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

April 2, 2020

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

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

Dear Mr. Harper:

From February 18 through February 21, 2020, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at Westinghouse's (hereafter referred to as W-NS) facility in New Stanton, Pennsylvania. The purpose of this limited-scope inspection was to assess W-NS'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 W-NS's implementation of the quality activities associated with testing 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 W-NS'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. Notice of Nonconformance
2. Inspection Report No. 99901043/2020-201
   and Attachment

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Dated: April 2, 2020

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DATE	4/2/2020	3/27/2020	3/27/2020	4/2/2020

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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.:	99901043/2020-201
Vendor:	Westinghouse – 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 LLC 1000 Cranberry Woods Drive Cranberry Township, PA 16066
Phone:	(412) 374-3741
Email:	glenngt@westinghouse.com
Nuclear Industry Activity:	Westinghouse New Stanton is conducting Environmental Qualification (EQ) testing of uninterruptable power supplies (UPS) in accordance with U.S. Nuclear Regulatory Commission (NRC) regulations and the technical standards imposed on them by their customer.
Inspection Dates:	February 18 - 21, 2020

Inspectors:		
Aaron Armstrong	NRR/DRO/IQVB	Team Leader
Nicholas Savwoir	NRR/DRO/IQVB	
Greg Galletti	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 – New Stanton
99901043/2020-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted a vendor inspection at the Westinghouse (hereafter referred to as W-NS) 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" and 10 CFR Part 21, "Reporting of Defects and Noncompliance."

Translation of Technical Requirements

The NRC inspection team reviewed W-NS's translation of requirements for the Environmental Qualification (EQ) testing of safety-related uninterruptable power supplies (UPS's), Class 1E Direct Current (IDS) and UPS System Battery Charger, Inverter, and Regulating Transformer in accordance with NRC regulations and the technical standards imposed on them by their customer for components being supplied to the AP1000 units under construction at the Vogtle site. The NRC inspection team verified that the technical requirements contained within the purchase orders and design specifications were properly translated into W-NS EQ Testing Procedures. No findings of significance were identified.

Adequacy of Testing Scope

The NRC inspection team reviewed the overall scope of the EQ testing program for the UPS. In particular, the NRC inspection team assessed whether the testing program scope was adequate to demonstrate EQ of the required safety-related functions. The UPS 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 EQ testing scope was developed in accordance with the requirements of 1974 Editions of the Institute of Electrical and Electronics Engineers (IEEE) standard No. 323, "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations"; NRC Regulatory Guide 1.89, Revision 1, "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants," and AP1000 Equipment Qualification Methodology. During the week of the inspection the NRC inspection team did not review the isolation safety-related function in accordance with IEEE 384-1981, "Standard Criteria for Independence of Class 1E Equipment and Circuits," because it was outside of the scope of the EQ test program during the week of the inspection. No findings of significance were identified.

Test Control

The NRC inspection team reviewed W-NS's policies and implementing procedures that govern the implementation of 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 pre-test site acceptance testing, test deviations and test non-conformances and the physical test setup for conducting EQ tests defined in W-NS EQ testing procedures and work instruction. The objective of the W-NS EQ testing profile consisted of three phases; EQ mild environments (Phase 1), abnormal temperature and humidity transients

(Phase 2), and supplemental environmental conditions at minimum temperature (Phase 3). During the inspection, W-NS only tested Cycle 1 of the Phase 2 for the EQ profile because W-NS's environmental chamber was not able to maintain temperature and humidity conditions in accordance with IEEE 650-1990, "IEEE Standard for Qualification of Class 1E Static Battery Chargers and Inverters for Nuclear Power Generating Stations," required for Phase 1 or maintain the elevated relative humidity levels of Phase 2, Cycle 2. W-NS will complete the remainder of the EQ testing at Clark Laboratory. No findings of significance were identified.

Control of Measuring and Test Equipment

The NRC inspection team reviewed W-NS's policies and implementing procedures that govern the implementation of its measuring and test equipment (M&TE) program to determine compliance with the requirements of Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50. The NRC inspection team observed that the M&TE had the appropriate calibration stickers and current calibration dates, including the calibration due date. The NRC inspection team verified calibration of M&TE in W-NS's facility and reviewed the procurement methods used for the calibration and testing services for equipment used for the AP1000 battery charger, inverter and rectifying transformer. No findings of significance were identified.

REPORT DETAILS

1. Design Control

a. Inspection Scope

The NRC inspection team reviewed Westinghouse's (hereafter referred to as W-NS) policies and implementing procedures that govern the design control program to determine compliance with the requirements of Criterion III, "Design Control" of Appendix B to 10 CFR Part 50. The NRC inspection team also discussed the design control program with Westinghouse's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

Translation of Technical Requirements

The NRC inspection team reviewed Westinghouse's translation of the testing requirements for EQ testing of the safety-related uninterruptable power supplies (UPSs) being supplied to the AP1000 units under construction at the Vogtle site. The UPS Class 1E Direct Current (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 also reviewed associated purchase orders and purchase order revisions for the EQ testing. The NRC inspection team reviewed the W-NS's developed test procedures to ensure the UPS AP1000 environmental profile and equipment qualification methodology requirements were appropriately translated from the design specifications.

The NRC inspection team reviewed design specification APP-DC01-Z0-001 which provided the technical requirements for the design of the Class 1E battery chargers that will be used in the IDS for the Westinghouse AP1000 plant. The NRC inspection team reviewed the design specification in APP-DT01-Z0-010 that provides the technical requirements for the Class 1E regulating transformers for the Westinghouse AP1000 plant. The regulating transformers provide a regulated backup source of AC power to the Class 1E Instrumentation and Control (I&C) Bus. The regulating transformers are powered from the diesel generator backed Motor Control Centers. The 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 provides 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. Also, 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 environmental qualification (EQ) test for the IDS battery charger, inverter and regulating transformer for the AP1000 plant. The NRC inspection team verified that the test plan met the requirements contained within Regulatory Guide (RG) 1.89, Revision 1, "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants," and the associated equipment design specifications. RG 1.89 endorses IEEE 323-1974 and detailed the testing requirements for the EQ testing. The NRC inspection team also

interacted with the product engineering group to review the implementation of W-NS's receipt inspection requirements for the equipment under test (EUT).

Adequacy of Testing Scope

The NRC inspection team reviewed the scope of the 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 under the Phase 2, Cycle 1 EQ test profile. The NRC inspection team reviewed the EQ test program in accordance with IEEE 323-1974 and AP1000 testing requirements. The UPS 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 UPS functional operation test in response to voltage change, frequency and loading. Specifically, the functional tests were performed at ambient conditions and included inverter to by-pass transfer, by-pass to inverter transfer, inverter full load rejection, inverter full load step, inverter load power factor test, charger undervoltage (UV) relay test, charger blocking diode test, and charger current limit test. In addition, the NRC inspection team reviewed the EQ temperature limits, general room group methodology, and GOTHIC (Generation of Thermal-Hydraulic Information for Containment) modeling heat structures for compartments in the AP1000 auxiliary building where the UPS configuration will be installed in accordance with W-NS's walk-in environmental chamber specifications used for the EQ test program. Furthermore, the NRC inspection team reviewed W-NS's and a contracted test lab's inter-works request scope of work, in support of the remaining required UPS EQ test program.

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 verified technical requirements contained within the purchase specification were being properly translated into EQ testing procedures. The NRC inspection team also determined that the overall scope of the EQ testing program was adequate to demonstrate environmental qualification of the required safety-related functions. No findings of significance were identified.

2. Test Control

a. Inspection Scope

The NRC inspection team reviewed W-NS'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 to 10 CFR Part 50. The NRC inspection team also discussed the test control program with W-NS management and technical staff.

Pre-test Site Acceptance Testing (SAT)

The NRC inspection team reviewed a contractor's SAT report to confirm the system was received and installed adequately. The SAT testing included a general condition check, component tests, alarm tests, and functional testing. All testing was adequately documented and confirmed proper installation and functioning of the system. During SAT, one issue was identified by W-NS with IDS battery charger high DC voltage warning and high DC voltage shutdown that required system setpoints to be revised. A design change was adequately implemented in accordance with the requirements for an Engineering and Design Coordination Report (E&DCR).

EQ Test Setup and On-Going Test Review

The NRC inspection team reviewed the physical test setup for conducting EQ tests defined in W-NS's EQ test procedures and work instructions. The W-NS procedures define the process and responsibilities for conducting EQ testing, general quality practices including, but not limited to, calibration and software testing, test area access, byproduct control, development of test procedures, test logs, reporting of nonconforming conditions, and final test report generation. In addition, the NRC inspection team performed a walk-down of the test configuration, observed EUT and discussed the ongoing test program with W-NS's testing staff.

The NRC inspection team reviewed the current environmental test log that included results of initial inspection, test specimen modifications (including field changes), and setpoint modifications. The test log also provided test configuration diagrams, and all monitoring equipment and connections to the EUT were identified. The NRC inspection team confirmed that monitoring channels were established for power, signal, and environmental data. The NRC inspection team confirmed the test setup and environmental conditions met the test configuration as defined in the test logs.

Review of Test Deviations and Non-Conformances

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.

The NRC inspection team reviewed completed test logs sheets for six data cycles and confirmed the results were generally consistent with the expected min/max values for the parameters of interest. In instances of the recorded min/max values not meeting test specifications, an NON was created, identified on the test log, and documented in the nonconformance reporting system. The NRC inspection team reviewed a sample of NONs generated from the Phase 2, Cycle 1 tests and confirmed the descriptions, comments on dispositions, and resolutions proposed or implemented. In several instances, changes required to the test procedures were captured in deviation reports that were documented on the test log sheets. The NRC inspection team reviewed the deviation reports and confirmed the descriptions, comments, and dispositions were consistent with those changes described in the deviation and/or the test logs.

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 W-NS 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 verified test control and work instructions requirements were being properly controlled for EQ testing. No findings of significance were identified.

3. Control of Measuring and Test Equipment

a. Inspection Scope

The NRC inspection team reviewed W-NS's policies and implementing procedures that govern the M&TE program to determine compliance with the requirements of Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50. The NRC inspection team also discussed the M&TE program with W-NS management and technical staff.

The NRC inspection team reviewed the calibration records for the SOLTEC data acquisition modules, thermocouples, Fluke power analyzers, and Rotonic data loggers. The NRC inspection team also reviewed W-NS's purchase orders for a contracted test laboratory. The NRC inspection team observed that the M&TE had the appropriate calibration stickers and current calibration dates, including the calibration due date. In addition, the NRC inspection team reviewed purchase orders for M&TE calibration services and testing services. The NRC inspection team performed a walk-down of W-NS's testing laboratory to observe that M&TE were labeled, handled, and stored in a manner that indicated the calibration status of the instrument and ensured its traceability to calibration test data.

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. Conclusion

The NRC inspection team concluded that W-NS is implementing its M&TE program in accordance with the regulatory requirements of Criterion XII of Appendix B to 10 CFR Part 50. No findings of significance were identified.

4. Entrance and Exit Meetings

On February 18, 2020, the NRC inspection team discussed the scope of the inspection with Mr. Brian Schleger and other members of W-NS's management and technical staff. On

February 21, 2019, the NRC inspection team presented the inspection results and observations during an exit meeting with Mr. Brian Schleger, and other members of W-NS'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
Nicholas Savwoir	Inspector	NRC	X	X
Greg Galletti	Inspector	NRC	X	X
Greg Glenn	Licensing Engineer	Westinghouse		X*
Brian Schleger	Licensing Engineer	Westinghouse	X	X
Mark DeMaglio	Principal Electrical Engineer	Westinghouse	X	
William Smoody	Regulatory Compliance	Westinghouse	X	
Suresh Channarasappa	GIC Consulting Engineer	Westinghouse	X	X*
John Ewald	Manager AP1000 Electrical	Westinghouse	X*	
Sarah DiTommaso	Director of Licensing and Regulatory Affairs	Westinghouse	X*	
Camille Zozula	Manager of Fuel Plant and radioactive Materials	Westinghouse	X*	X*
Nick Kellenberger	Vogtle 3 & 4 Site Licensing	Southern Nuclear Company	X*	
Nitin Patel	Vogtle 3 & 4 Site Licensing	Southern Nuclear Company	X*	X*
Christopher Roseman	Director of Electrical Engineering	Westinghouse	X*	X*

Lynette Little	NPO Quality Manager	Westinghouse	X	X
Dave Matteo	QO Manager	Westinghouse		X
Quang Nguyen	Director, Nuclear Systems Products and EQ	Westinghouse	X*	
Keegan Foster	Electrical Engineer	Westinghouse	X	X
Louis Jesso	Principal Engineer, Qualifications	Westinghouse	X	X*
Stephen Packard	Quality Program Manager	Westinghouse	X*	X*
Lisa Manning	Global Quality	Westinghouse	X*	X*
Johnathan Fisher	Issue Resolution and Failure Analysis	Westinghouse		X*

* indicates attendance by phone

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," dated October 2018

APP-DT01-Z0-010, Rev. 8, "Design Specification for Class 1E Regulating Transformers," dated January 2016

APP-DU01-Z0-001, Rev. 7, "Design Specification for Class 1E Inverters, Static Transfer and Manual Bypass Switches for IDS System," dated January 2016

APP-IDS-VPP-002, Revision 0; Functional Operational Test- Test Number EQLR-455 (data sheet B.2-1) dated January 28, 2020

EQ-TP-488-APP, “AP1000 Pre-Seismic Environmental Qualification Test Procedure for the IDS Battery Charger (DC01), Inverter (DU01) and Regulating Transformer (DT01) for Use in the AP1000 Plant,” dated January 2020

APP-1200VPC-001 Revision 1, “Base Model for AP1000 Auxiliary Building Heat-Up Analysis Using GOTHIC,” dated September 2016

APP-VBS-M3C-001, Revision 9, “System Design Calculation for Ventilation (VBS) System,” dated January 7, 2019

APP-DC01-GEF-06, “Change to the IDS Battery Charger High DC Output,” Revision 0

EQLR-455, “Pre-Seismic Environmental Qualification Testing for the AP1000 IDS Battery Charger (DC01), Inverter (DUO1), and Regulating Transformer (DT01),” dated December 2019 – February 2020

EQLR-455, “Pre-test Baseline,” dated January 17 – 27, 2019

EQ-TP-488-APP, Rev. 0, APP-IDS-VPP-002, Rev. 0, ““Pre-Seismic Environmental Qualification Test Procedure for the IDS Battery Charger (DC01), Inverter (DUO1), and Regulating Transformer (DT01) for Use in The AP1000 Plant,” dated January 2020

EQ-WI-020-ENV, “Work instruction In-House Environmental Testing,” Revision 0, dated October 2016

F-APP-GW-GAP-420-1, “Engineering & Design Coordination Report (E&DCR),” Revision 15

Engineering and Design Coordination Report (E&DCR) APP-DC01-GEF-006, Revision 0.

Contractor Test No. 1120086121_321_421, “Site Acceptance Test,” dated December 16, 2019

<u>Deviation and Nonconformance Reports</u>

EQLR-455 DEV-01, dated January 16, 2020
EQLR-455 DEV-02, dated January 17, 2020
EQLR-455 DEV-03, dated January 21, 2020
EQLR-455 DEV-04, dated January 23, 2020
EQLR-455 DEV-05, dated January 24, 2020
EQLR-455 DEV-06, dated January 28, 2020
EQLR-455 DEV-06, Revision 1, dated February 13, 2020
EQLR-455 DEV-14, dated February 11, 2020
EQLR-455 NON-01, dated January 23, 2020
EQLR-455 NON-02, dated January 24, 2020
EQLR-455 NON-03, dated February 07, 2020
EQLR-455 NON-04, dated February 11, 2020
EQLR-455 NON-05, dated February 12, 2020
EQLR-455 NON-06, dated February 13, 2020

EQLR-455 NON-07, dated February 12, 2020

Certificates of Calibration

#0011205303, Fluke Data Logger Model 2686A, SN 9553050, due date November 11, 2020
#0011156842, SOLTEC Model AP11-109, SN 0000232, due date April 3, 2020
#0011156822, SOLTEC Model AP11-109, SN 0000233, due date April 3, 2020
#0040003559, SOLTEC Model AP11-109, SN 0000230, due date April 3, 2020
#0011208541, SOLTEC Model AP11-101, SN 0909110, due date November 27, 2020
#0011208537, SOLTEC Model AP11-101, SN 0909118, due date November 27, 2020
#0011208544, SOLTEC Model AP11-101, SN 0002942, due date April 20, 2020
#0011166141, SOLTEC Model AP11-101, SN 0002949, due date April 20, 2020
#0011182846, SOLTEC Model AP11-101, SN 00908061, due date July 17, 2020
#0011182844, SOLTEC Model AP11-101, SN 00908061, due date July 17, 2020
#0011188336, SOLTEC Model AP11-101, SN 00809232, due date September 21, 2020
#0011188335, SOLTEC Model AP11-101, SN 204061KN, due date September 21, 2020
#0011188336, SOLTEC Model AP11-101, SN 0809232, due date September 21, 2020
#0011188334, SOLTEC Model AP11-101, SN 0908060, due date September 21, 2020
#0011166142, SOLTEC Model AP11-101, SN 0002961, due date September 5, 2020
#0011166133, SOLTEC Model AP11-101, SN 0002934, due date September 5, 2020
#0011166146, SOLTEC Model AP11-101, SN 908060, due date September 21, 2020
#0011171647, Omega Thermal couple, due date May 17, 2020
#0011166087, Omega Thermal couple, due date April 17, 2020
#0011171650, Omega Thermal couple, due date May 17, 2020
#0011171657, Omega Thermal couple, due date May 17, 2020
#0011166089, Omega Thermal couple, due date April 17, 2020
#0011188320, Current Shunt, due date August 17, 2020
#0011180623, Fluke Power Analyzer, July 10, 2020
#0011171706, Fluke Multi Meter, due date May 23, 2020
#0011205290, Rotonic, due date May September 4, 2020

Purchase Order and Audits

#4500788611, Clark Dynamics Testing Laboratory INC., dated December 6, 2019
Audit of Clark Dynamics Testing Laboratory INC., dated October 3, 2020

Test Data Sheets

APP-IDS-VPP-005, Rev. 0, “Functional Monitoring Data Sheet,” dated February 09, 2020
APP-IDS-VPP-005, Rev. 0, “Functional Monitoring Data Sheet,” dated February 11, 2020
APP-IDS-VPP-005, Rev. 0, “Functional Monitoring Data Sheet,” dated February 13, 2020
APP-IDS-VPP-005, Rev. 0, “Functional Monitoring Data Sheet,” dated February 15, 2020
APP-IDS-VPP-005, Rev. 0, “Functional Monitoring Data Sheet,” dated February 16, 2020

Misc.

Westinghouse Inter-works Request; “Inter-works Request for qualification operations scope of work for EQ testing 1E UPS Equipment” WEC_NPO_000124, January 17, 2020

Westinghouse Sheet NS-ES-0273, Nuclear Services/ Engineering Services “Equipment Qualification,” dated October 2015

5. ACRONYMS AND ABBREVIATIONS

AC	Alternating Current
CFR	Code of Federal Regulations
DC	Direct Current
EUT	Equipment Under Test
IDS	Class 1E DC and UPS System
IEC	International Electrotechnical Commission
PMS	Protection and Monitoring System
M&TE	Measuring and Test Equipment
NRC	U.S. Nuclear Regulatory Commission
PO	Purchase Order
QA	Quality Assurance
RG	Regulatory Guide
UPS	Uninterruptible Power Supply