UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

May 2, 2025

Jamie M. Coleman
Regulatory Affairs Director
Southern Nuclear Operating Company, Inc.
3535 Colonnade Parkway
Birmingham, AL 35243

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT UNIT 3 - 95001 SUPPLEMENTAL INSPECTION REPORT 05200025/2025040 AND FOLLOW-UP ASSESSMENT LETTER

Dear Jamie M. Coleman:

On March 20, 2025, the U.S. Nuclear Regulatory Commission (NRC) completed a supplemental inspection at Vogtle Electric Generating Plant (VEGP), Unit 3 using Inspection Procedure 95001, "Supplemental Inspection Response to Action Matrix Column 2 (Regulatory Response) Inputs," due to a White performance indicator (PI). The NRC concluded that your evaluation identified the cause of the issue, and your corrective actions addressed the underlying issues that resulted in the White PI. Therefore, our updated assessment will transition VEGP Unit 3 back to the licensee response column. At the conclusion of the inspection, we discussed the results of our inspection with you and other members of your staff.

The NRC performed this inspection to review and challenge your station's actions in response to a White Unplanned Scrams with Complications (USwC) PI, which you reported on October 22, 2024. On February 14, 2025, you informed the NRC that VEGP Unit 3 was ready for the supplemental inspection (ADAMS ML25045A146**)**.

The NRC determined that your staff's evaluation identified the cause of the White PI*.* Specifically, an overly conservative design for the passive residual heat removal (PRHR) actuation system resulted in unnecessary PRHR actuations, safeguards actuations, and excessive plant cooldowns resulting in two complicated scrams in the third quarter 2024. We also determined that completed and planned corrective actions were sufficient to address the performance issues that led to the White PI. Based on the results of this inspection, the NRC concluded that Southern Nuclear Operating Company, Inc. performed a comprehensive evaluation of the White PI, and the inspection procedure objectives were met.

Based on the guidance in Inspection Manual Chapter 0305, "Operating Reactor Assessment Program," and the results of this inspection, the White PI will no longer count as an Action Matrix input. Therefore, as a result of our continuous review of plant performance, the NRC has updated its assessment of VEGP Unit 3. This assessment supplements, but does not supersede, the annual assessment letter issued on March 11, 2025. Based on successful completion of the supplemental inspection, and issuance of this inspection report, VEGP Unit 3 has transitioned to the licensee response column (Column 1) of the NRC Action Matrix as of the date of the exit and regulatory performance meeting for this inspection on March 20, 2025.

No NRC-identified or self-revealing findings were identified during this inspection.

A licensee-identified violation which was determined to be of very low safety significance is documented in this report. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violation or the significance or severity of the violation documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement; and the NRC Resident Inspector at VEGP Unit 3.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

Signed by Blamey, Alan
on 05/02/25

Alan J. Blamey, Chief
Reactor Projects Branch 3
Division of Operating Reactor Safety

Docket No. 05200025
License No. NPF-91

Enclosure:
As stated

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SUBJECT: VOGTLE ELECTRIC GENERATING PLANT UNIT 3 – 95001 SUPPLEMENTAL INSPECTION REPORT 05200025/2025040. DATED MAY 02, 2025.

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number:	05200025
License Number:	NPF-91
Report Number:	05200025/2025040
Enterprise Identifier:	I-2025-040-0005
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Vogtle Electric Generating Plant Unit 3
Location:	Waynesboro, GA
Inspection Dates:	March 17, 2025 to March 20, 2025
Inspectors:	K. Kirchbaum, Senior Operations Engineer A. Rosebrook, Senior Reactor Analyst (Lead)
Approved By:	Alan J. Blamey, Chief Reactor Projects Branch 3 Division of Operating Reactor Safety

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a 95001 supplemental inspection at Vogtle Electric Generating Plant Unit 3, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information. A licensee-identified non-cited violation is documented in report section: 95001.

List of Findings and Violations

No findings or violations of more than minor significance were identified.

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05200025/2024-003-00	LER 2024-003-00 for Vogtle Electric Generating Plant, Unit 3, Automatic Reactor Protection System and Manual Safeguards Actuation Due to a Failed Open Flow Control Valve	71153	Closed

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

71153 - Follow Up of Events and Notices of Enforcement Discretion

Follow Up of Events and Notices of Enforcement Discretion (1 Sample)

(1) LER 2024-003-00 for Vogtle Electric Generating Plant, Unit 3, Automatic Reactor Protection System and Manual Safeguards Actuation Due to a Failed Open Flow Control Valve. The event was determined to not have been within the licensee's ability to foresee and prevent. Southern Nuclear Operating Company, INC (Southern Nuclear Company or SNC) had international operating experience for the Sanmen Unit 1 event and was working with Westinghouse to implement a design change for this single point vulnerability. The implementation timeline was reasonable, had a sound engineering basis and required the plant to be in Mode 5 (shutdown) to install the modification. Therefore, there was no performance deficiency associated with this event. This licensee event report is closed.

95001 - Supplemental Inspection Response to Action Matrix Column 2 (Regulatory Response) Inputs

The inspectors reviewed and selectively challenged aspects of SNC's problem identification, causal analysis, and corrective actions in response to a White performance indicator (PI) for two unplanned scrams with complications which occurred on July 8, 2024, and September 17, 2024. Both events involved an actuation of the passive residual heat removal (PRHR) heat exchanger (HX), actuation of safeguards, and a significant cooldown of the reactor coolant system (RCS). This exceeded the green-white threshold for performance indicator IE04: Unplanned Scrams with Complications (USwC) as documented in VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4 – INTEGRATED INSPECTION REPORT AND ASSESSMENT FOLLOW-UP LETTER 05200025/2024003 AND 05200026/2024003 dated November 14, 2024 (ML24313A063).

1. Objective: Ensure that the root and contributing causes of individual and collective white performance issues are understood. (1 Sample)

   Under this objective, the inspectors reviewed the evaluations SNC conducted for the July 8, 2025, and September 17, 2025, scrams and a common cause evaluation for the White PI. The inspection team evaluated SNC's identification of the issues, when and how long the issues existed, prior opportunities for identification, documentation of significant plant-specific consequences and compliance concerns, use of systematic methodology to identify

causes with a sufficient level of supporting detail, consideration of prior occurrences, identification of extent-of-condition and extent-of-cause, and identification of any potential programmatic weaknesses in performance.

NRC Assessment: The inspection team concluded that this objective was met. The team determined that SNC adequately evaluated the events in accordance with their corrective action program and identified direct causes, root causes, contributing causes, and identified extent of conditions.

a. Identification: The two unplanned scrams with complications were appropriately characterized by SNC as self-revealing events. The two events are listed below.

   Event 1: On July 8, 2024, with VEGP Unit 3 at 100% power, the main feedwater pump "A" minimum flow valve failed open, due to foreign material in the valve operator, diverting main feedwater flow from the steam generators to the deaerator storage tank. Due to feedwater flow being diverted, steam generator levels dropped resulting in a reactor scram and passive residual heat removal (PRHR) heat exchanger (HX) actuation. Subsequently, an automatic safeguards actuation was received when the RCS temperatures reached the 505 ºF set point.

   Event 2: On September 17, 2024, with VEGP Unit 3 at 100% power, the reactor automatically scrammed when a Mersen fuse failed in the PRHR HX outlet valve logic. This resulted in the PRHR HX outlet valve failing open, actuating the PRHR system. Following the scram, pressurizer levels began to lower because of the rapid cool down resulting in the operators manually actuating safeguards.

b. Exposure Time: For both events, SNC appropriately addressed the exposure time.

   Event 1: Both the failed main feedwater pump "A" minimum flow valve which initiated the reactor scram and the overly conservative PRHR system actuation circuitry design which resulted in unnecessary actuation of the PRHR system and excessive plant cooldown rates were present since site construction. A design change to provide an automatic rapid turbine runback on failure of the minimum flow valve was completed on Unit 4 and was scheduled to be completed in the first VEGP Unit 3 refueling outage (Fall 2024).

   Event 2: The failed Mersen fuse was installed during plant construction and the power supply for 3-PXS-V108A was present since site construction. However, it was identified as a single point vulnerability, and a design change was in process and scheduled to be completed and installed by May 2026.

c. Identification Opportunities: In general, SNC appropriately considered prior occurrences and identification opportunities.

   Event 1: There was no reasonable opportunity to identify the foreign material in the feedwater minimum flow valve operator (air regulator). The equipment was installed during plant construction and passed all pre-commissioning testing and showed no operational concerns prior to the failure.

   A design change was planned for an automatic turbine runback to address the consequences of a potential failure of a main feedwater minimum flow valve. This change was implemented on VEGP Unit 4 and was scheduled to be completed during

the first VEGP Unit 3 refueling outage (Fall 2024). Therefore, this is not considered a missed opportunity.

The steam generator indicated that water level pressure induced spikes were significantly larger than any observed during pre-commissioning testing. Therefore, this is not considered a missed opportunity.

Event 2: Southern Nuclear Company was aware of international operation experience from Sanmen Unit 1. On April 28, 2022, Sanmen Unit 1 scrammed from full power due to the PRHR flow control valve (1-PXS-V108B) failing open due to a failed Mersen fuse. This resulted in a turbine trip, reactor scram and safeguards actuation. Vendor recommendations which were implemented at Sanmen Unit 1 were included in the Operating Experience report.

Southern Nuclear Company did not implement all these recommendations, which included replacing and/or X-raying the fuses. After the VEGP Unit 3 scram inspections revealed several installed Mersen fuses had the same defective condition. This was a missed opportunity.

Southern Nuclear Company did identify the power supply for the PRHR flow controller presented a single point vulnerability, and a design change was planned for May 2026, to replace the series fuse configuration with parallel and independent power supplies. This is not considered a missed opportunity because the design change is being developed, but it is not currently installed.

d. Risk and Compliance: The root cause documented the qualitative consequences of each event and the performance issue with respect to nuclear, radiological, safety culture, and industrial consequences. Based on their review, the inspectors concluded that the cause analysis demonstrated an understanding of significant plant consequences and compliance concerns associated with each event and the performance issue.

   Event 1: The event was a plant transient which resulted in an inadvertent actuation of the PRHR system and resulting valid automatic safeguards actuation. The PRHR system, which is the credited, safety related mitigating system, did actuate and performed its safety function even though it was not required. The plant design accounted for 10 inadvertent PRHR HX actuations with excessive cooldowns. The post event analysis confirmed this transient was within the bounding analysis, so this did not contribute to risk during the event. Because of these factors the conditional core damage probability for the event was below 1E-7 (very low safety significance).

   Event 2: The event was an inadvertent actuation of the PRHR system which resulted in a plant transient and manual actuation of safeguard by procedure. The PRHR system, which is the safety related and credited mitigating system did actuate and performed its safety function even though it was not required. The plant design accounted for 10 inadvertent PRHR HX actuations with excessive cooldowns and post event analysis confirmed this transient was within the bounding analysis so this did not contribute to risk during the event. Because of this the conditional core damage probability for the event was below 1E-7 (very low safety significance).

The cumulative impact of the two scrams would increase the plant specific transient initiating event frequency. However, the resulting change in baseline risk would remain very low, less than 1E-7 due to the passive plant design.

e. Methodology: The inspectors determined the methodology was consistent with the SNC Corrective Action Program.

For both Event 1 and Event 2 a Level of Effort Corrective Action Report (CAR) 718091 and 753094 respectively was performed as required by SNC Corrective Action Program (CAP) for an event not considered to be a significant condition adverse to quality. This is acceptable for both events to meet the 95001 criteria.

Common Cause: A Root Cause Report CAR 792863 was performed for exceeding the Unplanned Scrams with Complications PI Green-White threshold. The SNC Corrective Action Program treats Greater than Green Regulatory Issues as Significant Conditions adverse to quality. This meets the 95001 criteria.

f. Level of Detail: The inspectors determined the cause evaluations, in aggregate, were performed commensurate with the safety significance and complexity of the performance issue and were of sufficient detail to identify the root and contributing causes, extent of conditions, and extent of causes. The cause evaluations were performed by individuals in the licensee's organization with varying levels of experience and backgrounds. Since the performance indicator inputs did not involve significant conditions averse to quality, a root cause evaluation was not required in every case.

Event 1: The level of detail was sufficient. The direct cause of the initiating event was parts quality. Specifically, the feedwater minimum flow valve failing open was the result of foreign material in the valve positioner's pressure regulator. The additional causes were:

Cause 1: Overly Conservative Design

The PRHR actuation system and lack of a rapid power reduction for the failure of the feedwater minimum flow valve resulted in the scram and rapid cooldown of the RCS. The PRHR system should not actuate when the steam generator wide range (SGWR) water level indication momentarily spikes below 35% level. The SGWR level indication is pressure compensated which can provide a very conservative and rapid change in the indicated SGWR level. To reduce the potential for unnecessary initiation of the PRHR system, SNC reduced the SGWR level set point for PRHR initiation (corrective action to preclude repetition (CAPR) 2 below). However, additional actions are needed to prevent recurrence as discussed in Section 3 below for the pressure compensated SGWR level indication.

The VEGP Unit 3 and Unit 4 design implements an automatic rapid power reduction for the loss of a main feedwater pump but did not include the main feedwater minimum flow valve failing open while near full power. An automatic rapid power reduction for a failed open feedwater minimum flow valve would rapidly reduce reactor power and stabilize the unit at a lower power level, without the need for a reactor scram or PRHR initiation (CAPR 1 below).

Cause 2: Change Management – Less Than Adequate Bridging Strategy

In 2022 SNC increased the main feedwater minimum flow rate which resulted in a change management issue. This issue for increasing main feedwater pump minimum flow rate from 5000 to 8000 GPM resulted in the abnormal operating procedure manual actions becoming ineffective. The change was not evaluated or modelled to determine the adequacy of the reduced operator response time to manually conduct the power reduction. As a result, there was insufficient time for an operator to manually reduce power and stabilize the plant before reaching an automatic reactor scram.

Event 2: The level of detail was sufficient. The direct cause of the event was parts quality. The Mersen fuses had a defective condition that resulted in the premature failure of the fuse. The failed fuse opened the PRHR HX outlet valve and actuated the PRHR system. The additional cause was:

Cause 1: Overly Conservative Design

There are four fuses in series and failure of any one of these fuses would result in a PRHR actuation. Therefore, this design creates “single point vulnerabilities” that can cause inadvertent PRHR actuations (CAPR 3 below).

Root Cause: The level of detail was sufficient. The root cause of the event was an overly conservative design of the PRHR actuation logic.

Corrective Actions to Preclude Repetition (CAPR) (From original level of effort CARs):

1. CAPR 1: Modification to include an automatic turbine runback for the main feedwater minimum flow valve failed in the open position. Design Change Package (DCP) SNC1401719 (PLS Logic Changes on loss of MFWP and valve failure) / DCP SNC1575785 (Automatic Turbine Runback – C-20 changes) / DCP SNC1575787 (Automatic Turbine Runback – C-20 changes).

2. CAPR 2: Modification to reduce the PRHR initiation setpoint on the SGWR level. DCP SNC2042357 / DCP SNC2079229 (Steam Generator Wide Range Setpoint Changes)

3. CAPR 3: Modification to install redundant PRHR logic. DCP SNC1583547 (Redundant PRHR HX Logic)

g. Operating Experience: The inspectors determined that SNC appropriately considered prior occurrences and operating experience.

Event 1: Southern Nuclear Company was aware of the vulnerability with the main feedwater pump minimum flow in 2015 and developed a design change package in 2019 to address this operating experience.

Event 2: On April 28, 2022, Sanmen Unit 1 tripped from full power due to the PRHR flow control valve (1-PXS-V108B) failing open due to a failed Mersen fuse. This resulted in a turbine trip, reactor scram and safeguards actuation.

Vendor recommendations which were implemented at Sanmen Unit 1 were included in the industry operating experience report and SNC communicated with Westinghouse about this event. Most of the recommendations were incorporated in a design change package which was scheduled to be implemented on VEGP Units 3 and Unit 4 by May 2026.

Common Cause: Southern Nuclear Company used the Institute of Nuclear Power Operations database to collect domestic and international operating experience for similar events as required by their corrective action program guidance.

h. Extent of Condition and Cause:

Event 1: Extent of condition reviews were completed as part of the Level of Effort CAR.

Event 2: Extent of condition reviews were completed as part of the Level of Effort review. This review identified seven additional air operated valves (AOV) in safety-related applications which had the same single point vulnerability. The design change package for CAPR 3 includes installing diverse power supplies, fuses and system interface modules (SIMs) for each of the seven AOVs on VEGP Unit 3 during the second refueling outage (Spring 2026) and all nine AOV's on VEGP Unit 4 during the first refueling outage (Fall 2025).

Common Cause: Extent of condition and extent of cause reviews were completed as part of the root cause.

i. Common Cause: Southern Nuclear Company identified a common root cause for both events. The common cause was an overly conservative PRHR heat exchanger actuation design that resulted in inadvertent actuations of the PRHR system and undesired plant cooldown rates.

The inspectors noted a second common cause. Both of the vulnerabilities which resulted in the plant trip had been identified previously and design changes were in progress. However, in both cases the risk management bridging strategies had weaknesses which contributed to the events.

Event 1: The design change to install the automatic turbine runback on a failure of the main feedwater pump minimum flow valve had a bridging strategy which relied upon operator actions to reduce power. However, in the third quarter of 2022 feedwater flows were increased and the trim package for the minimum flow valve was replaced increasing minimum flow from 5000 to 8000 gpm. Increasing the flow diverted from the steam generator resulted in shortening the time available for operator action to reduce power. This invalidated the bridging strategy, and it was not effective during the event.

Event 2: A design change to provide redundant PRHR actuation logic was scheduled for installation during the first refueling outage on VEGP Unit 4 and the second refueling outage on Unit 3. This design change was recommended by Westinghouse following an event at Sanmen Unit 1 in 2022 which was nearly identical to event 2. However, one of the recommendations the vendor gave Sanmen Unit 1 was to replace all the Mersen Fuses. Southern Nuclear Company performed an evaluation (RER SNC 1506409) that recommended not to replace the fuses. The recommendation was based in part on NUREG 1760, which states that fuses loaded under 60% could last indefinitely, and

Westinghouse input. These fuses are rated for 3 amps and loaded at 3%. This RER was reviewed and accepted by the Plant Health Committee in September 2023. While the engineering basis for the decision is sound, (thus not considered a performance deficiency), in hindsight, this strategy was also ineffective.

2. Objective: Ensure that the extent-of-condition and extent-of-cause of individual and collective white performance issues are identified. (1 Sample)

   Under this objective, the inspectors independently assessed SNC's evaluation of their extent-of-condition and extent-of-cause for the two events and root cause analysis for the White Unplanned Scrams with Complications PI.

   NRC Assessment: The inspection team concluded that this objective was met. The inspectors' review determined the licensee's evaluations were documented at a sufficient level of detail, included relevant operating experience, and identified the root causes, contributing causes, extent of conditions, and extent of causes of the performance issue. Corrective actions were developed and performed for both units and for additional components identified during the extent of condition review.

   a. Extent-of-Condition and Cause

      The inspectors determined that the licensee appropriately identified the extent of condition and extent of cause.

      Event 1: Southern Nuclear Company determined that PRHR system actuation from a momentary overly conservative SGWR level transmitter indication below 35% and not having an automatic rapid power reduction actuation logic to rapidly reduce reactor power for this event were applicable to and implemented on VEGP Unit 3 and Unit 4. These were implemented as CAPR 1 and CAPR 2.

      Event 2: Southern Nuclear Company evaluation identified nine safety related air operated valves which were susceptible to the same single point vulnerability (single fuse failure can result in an inadvertent actuation). The design change package implementing CAPR 3 includes each of these valves on VEGP Unit 3 and Unit 4.

      Common Cause: The root cause of the overly conservative PRHR heat exchanger actuation design is applicable to VEGP Unit 3 and Unit 4 and design changes are being implemented on both units.

3. Objective: Ensure that completed corrective actions to address and preclude repetition of white performance issues are timely and effective. (1 Sample)

   Under this objective, the inspectors assessed the appropriateness and timeliness of the licensee's corrective actions.

   NRC Assessment: The inspection team concluded that this objective was met. Southern Nuclear Company identified and is implementing three corrective actions to preclude repetition. Each of these three CAPRs involves design changes which require an outage to be fully implemented. Therefore, when those are complete, the NRC plans to inspect and assess the planned corrective action to prevent recurrence identified in CAPR 2 and CAPR 3.

a. Completed Corrective Actions to Prevent Recurrence

CAPR 1: Unit 3 Design Change Package (DCP) SNC1401719 (PLS Logic Changes on loss of main feedwater pump and valve failure) / DCP SNC1575785 (Automatic Turbine Runback – C-20 changes) / DCP SNC1575787 (Automatic Turbine Runback – C-20 changes). This CAPR was implemented on VEGP Unit 3 and Unit 4. The automatic rapid turbine run back for a failed open feedwater minimum flow valve at power was implemented on Unit 4 prior to the July 2024 Unit 3 scram. The Unit 3 change had been scheduled to be implemented during the first unit 3 refueling outage in the Fall of 2024. The design change was implemented on Unit 3 prior to plant restart following the July 2024 trip.

CAPR 2: VEGP Unit 3 DCP SNC2042357 / DCP SNC2079229 Steam Generator Wide Range Setpoint. These design changes were implemented on VEGP Unit 3 and Unit 4 (DCP 2042369/TE 1169109). However, this CAPR will not preclude repetition. This was identified and acknowledged in the design change package. While it gives additional margin for a PRHR actuation it would not preclude actuation in all cases such as an automatic plant trip from 21 inches on narrow range steam generator water level. The long-term corrective action would be to complete Technical Evaluation (TE) 1160326 (CA 14 for CAR 718091) which involve software changes to filter or include a time delay in the actuation circuity. This would ensure a momentary downward steam generator level spike due to a pressure wave would not cause an unnecessary PRHR system actuation. TE 1160326 is scheduled to go to the plant health committee in April 2025 for authorization. While the licensee's Corrective Action Program would not classify this as a CAPR, the inspectors considered this action to be a CAPR. This is not a performance deficiency, but it is a corrective action which should be reviewed once it is completed.

CAPR 3: Unit 3 DCP SNC1583547 Redundant PRHR HX Logic. This design change package includes 1) providing two channels of power to each of the nine affected air operated valves (each channel being a system interface module (SIM), a fuse, and a power supply) 2) installation of throttling capability for PRHR to limit cooldown and 3) update to the standby feedwater system logic. This change is scheduled to be implemented following the Unit 3 second refueling outage and the Unit 4 first refueling outage.

b. Other Completed Corrective Actions

Event 1:

- Replaced failed main feedwater minimum flow control valve actuator.
- Performed forensic analysis of the failed component and discovered foreign material in the regulator and evaluated the condition under 10 CFR Part 21.

Event 2:

- Replaced all of the 3 amp priority 1 and 2 fuses from the event extent of condition. If these fuses fail, it will result in a reactor/turbine trip (priority 1), a unit shut down in 24 hours or less or a unit derate or down power (Priority 2) or present a significant challenge to unit operation or normal safe shutdown.

- Revised testing requirements for all Mersen fuses consistent with Westinghouse recommendations.
- Revised purchase orders for Mersen fuses to add requirements for X-ray examinations and additional shipping and handling requirements to prevent damage to fuses during shipping.

Common Cause

- Completed engineering analysis (DCP 240361) and operability determination for excessive cooldowns caused by PRHR actuation (CR 11111053 and CR11091687)

4. Objective: Ensure that pending corrective action plans direct prompt and effective actions to address and preclude repetition of white performance issues. (1 Sample)

   Under this objective, the inspectors assessed the appropriateness and timeliness of the licensee's planned corrective actions.

   NRC Assessment: The inspection team concluded that this objective was met. The inspectors concluded the dates for implementation and completion of the planned root and contributing cause corrective actions were reasonable, effective, and prioritized with consideration for risk significance and regulatory compliance. The inspectors also concluded that the licensee established reasonable measures of success to evaluate the effectiveness of the corrective actions. When complete, the NRC plans to inspect and assess the planned corrective actions to prevent recurrence identified in Section a of this objective.

   a. Planned Corrective Actions to Prevent Recurrence

      CAPR 2: The long-term corrective action (originally CA 14) to revise the safety related software to establish a filter/ time delay to prevent the pressure wave induced false level indication for causing an unnecessary PRHR system actuation. The proposed timeline for this design change is reasonable and risk is mitigated by the short-term corrective action to lower the steam generator water level wide range setpoint for PRHR actuation and operator actions to insert a manual scram at 26 inches as occurred during the plant trip.

      CAPR 3: This design change requires a plant outage to implement, and risk has been mitigated by the actions to replace the installed fuses and to test Mersen fuses in accordance with Westinghouse recommendation prior to installing them.

Conclusion (1 Sample)

The inspectors concluded that the corrective actions to preclude repetition of the root and contributing causes of the performance issue were effective and adequately prioritized considering safety significance and regulatory compliance. In addition, the inspectors determined evaluations were documented at a sufficient level of detail, included relevant operating experience, and identified the root causes, contributing causes, extent of conditions, and extent of causes of the performance issue.

The NRC considered all of the inspection criteria in NRC Inspection Procedure 95001 to have been met. Therefore, effective the date of the inspection Exit and Regulatory Performance meetings, VEGP Unit 3 will return to the Licensee Response column of the NRC Action Matrix. It should be noted that in accordance with NRC Inspection Manual Chapter 0305 Section 11.2, the White Performance Indicator for Unplanned Scrams with Complications will still be reported as a White PI until the 2024 third quarter data is no longer considered, but it will no longer count as an input to the NRC Action Matrix.

INSPECTION RESULTS

Licensee-Identified Non-Cited Violation	95001
This violation of very low safety significance was identified by the licensee and has been entered into the licensee corrective action program and is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.	
Violation: Vogtle Electric Generating Plant Unit 3 Technical Specification (TS) 5.4.1 requires, in part, "Written procedures shall be established, implemented, and maintained covering the following activities: a. The applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978." Contrary to the above from 2022 until July 2024 SNC failed to maintain operations procedure 3-AOP-205, “Feedwater System Malfunctions,” a procedure recommended in Regulatory Guide 1.33 Revision 2 Appendix A. Specifically, SNC’s evaluation for the July 2024 plant trip, identified that a plant change to feedwater flow rates implemented in 2022 had not been evaluated or modelled and resulted in the operator actions in the abnormal operating procedure being ineffective. Significance/Severity: Green. The performance deficiency was more than minor because it affected the procedural quality attribute of the Initiating events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using NRC IMC 0609 Appendix A Exhibit 1 - Initiating Events Screening Questions, the finding screened to Green because the finding did not cause both a reactor trip AND the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. Corrective Action References: This issue was identified by SNC during the Level of Effort Evaluation for the July 2024 plant trip, CAR 718091.	

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On March 20, 2025, the inspectors presented the 95001 supplemental inspection results to Patrick Martino, Site Vice President and other members of the licensee staff.
- On March 20, 2025, Alan Blamey, Branch Chief, Division of Operational Reactor Safety conducted a Regulatory Performance Meeting with Patrick Martino, Site Vice President and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
95001	Calculations	APP-PMS-M3C-118	Steam Generator Wide Range Water Level ESFAS Setpoint and EOP Uncertainty Calculations for AP1000	Revision 1
	Corrective Action Documents	CAR 718091 LOE Event 1	Level of Evaluation Checklist	02/27/2025
		CAR 753094 LOE Event 2	Level of Event	03/03/2025
		CAR 792863	Root Cause Report on Unplanned Scrams	01/17/2025
	Engineering Changes	SNC1401719	Design Change Package - PLS Logic Changes for Loss of Main Feedwater and Valve Failure	Revision 1
		SNC1583547	Design Change Package - U3 - Haiyang 2 Trip Event Lessons Learned & IDS SPV	Revision 0
		SNC2042357	U3 Steam Generator Wide Range Level Low-2 Setpoint Change	Revision 0
		SNC2042369	U4 Steam Generator Wide Range Level Low-2 Setpoint Change	12/17/2024
	Engineering Evaluations	TE 1157877	WEC Support of Design Transient Analysis for U3 Rx Trip (7/8/24)	07/11/2024
		TE 1159932	Westinghouse developed and provided a setpoint change for the Steam Generator wide range in order to preclude the unnecessary PRHR actuation.	08/09/2024
		TE 1159932	WEC to develop PMS setpoint or software update to preclude unnecessary PRHR actuation on transitory SGWR signals.	08/09/2024
		TE 1162210	WEC support of Design Transient Analysis for U3 Rx Trip (9/17/24)	09/17/2024
		TE 1163745	PQI Test Failure, Vogtle 3&4 Safety Related Item 1345218 (Fuses)	10/15/2024
	Miscellaneous	Report CR25-018	Assessment Report - MOCK 95001 Inspection for Southern Nuclear Vogtle Electric Generating Plant, Unit 3	03/04/2025
		Simulator Testing Report 3/24/001	AP1000 Simulator Post-Event Testing Report Unit 3 Reactor Trip 3-24-001	
		Simulator Testing Report 3/24/002	AP1000 Simulator Post-Event Testing Report Unit 3 Reactor Trip 3-24-002	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Procedures	3-AOP-205	Feedwater System Malfunctions	Version 4.1
		3-EOP-E-0	Reactor Trip or Safeguards Actuation	Version 1.1