UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 8, 2021

Zachary S. Harper, Manager
Licensing Engineering
Cranberry Headquarters
1000 Westinghouse Drive
Cranberry Township, PA 16066

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT OF WESTINGHOUSE ELECTRIC COMPANY – NEW STANTON, NO. 99901043/2020-201

Dear Mr. Harper:

From January 25 through January 29, 2021, the United States (U.S.) Nuclear Regulatory Commission (NRC) staff conducted a virtual inspection of Westinghouse Electric Company's (WEC's) facility in New Stanton, Pennsylvania. The purpose of this limited-scope inspection was to assess WEC's compliance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," and selected portions of Appendix B, "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

This technically-focused inspection specifically evaluated WEC's implementation of the quality activities associated with testing and qualification of safety-related components that comprise the Uninterruptible Power Supply (UPS) system for the AP1000 reactors currently under construction at Vogtle Units 3 and 4. This NRC inspection report does not constitute NRC endorsement of WEC's overall quality assurance (QA) or 10 CFR Part 21 programs.

Based on the results of this inspection, the NRC inspection team found the implementation of your QA program met the requirements imposed on you by your customers or NRC licensees. No findings of significance were identified.

In accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," the NRC will make available electronically for public inspection a copy of this letter, its enclosure, and your response through the NRC's Public Document Room or from the NRC's Agencywide Documents Access and Management System, which is accessible at http://www.nrc.gov/reading-rm/adams.html.

If you have any questions concerning this matter, please contact Mr. Aaron Armstrong of my staff at (301)415-8396.

Sincerely,

Kerri A. Kavanagh, Chief **/RA/**
Quality Assurance and Vendor Inspection Branch
Division of Reactor Oversight
Office of Nuclear Reactor Regulation

Docket No.: 99901043

EPID No.: I-2020-201-0022

Enclosures:
1. Inspection Report No. 99901043/2021-201
   and Attachment

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT OF WESTINGHOUSE ELECTRIC COMPANY – NEW STANTON, NO. 99901043/2021-201 Dated: March 08, 2021

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OFFICE	NRR/DRO/IQVB	NRR/DRO/IQVB	NRR/DRO/IQVB	NRR/DRO/IQVB
NAME	AArmstrong	DZhang	YLaw	KKavanagh
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U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
DIVISION OF REACTOR OVERSIGHT
VENDOR INSPECTION REPORT

Docket No.:	99901043
Report No.:	99901043/2021-201
Vendor:	Westinghouse Electric Company – New Stanton 1000 Westinghouse Drive New Stanton, PA 15672
Vendor Contact:	Gregory T. Glenn, Licensing Principal Engineer Licensing Inspections and Special Programs Westinghouse Electric Company 1000 Cranberry Woods Drive Cranberry Township, PA 16066
Phone:	(412) 374-3741
Email:	glenngt@westinghouse.com
Nuclear Industry Activity:	Westinghouse Electric Company, New Stanton, conducted environmental qualification testing of the uninterruptible power supply for the AP1000 reactors currently under construction at Vogtle Units 3 and 4 in accordance with U.S. Nuclear Regulatory Commission regulations and the technical standards imposed on them by their customer.
Inspection Dates:	January 25 - 29, 2021

Inspectors:			
	Aaron Armstrong	NRR/DRO/IQVB	Team Leader
	Deanna Zhang	NRR/DRO/IQVB	
	Yiu Law	NRR/DRO/IQVB	

Approved by:	Kerri A. Kavanagh, Chief Quality Assurance and Vendor Inspection Branch Division of Reactor Oversight Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

Westinghouse Electric Company – New Stanton
99901043/2021-201

The United States (U.S.) Nuclear Regulatory Commission (NRC) staff conducted a virtual vendor inspection of the Westinghouse Electric Company (WEC) facility located in New Stanton, PA, to verify that it had implemented an adequate quality assurance (QA) program that complies with the requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities." During this inspection, the NRC inspection team implemented Inspection Procedure (IP) 43002, "Routine Inspections of Nuclear Vendors," dated January 27, 2017 and IP 35034, "Design Certification Testing Inspection," dated January 27, 2010. This technically-focused inspection specifically evaluated WEC's implementation of quality activities associated with environmental qualification and seismic testing for the Uninterruptible Power Supplies (UPS) to be used in the Advanced Passive (AP) 1000 plant at Vogtle Units 3 and 4.

The UPS's safety-related functions consist of 1) supplying alternating current (AC) load 2) provide the Protection and Safety Monitoring System (PMS) with two loss-of-AC input voltage signals and 3) isolation between non-Class 1E and Class 1E circuits. The objective inspection was to review WEC's environmental qualification (EQ) testing profile which consisted of the remaining 2 phases of the EQ testing; abnormal temperature and humidity transients (Phase 2), and supplemental environmental conditions at minimum temperature (Phase 3). The NRC inspection team concluded, for the sample of documents reviewed, WEC's QA policies and procedures comply with the applicable requirements of Appendix B to 10 CFR Part 50

Test Control

The NRC inspection team reviewed WEC's policies and implementing procedures policies and implementing procedures that govern its testing activities to determine compliance with the regulatory requirements in Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed the scope of the EQ testing program for the UPS, which is comprised of the battery charger, regulating transformer, and inverter, and assessed whether the testing program scope was adequate to demonstrate the EQ of safety-related functions under the EQ test profile. The EQ testing scope was developed in accordance with the requirements of Institute of Electrical and Electronics Engineers (IEEE) Standard (Std) 323-1974, "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations," as endorsed in NRC Regulatory Guide (RG) 1.89, "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants," Revision 1, and AP1000 Equipment Qualification Methodology. The seismic testing scope was developed in accordance with IEEE Std 344-1987, "IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations," as endorsed in RG 1.100, "Seismic Qualification of Electric and Mechanical Equipment for Nuclear Power Plants," Revision 2.

The NRC inspection team reviewed the pre-seismic and post-seismic EQ test report and seismic test report for the battery charger, regulating transformer, and inverter. The NRC inspection team verified that the test results for the battery charger, regulating transformer, and inverter met the acceptance criteria and the tests were performed in accordance with the EQ

requirements contained within RG 1.89 and IEEE Std 323-1974 and the seismic requirements contained within RG 1.100 and IEEE Std 344-1987. No findings of significance were identified.

The NRC inspection team also reviewed the current sample of test deviations and associated nonconformances (NONs) from the ongoing Phase 2 testing and confirmed the vendor was documenting and evaluating any test anomaly issues identified with the implementation of the test procedure. No findings of significance were identified.

Corrective Actions

The NRC inspection team reviewed WEC's policies and implementing procedures that govern the implementation of its Corrective Action program to determine compliance with the requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed a sample of corrective action reports and confirmed that they were adequately documented, reviewed, tracked, and dispositioned. The NRC inspection team and WEC discussed why the licensing position evaluation was not included in the pre-seismic justification report; but, was identified but was included in the post-seismic justification report. WEC opened IR-2021-1010 to address this issue in the pre-seismic report. The NRC inspection team noted that IR-2020-9212 did not clearly identify the two problems that could have caused the malfunction of the A070 control board in the inverter unit as described in IR-2020-11742. WEC revised IR-2020-9212 to clearly describe the two issues related to the failure of the inverter to pass the seismic testing. No findings of significance were identified.

REPORT DETAILS

1. Test Control

a. Inspection Scope

The U.S. Nuclear Regulatory Commission (NRC) inspection team reviewed Westinghouse Electric Company's (hereafter referred to as WEC's) policies and implementing procedures that govern its testing activities to determine compliance with the regulatory requirements in Criterion XI, "Test Control," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities." The NRC inspection team also discussed the test control program with WEC management and technical staff.

Adequacy of Testing Scope

The NRC inspection team reviewed the scope of the environmental qualification (EQ) testing program. In particular, the NRC inspection team assessed whether the testing program scope was adequate to demonstrate the EQ of safety-related functions. The EQ testing scope was developed in accordance with the requirements of Institute of Electrical and Electronics Engineers (IEEE) Standard (Std) 323-1974, "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations," as endorsed in NRC Regulatory Guide (RG) 1.89, "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants," Revision 1, and Advanced Passive (AP) 1000 Equipment Qualification Methodology. The seismic testing scope was developed in accordance with IEEE Std 344-1987, "IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations," as endorsed in RG 1.100, "Seismic Qualification of Electric and Mechanical Equipment for Nuclear Power Plants," Revision 2. The Uninterruptible Power Supplies' (UPSs') EQ test consisted of the ability to demonstrate the equipment performance under abnormal environmental conditions of temperature and humidity that may occur during plant operation for a required duration of time.

The NRC inspection team reviewed the pre-seismic, seismic and post-seismic environmental test reports for the battery chargers, regulating transformers and inverter. The pre-seismic environmental test for the inverter was re-performed at WEC's New Stanton, PA test facility following modifications to the design that addressed failures identified during the post-seismic environmental testing. This testing was conducted in accordance with EQ-TP-488-APP with certain modifications to address items such as monitoring, wiring, and functional data sheets that do not apply or have been modified.

The NRC inspection team also reviewed the associated purchase orders (POs) for the EQ testing and WEC's test procedures to ensure the UPS AP1000 environmental profile and EQ methodology requirements were appropriately translated from the design specifications. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

Adequacy of Test Results

The NRC inspection team reviewed WEC's translation of the testing requirements for EQ testing of the safety-related UPSs being supplied to the AP1000 units under construction at the Vogtle site. The UPS Class 1E Direct Current and UPS System (IDS) provides reliable power for the safety-related equipment required for the plant instrumentation, control, monitoring and other vital functions needed for shutdown of the plant. In the event of a total loss of off-site and on-site alternating current (AC) power sources, the direct current (DC) batteries constitute the sources of electrical power for operation of the required DC and AC instrument UPS loads.

The NRC inspection team reviewed design specifications APP-DC01-Z0-001 and APP-DT01-Z0-010, which provided the technical requirements for the design of the Class 1E battery chargers and regulating transformers that will be used in the IDS for the WEC AP1000 plant. The battery chargers provide power to Class 1E DC loads and maintain the batteries fully charged. The regulating transformers provide a regulated backup source of AC power to the Class 1E Instrumentation and Control Bus and are powered from the diesel generator backed Motor Control Centers. The battery chargers and regulating transformers provide the required isolation between the non-1E and the Class 1E electrical systems. In addition, the NRC inspection team reviewed design specification APP-DU01-Z0-001 which provided the technical requirements for the design of the Class 1E inverters, static transfer and manual by-pass switches. The inverters, static transfer switches, and manual by-pass switches are provided to power instrument and control power buses. The static transfer switch transfers the loads to the backup source upon inverter failure. The inverters, static transfer switches, and manual by-pass switches are classified as Class 1E and AP1000 Class C.

The NRC inspection team reviewed test plan EQ-TP-488-APP developed for the pre-seismic EQ test for the IDS battery charger, regulating transformer and inverter for the AP1000 plant. The NRC inspection team verified that the test plan met the requirements contained within RG 1.89, Revision 1, and the associated equipment design specifications. RG 1.89 provide guidance identified in IEEE 323-1974 which details the testing requirements for the EQ testing. The NRC inspection team also interacted with the product engineering group to review the implementation of WEC's receipt inspection requirements for the equipment under test (EUT).

The NRC inspection team reviewed the pre-seismic report, APP-IDS-VPR-014, seismic test report, APP-IDS-VPR-006, and post-seismic EQ test report, APP-IDS-VPR-008, for the IDS battery charger and regulating transformer. The testing methodology used for the pre-seismic and post seismic EQ testing is based on the requirements of IEEE Std 650-1990, "Qualification of Class 1E Static Battery Chargers and Inverters for Nuclear Power Generating Stations." Section 5.3.1.6 of this standard specified to demonstrate the equipment will meet its specified Class 1E performance characteristics under the specified service conditions, a stress test shall be performed with fully loaded equipment in the test chamber with maximum temperature and maximum relative humidity (RH) specified in the service condition. During the pre-seismic and post-seismic EQ testing, the NRC inspection team noted that the maximum RH levels achieved was 80 percent (%) at the maximum temperature of 120° Fahrenheit, which is less than the specified maximum RH level conditions in the plant design basis of 95% RH. The NRC inspection team reviewed the pre- and post-seismic justification reports, APP-IDS-VPR-005 and APP-IDS-VPR-015, respectively, for justification on not achieving the maximum RH levels and verified the

justification provided was adequate to address the lower RH levels achieved during testing. Based on the psychrometric chart, the moisture level achieved during the testing was twice the moisture level that would have been expected with maximum temperature and maximum RH levels specified in the AP1000 design basis. Therefore, since the inverter, battery charger, and regulating transformer met the specified Class 1E performance characteristics at the higher expected moisture level, use of corresponding moisture level in lieu of RH was considered an effective means of meeting the intent of the stress testing specified in IEEE Std 650-1990. A licensing position evaluation was provided in the post-seismic justification report; however, this licensing position evaluation was not included in the pre-seismic justification report where the issue was first identified. The NRC inspection team's review of the licensing position evaluation is provided in the corrective action section of this inspection report. The NRC inspection team also verified that the test results for the battery charger and regulating transformer met the acceptance criteria and the tests were performed in accordance with the EQ requirements contained within RG 1.89 and IEEE 323-1974 and the seismic requirements contained within RG 1.100 and IEEE Std 344-1987.

The NRC inspection team reviewed the pre-seismic EQ report, APP-IDS-VPR-007, seismic test report, APP-IDS-VPR-010, post-seismic EQ test report, APP-IDS-VPR-013, and EQ test report, APP-IDS-VPR-019, for the modified inverter design. Seismic testing was originally performed on the original inverter along with the battery charger and regulating transformer at the subcontracted Clark Testing Facility. During this testing, the inverter failed to meet the specified Class 1E performance characteristics specified in the AP1000 design basis. Several issues were identified as potential causes of the failure and modifications were made to the inverter to address these issues. Pre-seismic EQ, seismic, and post-seismic EQ testing were performed on the modified inverter design at the WEC New Stanton facility. The NRC inspection team verified that the test results for the inverter were performed in accordance with the EQ requirements contained within RG 1.89 and IEEE 323-1974 and the seismic requirements contained within RG 1.100 and IEEE Std 344-1987.

b. Observations and Findings

No findings of significance were identified.

c. Conclusions

The NRC inspection team concluded that WEC was implementing its test control program in accordance with the regulatory requirements of Criterion XI of Appendix B to 10 CFR Part 50. The NRC inspection team also determined that the overall scope of the EQ testing program and the test results were adequate to demonstrate environmental qualification of the required safety-related functions. The NRC inspection team verified test control and work instructions requirements were being properly controlled for EQ testing. No findings of significance were identified.

2. Corrective Action

a. Inspection Scope

The NRC inspection team reviewed WEC's policies and implementing procedures that govern its testing activities to determine compliance with the regulatory requirements in Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. The NRC inspection team also discussed corrective actions and deviations identified in testing data with WEC's

management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

Testing Deviations and Data

The NRC inspection team reviewed the current sample of test deviations and associated corrective actions identified during equipment qualification testing of the Class 1E UPS equipment. As part of the Qualification Test Program, the UPS equipment underwent electromagnetic compatibility (EMC), seismic, and environmental testing. The NRC inspection team reviewed completed test reports and confirmed the results were generally consistent with the expected parameters of the AP1000 UPS EUT. The Class 1E UPS equipment was delivered to the Vogtle site in 2018 under Contingent Quality Releases 2018-198, 2018-209, and 2018-210 documenting that EQ testing was not complete due to open corrective actions and a root cause analysis (RCA). .

The NRC inspection team reviewed the pre- and post-seismic justification reports, APP-IDS-VPR-005 and APP-IDS-VPR-015, respectively, for the EUT not achieving the maximum RH levels as required by IEEE Std 650-1990. The NRC inspection team reviewed the licensing position evaluation provided in Section 3.5 of the post-seismic justification report that determined licensing impacts of not meeting the maximum RH levels concurrent with maximum temperature conditions for the AP1000 design basis. The NRC inspection team found the conclusion of this evaluation to be acceptable because the AP1000 Design Control Document (DCD) and the Vogtle Units 3 & 4 Updated Final Safety Analysis Report (UFSAR) identified IEEE Std 650-1990, among other standards, is used as guidance to develop the EQ methodology. Therefore, meeting the testing condition criteria within IEEE Std 650-1990 is not considered a requirement to satisfy the AP1000 and Vogtle Units 3 & 4 licensing basis requirements. However, the NRC inspection team could not find this licensing position evaluation in the pre-seismic justification report and requested WEC to explain why this evaluation was not included. In response to the NRC inspection team's request, WEC opened Incident Report (IR)-2021-1010 to enter this issue into WEC's corrective action program. The NRC inspection team reviewed IR-2021-1010 and found it adequate to address the above issue the team identified.

The NRC inspection team reviewed IR-2020-11742, which summarizes several supplier corrective action reports (SCARs) that were written as a result of EQ testing of the original inverter design. IR-2020-11742 summarized the inverter A070 control board malfunction issue documented in Suppliers Corrective Action Report (SCAR) 2020-9212, which included two problems (i.e., inadvertent inverter shutdown and/or an unacceptable delayed switch to bypass mode possibly due to elevated temperatures from component tolerance stack up and/or a white film found on the A070 Control board main processor unit (MPU)) that could be causing the malfunction and the remediation for each problem. The NRC inspection team reviewed IR-2020-9212, which addressed the two failures that occurred during the EQ of the Class 1E IDS inverter. The failures included the inverter inadvertently switching from the normal DC source to the bypass source and the inverter ceased to provide output power for a short period while the transfer took place. This corrective action resulted in the issuance of a SCAR to Gutor, the supplier of the IPS equipment, and required Gutor to perform an RCA of the failed board. At the time of this inspection, Gutor had not completed the RCA and WEC corrective action reports (CARs) and SCARs were still open. WEC stated that while the IPS equipment is at the Vogtle Units 3 & 4 site, this equipment has not been officially delivered, therefore any site work on this equipment is being completed at

risk. The NRC inspection team noted that IR-2020-9212 did not clearly identify the two problems that could have caused the malfunction of the A070 control board as described in IR-2020-11742. To address this discrepancy, WEC and the NRC inspection team discussed this issue, and WEC revised IR-2020-9212 to clearly describe the two issues related to the failure of the inverter and the possible actions take which enabled the inverter to pass seismic testing. The NRC inspection team reviewed the revised IR-2020-9212 and found it adequate to address the issue the team identified. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusions

The NRC inspection team concluded that WEC was implementing its corrective action program in accordance with the regulatory requirements of Criterion XVI of Appendix B to 10 CFR Part 50. The NRC inspection team verified test data and evaluations of test data. No findings of significance were identified.

3. Entrance and Exit Meetings

On January 25, 2021, the NRC inspection team discussed the scope of the inspection with Mr. Brian Schleger and other members of WEC's management and technical staff. On January 29, 2021, the NRC inspection team presented the inspection results and observations during an exit meeting with Mr. Brian Schleger and other members of WEC's management and technical staff. The attachment to this report lists the attendees of the entrance and exit meetings, as well as those individuals whom the NRC inspection team interviewed.

ATTACHMENT

1. ENTRANCE/EXIT MEETING ATTENDEES

Name	Title	Affiliation	Entrance	Exit
Aaron Armstrong	Inspection Team Leader	NRC	X	X
Deanna Zhang	Inspector	NRC	X	X
Yiu Law	Inspector	NRC	X	X
Kerri Kavanagh	Branch Chief	NRC		X
Paul Prescott	Senior Reactor Operator Engineer	NRC		X
Nitin Patel		SNC	X	X
Brandon Norris		SNC	X	
Greg Glenn	Licensing Principal Engineer	Westinghouse	X	X*
Stephen Packard	Quality Program Manager	Westinghouse	X	X
Christopher Srock	Director Global Instrumentation & Control & Information System Procurement	Westinghouse	X	
Christopher Roseman	Director Electrical Engineering	Westinghouse	X	
Lou Jesso	Principal Engineer	Westinghouse	X	X
Jason Mears	Principal Engineer	Westinghouse	X	X
Jennifer Moon	Principal Engineer	Westinghouse	X	

Jonathan Drexler	Principal Engineer	Westinghouse	X	
Keegan Foster	Senior Electrical Engineer	Westinghouse	X	X
Jonathan Fisher	Principal Project Engineer	Westinghouse	X	X
Edward Drake	Principal Engineer	Westinghouse	X	X
Suresh Channarasappa	Consulting Engineer	Westinghouse	X	X
Ken Angeletti	Sourcing Principal	Westinghouse	X	X
Dave Matteo	Manager	Westinghouse	X	X
Brian Schleger	Licensing Principal Engineer	Westinghouse	X	
John Ewald	Manager	Westinghouse	X	X
Richard Demnovich	Senior Quality Engineer	Westinghouse	X	
Brad Emsurak	Manager	Westinghouse	X	
Dan Martin	Senior Engineer	Westinghouse	X	
Lynette Little	Manager NPO Quality	Westinghouse		X

2. INSPECTION PROCEDURES USED

Inspection Procedure (IP) 36100, “Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance,” dated May 16, 2019.

IP 43002, “Routine Inspections of Nuclear Vendors,” dated January 27, 2017.

IP 35034, “Design Certification Testing Inspection,” dated January 27, 2010.

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None.

4. DOCUMENTS REVIEWED

Procedures and Work Instructions:

APP-DC01-Z0-001, Rev. 11, "Design Specification for Class 1E 250 VDC Battery Chargers for System IDS."

APP-DT01-Z0-010, Rev. 8, "Design Specification for Class 1E Regulating Transformers."

APP-DU01-Z0-001, Rev. 7, "Design Specification for Class 1E Inverters, Static Transfer and Manual Bypass Switches for IDS System."

APP-IDS-VPR-014, Rev. 0, "Pre-Seismic Environmental Qualification Test Report for the IDS Battery Charger (DC01) and Regulating Transformer (DT01) for Use in the AP1000 Plant."

APP-IDS-VPR-007, Rev. 0, "IEEE 650-1990 Pre-Seismic Environmental Test Report for the IDS Inverter (DU01) for Use in the AP1000 Plant."

APP-IDS-VPR-006 Rev.1, "Seismic Qualification Electrical Monitoring Report for the GUTOR Electronic Battery Charger and Bypass Stabilizer Transformer for Use in the AP1000 Plant."

APP-IDS-VPR-010, Rev. 0, "Seismic Qualification Test Report for the IDS Inverter (DU01) for Use in the AP1000 Plant."

APP-IDS-VPR-008, Rev. 0, "Post-Seismic Environmental Qualification Test Report for the IDS Battery Charger (DC01) and Regulating Transformer (DT01) for Use in the AP1000 Plant"

APP-IDS-VPR-013, Rev. 0, "IEEE 650-1990 Post-Seismic Environmental Test Report for the IDS Inverter (DU01) for Use in the AP1000 Plant."

APP-IDS-VPR-019, Rev. 0, "Environmental Qualification Test Report for the IDS Inverter (DU01) for Use in the AP1000 Plant."

APP-IDS-VPR-004, Rev. 0, "Electromagnetic Compatibility Report for the Battery Charger (DC01), Inverter (DU01), and Regulating Transformer (DT01) for Use in the AP1000 Plant

APP-IDS-VPR-009, Rev. 0, "Environmental Test Report for the IDS Battery Charger (DC01) and Regulating Transformer (DT01) Undervoltage Response for Use in the AP1000 Plant."

APP-GW-VP-030, Rev. 6, "AP1000 Enviromental Conditions."

Corrective Actions:
IR-2020-11742, dated October 19, 2020
IR-2020-14174, dated December 22, 2020

IR-2020-4901, dated April 21, 2020
IR-2020-4954, dated April 22, 2020
IR-2020-9212, dated August 14, 2020 **
IR-2020-9316, dated Augurs 18, 2020
IR-2021-1010, dated January 29, 2021 **
IR-2013-14747, dated June 3, 2013
IR-2014-18202, dated January 13, 2014
IR-2016-4656, dated October 17, 2016
IR-2017-15059, dated February 3, 2017
** generated during this inspection

5. ACRONYMS AND ABBREVIATIONS

AC	Alternating Current
AP	Advanced Passive
CAR	Corrective Action Report
CFR	Code of Federal Regulations
DC	Direct Current
EMC	Electromagnetic Compatibility
EUT	Equipment Under Test
IDS	Class 1E DC and UPS System
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineering
IP	Inspection Procedure
MPU	Main Processor Unit
M&TE	Measuring and Test Equipment
NRC	Nuclear Regulatory Commission
PMS	Protection and Monitoring System
PO	Purchase Order
QA	Quality Assurance
RCA	Root Cause Analysis
RG	Regulatory Guide
RH	Relative Humidity
SCAR	Supplier Corrective Action Report
UPS	Uninterruptible Power Supply
U.S.	United States