



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

May 18, 2023

EA-23-019

Brad Kapellas, Site Vice President
Entergy Operations, Inc.
P.O. Box 756
Port Gibson, MS 39150

**SUBJECT: GRAND GULF NUCLEAR STATION – NRC INSPECTION REPORT
05000416/2023090 AND PRELIMINARY WHITE FINDING**

Dear Brad Kapellas:

This letter refers to the inspection conducted from November 14, 2022, to April 5, 2023, by the U.S. Nuclear Regulatory Commission (NRC) at the Grand Gulf Nuclear Station. The purpose of the inspection was to verify Entergy Operations, Inc. (licensee) is ensuring the accuracy and operability of radiation monitoring instruments that are used to monitor areas, materials, and workers to ensure a radiologically safe work environment and detect and quantify radioactive process streams and effluent releases. On April 5, 2023, a final exit briefing was conducted with you and other members of your staff. The results of the inspection are documented in the enclosed report.

The enclosed report discusses a preliminary White finding (i.e., “a finding with low-to-moderate safety significance that may require additional NRC inspections”), with three associated apparent violations. As described in the enclosed report, during the week of November 14, 2022, NRC inspectors reviewed documents related to your radiation monitoring instrumentation program and identified calibration failures for the drywell and containment high range area radiation monitors. The finding was assessed based on the best available information, using the applicable significance determination process (SDP). The final resolution of this finding will be conveyed in separate correspondence.

The finding has three associated apparent violations which are being considered for escalated enforcement action in accordance with the NRC Enforcement Policy, which can be found at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>. The apparent violations involve the failure to: (1) calibrate primary drywell and containment high range area radiation monitors in accordance with 10 CFR 20.1501(c); (2) follow and maintain the effectiveness of an emergency plan that meets the requirements in 10 CFR Part 50, Appendix E, and the planning standards of 10 CFR 50.47(b); and (3) maintain the drywell and containment high range area radiation monitors operable or else initiate action to prepare and submit a Special Report to the NRC immediately.

In accordance with NRC Inspection Manual Chapter 0609, we intend to complete our evaluation using the best available information and issue our final significance determination and enforcement decision, in writing, within 90 days from the date of this letter. The significance determination process encourages an open dialogue between your staff and the NRC; however, the dialogue should not impact the timeliness of our final determination.

Before we make a final decision on this matter, we are providing you with an opportunity to either (1) attend a Regulatory Conference where you can present to the NRC your perspective on the facts and assumptions the NRC used to arrive at the finding and assess its significance, or (2) submit your position on the finding to the NRC in writing. If you request a Regulatory Conference, it should be held within 40 days of the receipt of this letter, and we encourage you to submit supporting documentation at least one week prior to the conference in an effort to make the conference more efficient and effective. The focus of the Regulatory Conference is to discuss the significance of the finding and not necessarily the root cause(s) or corrective action(s) associated with the finding. If a Regulatory Conference is held, it will be open for public observation. If you decide to submit only a written response, such submittal should be sent to the NRC within 40 days of your receipt of this letter.

If you decline to request a Regulatory Conference or to submit a written response, you relinquish your right to appeal the final SDP determination, in that by not doing either, you fail to meet the appeal requirements stated in the Prerequisite and Limitation sections of Attachment 2 of NRC Inspection Manual Chapter 0609.

If you choose to send a written response, it should be clearly marked as a "Response to Apparent Violations in NRC Inspection Report 05000416/2023090; EA-23-019" and should include for the apparent violations: (1) the reason for the apparent violations or, if contested, the basis for disputing the apparent violations; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken; and (4) the date when full compliance will be achieved. Your response may reference or include previously docketed correspondence if the correspondence adequately addresses the required response.

Additionally, your written response should be sent to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Director, Division of Radiological Safety and Security, U.S. Nuclear Regulatory Commission, Region IV, 1600 East Lamar Blvd., Arlington, Texas 76011-4511, and the NRC Resident Inspector at the Grand Gulf Nuclear Station, and emailed to R4Enforcement@nrc.gov, within 40 days of the date of this letter. If an adequate response is not received within the time specified or an extension of time has not been granted by the NRC, the NRC will proceed with its enforcement decision or schedule a Regulatory Conference.

Please contact Gregory Warnick at 817-200-1249 within 10 days from the issue date of this letter to notify the NRC of your intentions. If we have not heard from you within 10 days, we will continue with our significance determination and enforcement decision. The final resolution of this matter will be conveyed in separate correspondence.

Because the NRC has not made a final determination in this matter, a Notice of Violation is not being issued at this time. In addition, please be advised that the number and characterization of the apparent violations described in the enclosed inspection report may change as a result of further NRC review.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room and from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions concerning this matter, please contact Gregory Warnick of my staff at 817-200-1249.

Sincerely,



Rivera-Varona, Aida signing on behalf
of Miller, Geoffrey
on 05/18/23

Geoffrey B. Miller, Director (Acting)
Division of Radiological Safety & Security

Docket No. 05000416
License No. NPF-29

Enclosure:
NRC Inspection Report
05000416/2023090

cc w/ encl: Distribution via LISTSERV

GRAND GULF NUCLEAR STATION - NRC INSPECTION REPORT 05000416/2023090 AND PRELIMINARY WHITE FINDING - DATED MAY 18, 2023

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ADAMS ACCESSION NUMBER: **ML23122A163**

SUNSI Review: ADAMS: Non-Publicly Available Non-Sensitive Keyword:
 By: ACR Yes No Publicly Available Sensitive NRC-002

OFFICE	ES:ACES	HP:DIOR	SHP:DIOR	C:DIOR	C:PBA	TL:ACES
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DATE	05/02/23	/05/02/23	05/02/23	05/02/23	05/02/23	05/04/23
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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Number: 05000416

License Number: NPF-29

Report Number: 05000416/2023090

Enterprise Identifier: I-2023-090-0003

Licensee: Entergy Operations, Inc.

Facility: Grand Gulf Nuclear Station

Location: Port Gibson, MS

Inspection Dates: November 14, 2022 to April 5, 2023

Inspectors: D. Antonangeli, Health Physicist
N. Greene, Senior Health Physicist
S. Hedger, Senior Emergency Preparedness Inspector

Approved By: Gregory G. Warnick, Chief
Decommissioning, ISFSI & Operating Reactors Branch
Division of Radiological Safety & Security

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a NRC inspection at Grand Gulf Nuclear Station, 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.

List of Findings and Violations

Failure to calibrate primary drywell and containment high range area radiation monitors in accordance with 10 CFR 20.1501(c)			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Emergency Preparedness	Preliminary White AV 05000416/2023090-01 Open EA-23-019	[H.9] – Training	71124.05
During the week of November 14, 2022, NRC inspectors reviewed documents related to the licensee's radiation monitoring instrumentation program and identified calibration failures for their drywell and containment high range area radiation monitors (1D21K648A, 1D21K648B, 1D21K648C, and 1D21K648D). The calibration failures impacted all four radiation monitors. The licensee failed to perform a calibration in accordance with NRC requirements of 10 CFR 20.1501(c). The licensee then failed to declare these radiation monitors inoperable in accordance with their technical specification requirements (TS 3.3.3.1 and TS 3.0.1) and perform the associated limiting condition for operation (LCO) action. Inoperable radiation monitors would be unable to perform their intended function for Emergency Preparedness actions in accordance with 10 CFR 50.54(q)(2).			

Additional Tracking Items

None.

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.

RADIATION SAFETY

71124.05 - Radiation Monitoring Instrumentation

Calibration and Testing Program (IP Section 03.02) (4 Samples)

The inspectors evaluated the calibration and testing of the following radiation detection instruments per procedure 06-IC-1D21-R-1002:

- (1) drywell high range area monitor, plant I.D: 1D21K648A
- (2) drywell high range area monitor, plant I.D: 1D21K648D
- (3) containment high range area monitor, plant I.D: 1D21K648B
- (4) containment high range area monitor, plant I.D: 1D21K648C

INSPECTION RESULTS

Failure to calibrate primary drywell and containment high range area radiation monitors in accordance with 10 CFR 20.1501(c)			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Emergency Preparedness	Preliminary White AV 05000416/2023090-01 Open EA-23-019	[H.9] – Training	71124.05
<p>During the week of November 14, 2022, NRC inspectors reviewed documents related to the licensee's radiation monitoring instrumentation program and identified calibration failures for their drywell and containment high range area radiation monitors (1D21K648A, 1D21K648B, 1D21K648C, and 1D21K648D). The calibration failures impacted all four radiation monitors. The licensee failed to perform a calibration in accordance with NRC requirements of 10 CFR 20.1501(c). The licensee then failed to declare these radiation monitors inoperable in accordance with their technical specification requirements (TS 3.3.3.1 and TS 3.0.1) and perform the associated limiting condition for operation (LCO) action. Inoperable radiation monitors would be unable to perform their intended function for Emergency Preparedness actions in accordance with 10 CFR 50.54(q)(2).</p>			
<p><u>Description:</u> The NRC inspectors reviewed documents related to the licensee's radiation monitoring instrumentation program. The inspectors identified documented failures of selected radiation monitoring instruments associated with the 'sensitivity' parameters. Upon further review, inspectors determined that all four of the licensee's accident high range</p>			

radiation monitors (two drywell – detectors A and D, two containment – detectors B and C) failed to be within the ‘sensitivity’ tolerances during their last two calibrations cycles.

The sensitivity parameter represents the fundamental way the detector (in this case an ion chamber) works. This parameter relates the output signal of the detector to the amount of radiation present. The calibration process uses this parameter to demonstrate the instrument’s ability to accurately detect radiation. For context, the sensitivity parameter was determined in a controlled laboratory environment where the detector was exposed to a known radiation field (in roentgens per hour (R/hr)) that resulted in a corresponding output current (in amps) based on the collection efficiency of the detector. This was how the sensitivity parameter value for the detector was determined, in the units of amps (A) per R/hr (A/R/hr). The vendor established the sensitivity parameter value by testing three decades of response and averaging them. This established the linear and consistent response on the detector side of the calibration. In this case, the vendor provided an average value of 6.8×10^{-11} A/R/hr with a tolerance of +/- 10 percent (%), as a requirement, to maintain a successful calibration check of the system. Moreover, for accident high range radiation monitors, NUREG 0737, “Clarification of TMI Action Plan requirements,” describes a calibration variance for not checking the entire detector range using radiation. This means that the sensitivity parameter check plays a more important role in the detector calibration. There is only one radiation level measurement made and this is the only indication of how the detector will respond on the higher radiological ranges that are not being checked within the licensee’s calibration process. The sensitivity parameter check verifies that the current output on any range of the instrument between calibrations is displayed within a reasonable tolerance of the actual radiological conditions. This allows the control room operators to make an acceptable determination of actions during/post an accident.

This sensitivity parameter was introduced to the licensee's calibration program and process by the corrective actions for a Notice of Violation (NOV) accompanying Inspection Report 05000416/2017012, which the licensee received from the NRC by letter dated August 22, 2017 (ADAMS Accession No. ML17235B265). The licensee added the sensitivity parameter check to the calibration procedure as a corrective action of the 2017 violation since it was required by the vendor manual for a successful calibration. Since implementation of this sensitivity parameter to calibration procedure 06-IC-1D21-R-1002, “Containment/Drywell High Range Area Radiation Monitor Calibration,” the licensee has not been able to successfully determine the detector sensitivity parameter within the vendor’s stated tolerance. The licensee has initiated condition reports (CRs), for tracking purposes, when the sensitivity failed to be within required tolerance, but the CR evaluations consistently conclude that the sensitivity parameter tolerance is not a technical specification acceptance criterion; therefore, the calibrations were completed without meeting the tolerance or completion of Section 5.89 of calibration procedure 06-IC-1D21-R-1002. The calibration procedure states that completion of the procedure is a successful performance of the calibration surveillance. However, the NRC asserts that the calibration procedure is inadequate and/or incomplete because the results conflict with the acceptance criterion.

In addition, the licensee conducted operability evaluations for these drywell and containment high range radiation monitors and concluded that the calibration procedure was inadequate. Specifically, the licensee determined these sensitivity values cannot be collected adequately without factoring background radiation/current into the calculation. The licensee also concluded that an additional step in the procedure related to collecting background data was needed. The licensee stated to the NRC that they agree the calibration procedure was inadequate relative to the way in which they handle the sensitivity parameter value. However,

the licensee maintained that the radiation monitors were properly calibrated based on meeting the radiation source check tolerance of +/- 36%, as described in Section 5.87, "Radiation Calibration," of their calibration procedure 06-IC-1D21-R-1002.

The licensee is committed to perform calibration of the drywell and containment high range radiation monitors in accordance with NUREG-0737, and in compliance with the vendor manual. Per NUREG-0737, the licensee must complete a "special calibration" for at least one decade below 10 R/hr. In this case, the licensee's radiation source check, involves exposing the detector to a known radiation source, at approximately 4.5 rem per hour (R/hr), that verifies the radiation detector is within tolerance, and thus, adequately calibrated. The inspectors identified that the radiation source check tolerance of +/- 36%, as established by the licensee from the vendor manual, is inappropriate because the tolerance of +/- 36% is applicable to the overall system accuracy of the detector (i.e., across a wide range of radiation intensity and radiation energy) and is not applicable for a single point reading on the lowest decade as performed with the radiation source check. Based on ANSI N320-1978, as the licensee commits to, the radiation system calibration shall be within +/- 40%, and +/- 15% precision for any single sample. The calibration data provided by the licensee, and reviewed by the NRC, demonstrates a single point error as high as +/- 33% for three of the four (A, B, and D) drywell/containment high range area radiation monitors, and would significantly challenge meeting the overall system accuracy of +/- 36% when factoring in other system losses and errors across the other seven decade readings required for a successful calibration. In fact, during the NRC's communication with the licensee and vendor, the vendor stated that based on the available data, the overall system accuracy was likely greater than +/- 40% for these detectors. The NRC requested the licensee assess the system accuracy of their containment and drywell radiation monitoring systems for confirmation.

It is noteworthy that following issuance of the 2017 NOV, the licensee used their corrective action process, in part, to respond to this violation. In condition report CR-GGN-2017-06876, the licensee documented a validation of the calibration of containment area radiation monitors (B and C) and stated the following, *"Based on the calibration sheets, the installed monitors were exposed to a field of 4.95 R/hr. In both cases, the associated control room monitors indicated 4 R/hr. This is within 20% [19.2%] of the actual field, and therefore acceptable. The total stated accuracy of the instrument loop (detector, monitor, and indicator) is +/-36% of the input radiation per vendor manual 460000136. This verifies that the Containment Area Radiation Monitors are capable of detecting and measuring the radiation level within the reactor containment during and following an accident with sufficient accuracy to provide usable information, as per NUREG-0737."* This statement shows that the licensee understood the acceptance criteria and acceptable tolerances for the radiation source check and system loop accuracy for a successful calibration. This data was used to satisfy the NRC's concern in 2017 in its determination that the calibrations of these monitors were successful, within tolerance, and operable. As of the date of this report, the inspectors were not able to determine if the calibrations were successful based on the data provided to the NRC at the time of our inspection.

Specifically, inspectors reviewed procedure 06-IC-1D21-R-1002, revision 113, in which Step 5.87.5 instructs the licensee to record the "As Found" *meter* and *recorder* readings. These are the readings used for the radiation calibration for the detectors. It further instructs the licensee to immediately notify the supervisor if the "As Found" values are not within tolerance, but unfortunately, the tolerance is inappropriately documented as +/- 36%, which as stated above, does not comply with the vendor manual requirements or applicable ANSI

standards. Thus, the licensee consistently and inappropriately considered this calibration verification as successful, due to meeting the documented tolerance.

In response to these errors, the inspectors requested that the licensee demonstrate to the NRC that the overall system accuracy meets the tolerance of +/- 36% from the vendor or the +/- 40% from the ANSI standard, which would comply with the vendor manual requirements. As of the end of the inspection, NRC had not received this information for the drywell and containment high range area radiation monitors.

A successful calibration is required to ensure the radiation detectors are operable, and thus, able to both timely and accurately inform the licensee of in-situ radiological conditions during and post an accident. These radiological readings are then used to make determinations for various emergency response action levels (EALs), in accordance with the licensee's EAL Technical Bases Emergency Plan.

The licensee responded to questions provided by the inspectors focused on understanding the effects of the errors on EAL classification and dose assessment capabilities. Based on review of the evaluations and supplemental information provided by the licensee, including the licensee's Emergency Plan Table F-1, "Fission Product Barrier Threshold Matrix," the inspectors determined:

- For detectors A/D: the two drywell detectors would be used to classify up to an Unusual Event or Alert classification
- For detectors B/C: the two primary containment area radiation monitors would be used to classify up to a Site Area Emergency (SAE)
- For detectors A/B/C/D: all four detectors are used to classify up to a General Emergency (GE)

The primary concern on the EAL classification impacts is that the licensee has not demonstrated that they would be able to timely and accurately classify a GE in cases where they could have at least 20% fuel clad damage, but with reactor vessel levels remaining greater than the reactor pressure vessel (RPV) levels that trigger other EAL fission product barrier criteria. In the document "Grand Gulf Nuclear Station EAL Technical Bases," Table F-1 (revision 1), it states that there is a fuel clad barrier loss and a containment barrier potential loss when site Severe Accident Procedures (SAPs) are entered. Procedure 05-S-01-EP-2, "RPV Control," revision 3, indicates that SAPs are entered when RPV level cannot be maintained above -191 inches. In cases where the RPV level remains above -191 inches and significant fuel clad damage exists, the licensee hasn't demonstrated that there are other EAL criteria that could be credited to compensate for not having the capability to classify the GE based on containment radiation monitor readings at the timing expected for EAL FG1, i.e., earlier than would otherwise occur from other EALs in the approved EAL scheme.

Based on NRC's review of Table 5.4-1 of the licensee's EAL Technical Bases Emergency Plan, although the licensee may enter their SAP due to factors such as the RPV water level hitting its threshold for a SAE, the inability to use their radiation monitors to indicate actual radiation levels in the release pathway provides a degraded aspect of their ability to timely and accurately classify a GE. This has a direct impact on offsite response organizations being able to effectively implement protective action strategies to protect the public. While entry into

the SAP due to the RPV water level is a mitigating factor, for the purpose of significance per IMC 0609, Appendix B, the accuracy and timeliness of EAL classifications, and the required protective action recommendation, are considered degraded and not lost.

Corrective Actions: The licensee performed an operability evaluation, as documented in CR-GGN-2022-10690, supplemented by CR-GGN-2022-11351, which states that, “*The conditions identified in CR-2022-2940 for detector 1D21N048D and CR-2022-3094 for detector 1D21N048D did not meet detector sensitivity criteria provided in procedure. In both cases, the instruments passed their loop calibrations checks providing reasonable assurance of operability.*” The licensee informed the inspectors that they are conducting an uncertainty analysis, which will be used in their response to this violation, and as available, will be evaluated by the NRC.

Corrective Action References: CR-GGN-2022-10690

Performance Assessment:

Performance Deficiency: The licensee failed to perform a calibration in accordance with NRC requirements of 10 CFR 20.1501(c). The licensee then failed to declare these radiation monitors (1D21K648A, 1D21K648B, 1D21K648C, and 1D21K648D) inoperable in accordance with their technical specification requirements (TS 3.3.3.1 and TS 3.0.1) and perform the associated limiting condition for operation (LCO) action. Inoperable radiation monitors would be unable to perform their intended function for Emergency Preparedness actions in accordance with 10 CFR 50.54(q)(2).

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Facilities and Equipment attribute of the Emergency Preparedness cornerstone and adversely affected the cornerstone objective to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the finding was more than minor because it was associated with equipment needed (i.e., the drywell and containment high range radiation monitors) for EAL determinations, which is considered a risk-significant planning standard (RSPS) (i.e., 10 CFR 50.47(b)(4)) and adversely affected the Emergency Preparedness cornerstone objective to ensure that the performance expectation of reasonable assurance exists so that the licensee can effectively implement the approved emergency plan.

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix B, “Emergency Preparedness SDP.” Using Attachment 2 to IMC 0609, Appendix B, the finding is a failure to comply with RSPSs. Based on Table 5.4-1 of the licensee’s Emergency Plan, the inspectors determined that an EAL has been rendered ineffective such that any GE would not be declared for a particular off-normal event, but because of other EALs, an appropriate declaration could be made in a degraded manner (i.e., delayed). Since the GE classification would most likely be made at some point by entering the licensee’s SAP, the finding is not a loss of RSPS function but rather a degraded RSPS function when the staff considers all relevant mitigating factors. Thus, entry into the SAP has not been determined as both timely and accurate in all accident scenarios. Moreover, the actual containment and drywell high range monitor calibration data reviewed by inspectors for the radiation source check readout on the meter face and control room panels seem to consistently under-respond to radiation.

Thus, inoperable drywell and primary containment high range area radiation monitors affects the licensee's ability to make both timely and accurate EAL classifications per the licensee's Emergency Plan. Therefore, the violation is preliminary determined as a finding of WHITE significance.

Cross-Cutting Aspect: H.9 - Training: The organization provides training and ensures knowledge transfer to maintain a knowledgeable, technically competent workforce and instill nuclear safety values. Specifically, since at least 2017, the licensee has not demonstrated that their staff performing the calibration verifications of these radiation monitors has the technical knowledge to understand the full breadth of meeting acceptance criteria and requirements established for a successful calibration. Furthermore, their surveillance requirement 3.0.1 states, in part, that a failure to meet a surveillance is a failure to meet the LCO. NRC staff has engaged with the licensee multiple times to discuss these calibration aspects and establish a common understanding that the calibration data reviewed does not support these radiation monitors as being calibrated, and thus, they are not operable.

Enforcement:

Violation:

Apparent Violation #1: 10 CFR 20.1501(c) - Failure to calibrate the drywell and containment high range area radiation monitors

Title 10 CFR 20.1501(c) requires that the licensee shall ensure that instruments and equipment used for quantitative radiation measurements (e.g., dose rate and effluent monitoring) are calibrated periodically for the radiation measured.

Contrary to the above, from September 2019 to April 5, 2023, the licensee failed to ensure that instruments and equipment used for quantitative radiation measurements (e.g., dose rate and effluent monitoring) were calibrated periodically for the radiation measured. Specifically, the licensee failed to adequately calibrate and maintain the drywell and containment high range area radiation monitors in accordance with industry and vendor standards, as committed to, for a successful calibration.

Apparent Violation #2: 10 CFR 50.54(q)(2) - Failure to follow and maintain the effectiveness of an emergency plan and standards of 10 CFR 50.47(b)(4)

Title 10 CFR 50.54(q)(2) requires, in part, that a holder of a license under 10 CFR Part 50 shall follow and maintain the effectiveness of an emergency plan that meets the requirements in 10 CFR Part 50, Appendix E, and the planning standards of 10 CFR 50.47(b).

Title 10 CFR 50.47(b)(4) requires, in part, that a standard emergency classification and action level scheme is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

Contrary to the above, from September 2019 to April 5, 2023, the licensee failed to follow and maintain the effectiveness of an emergency plan which met the requirements in 10 CFR Part 50 Appendix E and the planning standards of 10 CFR 50.47(b). Specifically, the licensee failed to maintain a standard emergency classification scheme as required by 10 CFR 50.47(b)(4) as a result of calibration errors for drywell and containment area radiation monitors used for making General Emergency (GE) classifications. These calibration errors

failed to provide reasonable assurance that the monitors will remain operable and provide timely and accurate radiological information to the licensee during accident conditions.

Apparent Violation #3: TS 3.3.3.1 LCO Action - Failure to maintain the drywell and containment high range area radiation monitors operable and initiate action to prepare and submit a Special Report to the NRC immediately

Technical Specification (TS) 3.3.3.1 requires, in part, that the post-accident monitoring (PAM) instrumentation for each function in Table 3.3.3.1-1 shall be operable. Condition C requires, in part, that with one or more functions with two required channels inoperable, restore one required channel to operable status with 7 days. Condition D requires, in part, that with the required action and associated completion time of Condition C not met, enter the Condition referenced in Table 3.3.3.1-1 for the channel immediately. Table 3.3.3.1-1 Function 12, "Primary Containment Area Radiation," and Function 13, "Drywell Area Radiation," reference Condition F. Condition F requires, in part, that as required by required action D.1 and referenced in Table 3.3.3.1-1, initiate action to prepare and submit a Special Report immediately.

Contrary to the above, on December 23, 2022, the licensee failed to initiate an action to prepare and submit a Special Report after 7 days had elapsed with two required PAM instrumentation channels inoperable. Specifically, on December 16, 2022, NRC inspectors reviewed the radiation source check data and sensitivity parameter data for each of the drywell and containment high range monitors (detectors) during the calibration surveillance in accordance with procedure 06-IC-1D21-R-1002 and identified the value for all four detectors was outside of acceptable tolerances per industry acceptance criteria and standards, but the licensee still declared them operable. As a result, the licensee failed to initiate the LCO action.

Enforcement Action: These violations are being treated as apparent violations pending a final significance (enforcement) determination.

EXIT MEETINGS AND DEBRIEFS

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

- On April 5, 2023, the inspectors presented the preliminary White significance inspection results to Brad Kapellas, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71124.05	Corrective Action Documents	CR-GGN-YYYY-XXXXX	2017-00612, 2017-06876, 2022-02940, 2022-03094, 2022-10690, 2022-11351	
71124.05	Miscellaneous		Assessment of Calibration Status for Grand Gulf High Range Area Monitors	02/28/2023
71124.05	Miscellaneous		Grand Gulf Emergency Preparedness (EP) Position Paper 22-01: All Channels of Containment and Drywell Radiation Monitoring declared INOPERABLE	12/20/2022
71124.05	Miscellaneous		NRC Questions and Responses from EP Position Paper 22-01	01/17/2023
71124.05	Miscellaneous		GG Responses to NRC Questions on Operability Evaluation per CR-GGN-2022-11351	01/17/2023
71124.05	Miscellaneous		Licensee Response to Questions from the 12/02/22 RP Inspection Status Update Call	12/15/2022
71124.05	Miscellaneous	460000136	Victoreen Radiation Monitors Vendor Manual	08/08/1995
71124.05	Miscellaneous	877-1-1	Fluke Biomedical Victoreen 875 High Range Containment Monitor Operators Manual	05/2021
71124.05	Miscellaneous	GIN 2021-00062	Grand Gulf Nuclear Station EAL Technical Basis - Emergency Plan	1
71124.05	Miscellaneous	ML15127A549	GRAND GULF NUCLEAR STATION – NRC INTEGRATED INSPECTION REPORT 05000416/2015001	05/12/2015
71124.05	Miscellaneous	ML17235B265	GRAND GULF NUCLEAR STATION – NRC RADIATION PROTECTION INSPECTION REPORT 05000416/2017012 AND NOTICE OF VIOLATION	08/22/2017
71124.05	Operability Evaluations	CR-GGN-2022-10690	Operability Evaluation of Containment/Drywell High Range Radiation Monitors - Sensitivity Check	11/22/2022
71124.05	Operability Evaluations	CR-GGN-2022-11351	Operability Evaluation of Containment/Drywell High Range Radiation Monitors - Sensitivity Check	12/19/2022
71124.05	Procedures	06-IC-1D21-R-1002	Containment/Drywell High Range Area Radiation Monitor Calibration	113
71124.05	Procedures	EN-OP-104	Operability Determination Process	17
		05-S-01-EP-2	RPV Control	3
71124.05	Work Orders	WO 00542468-01	1D21N048A: Replace In-Drywell Radiation Detector	03/17/2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71124.05	Work Orders	WO 00542472-01	1D21N048D: Replace In-Drywell Radiation Detector	03/18/2022
71124.05	Work Orders	WO 52782236-01	06IC1D21-R-1002-03 Channel B (Containment) Calibration Record	09/05/2019
71124.05	Work Orders	WO 52782237-01	06IC1D21-R-1002-03 Channel C (Containment) Calibration Record	10/30/2019
71124.05	Work Orders	WO 52842051-01	06IC1D21-R-1002-03 Channel A (Drywell) Calibration Record	04/05/2020
71124.05	Work Orders	WO 52842512-01	06IC1D21-R-1002-03 Channel D (Drywell) Calibration Record	04/05/2020
71124.05	Work Orders	WO 52900509-01	06IC1D21-R-1002-03 Channel B (Containment) Calibration Record	09/02/2021
71124.05	Work Orders	WO 52906611-01	06IC1D21-R-1002-03 Channel C (Containment) Calibration Record	06/24/2021