

INSPECTOR NOTES COVER SHEET

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| Licensee/Certificate Holder (name and address) | Westinghouse Electric Company, LLC (WEC) Nuclear Fuel Columbia Fuel Site 5801 Bluff Road Hopkins, SC 29061 |
| Licensee/Certificate Holder contact and phone number | Wes Stilwell, Nuclear Fuel Transport Director (803) 647-3438 |
| Docket No. | 07100708 |
| Inspection Report No. | 071-0708/2019-201 |
| Inspection Dates(s) | December 9-12, 2019 |
| Inspection Location(s) | Columbia Fuel Site, Hopkins, SC |
| Inspectors | Earl Love, Team Leader, Senior Transportation and Storage Safety Inspector Marlone Davis, Senior Transportation and Storage Safety Inspector |
| Summary of Findings and Actions | <p>This inspection involved a review of WEC's, 10 CFR Part 71, Quality Management System (QMS) implementation at their location in Columbia, SC. Inspection activities focused on verification of compliance with Part 71 in design, procurement, fabrication, repair, maintenance, audit program controls, and package user requirements, as applicable for transportation packagings for which WEC is a registered user or the Certificate of Compliance (CoC) holder.</p> <p>Overall, except for one Severity Level IV (SLIV) non-cited violation (NCV), WEC's activities were found compliant with NRC Part 71 regulations and with WEC's NRC approved Quality Assurance Program (QAP), No. 0708, Revision 8, "Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report Quality Management System (QMS), Revision 7." With respect to the NCV, WEC did not audit all applicable QAP elements for each functional area at least once each year in accordance with WEC's internal quality assurance audit procedure.</p> |
| Lead Inspector Signature/Date |  02/18/2020 |
| Inspector Notes Approval Branch Chief Signature/Date | Alayna Pearson via email dated 2/20/2020 |

Background

WEC, based in Pittsburgh, PA, holds Part 71 QAP Approval No. 71-0708, Revision 8. The QAP authorizes activities at both the corporate office in Pittsburgh and at WEC's Columbia Fuel Fabrication Facility (CFFF), Columbia, SC. All Part 71 Quality Assurance (QA) and CoC activities take place in Columbia, SC, which is the location of the inspection. WEC was last inspected for Part 71 QAP activities in 2013 (NRC's Agencywide Documents Access and Management System [ADAMS] Accession No. ML13106A153). The inspection team assessed WEC's compliance with 10 CFR Parts 21 and 71 and verified that the transportation packagings, which WEC holds an NRC CoC, comply with the QA requirements of 10CFR Part 71, Subpart H. At the time of the 2013 inspection, no concerns were noted in the implementation of WEC's QMS for Part 71 activities at the Columbia facility.

Inspection Purpose

This inspection involved a review of WEC's QAM implementation at the Columbia, SC, location and focused on WEC's compliance with 10 CFR Parts 21 and 71, and verified that the transportation packagings which WEC holds an NRC CoC, or is a registered user of, comply with the QA requirements of 10CFR Part 71, Subpart H, in the areas of management, design, procurement, nonconformance, maintenance, and audit program controls, and how these activities are being controlled under WEC's NRC-approved QAP. The primary focus in the design and maintenance areas involved a systematic review of the Safety Analysis Report (SAR) Chapters 7 and 8 for each of three packaging CoCs (71-9239 MCC, 71-9292 Patriot, and 71-9297 Traveller STD/XL/VVER) that WEC holds and uses for transportation of NRC license material from the Columbia facility.

Primary Inspection Procedures/Guidance Documents

IP-86001, "Design, Fabrication, Testing, and Maintenance of Transportation Packagings"
NUREG/CR-6407, "Classification of Transportation Packaging and Dry Spent Fuel Storage System Components According to Importance to Safety"
NUREG/CR-6314, "Quality Assurance Inspections for Shipping and Storage Containers"
Regulatory Guide 7.10, "Establishing Quality Assurance Programs for Packaging Used in the Transport of Radioactive Material"

INSPECTOR NOTES: APPLICABLE SECTIONS FROM IP 86001 WERE PERFORMED DURING THE INSPECTION WITH RESULTS DOCUMENTED BELOW UNDER THE BASIC HEADINGS OUTLINED IN NUREG-6314.

4.1 Management Controls

Quality Assurance Policy

The team reviewed all sections of WEC's Quality Management System (QMS), Revision 7, dated October 1, 2013. The QMS was previously determined by the NRC (Office of Nuclear

Reactor Regulation) to meet the requirements of Appendix B to 10 CFR Part 50 (ADAMS ML14336A487). WEC applies the QMS to Part 71 activities as allowed by 10 CFR 71.101(f). No concerns were noted in the implementation of the QMS for Part 71 activities at the Columbia facility.

Nonconformance and Corrective Action Controls

The team reviewed a sample of nonconformance records and interviewed selected personnel to evaluate how Westinghouse Electric Company (WEC) implemented their nonconformance control program. The team noted that WEC uses electronic problem notices (EPNs) to process nonconforming items. The team reviewed completed EPNs to evaluate if WEC identified nonconforming items concerning materials, parts or components in accordance with applicable requirements. The inspectors reviewed both EPNs and issues entered in WEC's corrective action problem (CAP) from the previous five years. The team focused the review on "use-as-is" and "repair" type dispositions to evaluate how WEC technically justified the EPN. The team also discussed the EPNs and issues entered in the CAP with the WEC staff. The team used the following quality implementing procedures to review the EPNs and CARs:

- QA-615, "Control of Nonconforming Product," Revision 29;
- QA-617, "Processing an Electronic Problem Notice," Revision 4;
- CA-007, "Corrective and Preventive Action," Revision 43
- W2-5.1-101, "Westinghouse Corrective Action Program Procedure," Revision 7.

The team assessed that WEC effectively implemented its nonconformance control program and have adequate procedures in place to ensure compliance with the applicable regulations and approved QA Program requirements. The team also verified that WEC completed corrective actions for identified deficiencies and nonconformances in a timely manner for those items identified as needing an EPN or entered into the CAP. The team noted that WEC identified, documented, analyzed, and corrected conditions adverse to quality in accordance with established procedures except as noted in the internal audit section of this report.

Part 21 Requirements

The team reviewed Part 21 Procedure RA-110, "Identification and Reporting of Substantial Safety Hazards," Revision 7, to evaluate if provisions were in place for evaluating deviations that could cause a substantial safety hazard and complete the required notification in a timely manner. The inspectors requested a list of Part 21 evaluations and notifications associated with the Traveller models (STD and XL) and Modified Core Component (MCC) transportation shipping containers and interviewed personnel to verify if they were familiar with the implementing procedure of RA-110. The team also reviewed WEC's posting of Part 21 requirements in accordance with the 10 CFR 21.6, "Posting requirements".

The team assessed that WEC has provisions in place for evaluating deviations and reporting defects, as required by 10 CFR Part 21. The team noted that WEC did not have any Part 21 reports within the last five years. The team also noted that the RA-110 procedure focus primary

on the safety hazards of the regulations for 10 CFR Part 70. However, the team assessed that WEC at CFFF could use the procedure for transportation related deviations.

Documentation Controls

WEC documentation is established in three distinct levels that integrate policies, procedures, and working documents:

- Level 1. QMS
- Level 2. Westinghouse Level 2 Policies and Procedures
- Level 3. Functional/Department/Plant Procedures and Work Instructions

The team noted WEC Level 2 Policies and Procedures address regulatory requirements and QMS commitments and that these procedures were reviewed and approved by each applicable organization. Level 3 procedures implement local responsibilities in accordance with Level 2 policies and procedures or the QMS. Responsible managers ensure preparation, approval, distribution, and revision of these procedures. The team reviewed WEC's Level 2 document control procedure, W2-6.1-101, Revision 1, to help determine the effectiveness of the QA program in controlling quality-related documentation and records. The team reviewed a sample of inspection and test procedures, maintenance and test results, nonconformance reports, audit reports, procurement documents, QA procedures, and packaging drawings chosen from the Electronic Document Management System used by WEC. The team noted documents, including changes (version control), were reviewed for adequacy and approved for release by authorized personnel and distributed to and used by personnel performing the prescribed activity and that quality records, as defined by W2-6.2-101, "Quality Records," were properly identified, retrievable, controlled, and maintained. In documentation controls, the team had no findings.

Audit Program

The team reviewed WEC's audit program to determine if WEC scheduled, planned, and performed internal audits in accordance with approved implementing procedures. The team selected internal audits from the last five years, particularly related to transportation activities. The team reviewed the audit results to determine if WEC identified deficiencies and addressed the deficiencies within their corrective action program. The team reviewed the following quality procedures:

RA-106, "Regulatory Component Audits at Columbia Fuel Fabrication Facility (CFFF)," Revision 39,
W2-4.2-101, "Internal Quality Assurance Audits" and
RA-123, "Qualification of Regulatory Component Audit Personnel," Revision 10.

Overall, the team assessed that for the internal audits reviewed, WEC conducted audits with qualified and certified personnel and for the most part scheduled and evaluated some elements of their QA program as it relates to 10 CFR part 71 regulations. However, WEC did not audit all

applicable QA program elements for each functional area at least once each year as of 2011. From November of 2011 to December of 2019 (8 years), WEC has only completed three internal audits and did not capture all applicable QA program elements for each functional area at least once each year. WEC missed five out of eight audits. The team noted that this was contrary to the internal quality assurance audit procedure W2-4.2-101. Specifically, the program planning requirements in Section 4.1 of W2-4.2-101, which states, in part, that internal audits shall be conducted at planned intervals to verify that all aspects of the Quality Management System (QMS) conform to the regulations, codes, standards and other requirements, and internal audits shall be scheduled to ensure that an audit of all applicable Quality Assurance program elements are completed at least once per year.

Two previous NRC inspection teams identified similar issues with the internal audit program. WEC's corrective actions to resolve the issue was to complete an audit for the transport program functional area in March 2014 and November 2018. The team noted that both issue reports had a Low (Level 4) significance level. The team noted that this was contrary to Appendix C of CAP procedure CA-007, "Corrective and Preventive Action," Revision 43. Appendix C, "Criteria for Determining Issue Significance," to CA-007 provides criteria to identify both issues as a Medium (Level 3) significance because it was a procedure adherence violation. The team noted that there was no causal analysis performed on either issue report mostly due to the significance level being assigned as Low.

The team assessed that this was a violation of NRC requirements. Specifically, 10 CFR 71.111, states, in part, that the licensee shall prescribe activities affecting quality by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall require that these instructions, procedures, and drawings be followed. Contrary to, as of December 2019, WEC did not follow procedures to carry out a comprehensive system of planned and periodic audits to verify compliance with all aspects of the quality assurance program and did not follow procedural guidance to determine the appropriate significance level of issue reports. The inspectors determined that this violation was more than minor because WEC missed five out of eight audits and missed opportunities to correct the problem. The team dispositioned the violation in accordance with the NRC Enforcement Policy. The team characterized the violation as a Severity Level IV non-cited violation. The NRC plans to treat this NRC identified violation as a non-cited violation consistent with section 2.3.2 of the NRC Enforcement Policy. WEC entered this issue into their corrective action system for resolution as issue report 2020-1360, dated January 28, 2020 to determine the effective of the internal audit program.

4.2 Design Control

WEC has design control over, and owns and maintains packagings, with the following NRC issued CoCs:

- CoC 71-9239, Revision 19, Model No. MCC-3, 4 and 5
- CoC 71-9292, Revision 7, Model No. Patriot #'s 1 – 39
- CoC 71-9297, Revision 11, Model Nos.: Traveller STD, Traveller XL, Traveller VVER

The team noted that Westinghouse has not made nor requested any changes to the package designs, or operating procedures, acceptance tests and maintenance programs of any of the packages and that revisions to the CoC's were the result of CoC renewals.

Aspects of the design process were reviewed regarding determining compliance with associated QA program implementing procedures. The team reviewed portions of Procedure EP-108, Revision 17.4, "Nuclear Fuel Engineering Quality Assurance Program" and EP-404, Revision 42, "Engineering Change Notice," and reviewed Engineering Change Notice (ECN) No. 0003656, dated 2019 that upgraded a Traveller XL, Product Drawing 10043E90, Rev. 3, to create a new center axial restraint within the packaging. The team noted the Product Drawing defines the configuration of Nuclear Fuel products, specify the applicability of Nuclear Fuel specifications and include or reference required quality control inspection characteristics. The team noted the ECN did not impact the top axial restraint component already listed on license drawing 10004E58, Revision 9, "Safety Related Items Traveller XL and STD," as Item No. 152, Alternate Top Axial Restraint." Overall, the ECN was developed with supporting engineering independent verification, control of engineering and design and licensing drawings, and followed the process described in EP-404 for shipping containers including the requirement to properly integrate the design change with WEC licensing and other interface groups. Through discussion with staff and review of documents, the team assessed that WEC's design control process was adequate.

4.4 Maintenance Controls

Maintenance Activities

The team reviewed selected records and interviewed personnel to verify that WEC effectively implemented a maintenance control program in accordance with their NRC approved QA Program, CoC conditions, and the requirements of 10 CFR Part 71 for the transportation of radioactive material. The team performed a review on maintenance activities related to the Traveller and MCC radioactive transportation packaging for the last three refurbishments for Traveller model numbers 474 (STD) and 211 (XL). The team evaluated annual maintenance activities conducted at various maintenance facilities but specifically at CFFF. The evaluation included a review of maintenance requirements identified in the Safety Analysis Report (SAR), maintenance procedures, completed maintenance records, and personnel and qualification training records. The team also observed maintenance activities being performed on the Traveller models.

The team reviewed the following mechanical operating and maintenance implementing procedures:

MOP-500153, "Pack and Unpack Fuel Assembly – Traveller Package," Revision 2,
TR-225, "Refurbish Traveller Shipping Package," Revision 20,
CF-75B-018, "Traveller Refurbishment Verification Checklist," Revision 7.
TR-217, "Refurbish MCC Shipping Packaging," Revision 14

Based on a review of the maintenance records and procedures, the team assessed that WEC used appropriate maintenance materials, tools and equipment to conduct the required maintenance activities for the Traveller and MCC shipping containers. The team verified that the inspections were comprehensive and met acceptance criteria for tests identified in the maintenance records and procedures. The team verified that WEC appropriately inspected attributes of the boron plates, outer gaskets, and shock mounts. The team also verified that maintenance personnel and technicians recorded the proper information on the applicable forms and data sheets as defined and required in the WEC verification checklist and maintenance procedures. The team assessed that the maintenance conducted satisfied the requirements identified in the SAR and CoC. However, the team provided an observation to WEC regarding procedure TR-225 in that section 6.11 (Outerpack Gasket) did not contain acceptance criteria for an unacceptable gasket as identified on verification checklist captured in CF-75B-018. The team discussed this observation with WEC personnel and WEC placed this in their CAP as IR-2019-18073.

Material Procurement

The team reviewed WEC's most recent (2014-2017) important-to-safety (ITS) related purchase orders (Pos) and sampled a receipt inspection record related to Traveller STD and XL packages. Procurements ranged from new manufactured STD licensed shipping containers, locking studs, top axial restraints, clamshell hinge pins, XL top plate, miscellaneous fasteners (e.g., clips, screws, nuts, and washers), and weld wire. The team noted all POs required the work to be done in accordance with the suppliers QA program as audited and approved by WEC and that the provisions of 10 CFR Part 21 applied. The team noted majority of POs were placed with Columbiana Hi-Tech (CHT), Kernersville, NC. The team reviewed WEC's audit and supplier audit/evaluation summary of CHT and determined appropriate control of ITS purchased material and that CHT was WEC qualified and approved as an ITS material supplier. Overall, purchased ITS related items and associated supplier documentation conformed with WEC procurement documents. The team assessed that WEC had adequate controls for material procurement, traceability, and receipt inspection.

The team noted WEC as registered user Model UX-30 Package (CoC 9196). The package consists of two elements: 1) A standard 30-inch cylinder, and 2) a UX-30 overpack. The UX-30 is designed to protect a standard 30B cylinder (UF₆) and is designed and manufactured per ANSI N14.1, "Uranium Hexafluoride – Packaging for Transport," and is equipped with an ITS fill valve. The team reviewed WEC's procurement of (80) UF₆ fill valves and noted the valves were manufactured by Descote S.A.S, France and that the applicable requirements of ANSI 14.1, 10CFR21 and 10CFR71 applied. The team reviewed WEC receiving inspection reports, Descote's certificate of compliance, and valve manufacturer's material test reports. In addition, the team reviewed WEC's audit and supplier audit/evaluation summary of Descote and determined appropriate material procurement controls. Overall, no issues were identified with WEC's procurement of UF₆ fill valves.

The team reviewed WEC's correspondence and work authorization release (No. 2426722-01), dated October 2019, that defines the quality/technical, CoC drawing, functional testing, and specification requirements for the manufacture of 50 Traveller Standard packages at WEC's Newington Nuclear Components Manufacturing site located in Newington, NH, as audited and approved. The team determined the need to schedule an NRC inspection of WEC's, Newington, NH facility at a time commencing with Newington's on-going fabrication, testing and inspection activities of the packages. The purpose of the inspection will be in order to assure compliance to CoC 9297, revision 11, Traveller PWR Fuel Shipping Package Safety Analysis Report, Revision 14, and 10CFR Part 71, Subpart H.

Tools and Equipment

The team reviewed the control of measuring and test equipment (M&TE) procedure to evaluate how WEC identified, specified, and controlled tools and equipment in accordance with applicable standards and regulatory requirements. Specifically, the team reviewed QA-612, "Control of Inspection, Measuring, and Test Equipment," Revision 10. The team selected a sample of the M&TE used during the maintenance of the Traveller. The sample included a review of documentation that identified a calibrated torque wrench and a digital caliper. The team also reviewed the calibration reports to verify calibration dates, testing standards, and traceability of the associated M&TE.

Overall, the team assessed that WEC established controls of M&TE in accordance with standards and regulatory requirements. The team assessed that WEC maintenance and operation personnel provided the appropriate information on work checklist and documentation in accordance with approved procedures. The team verified that personnel used M&TE within their rated capacities and sensitivities as documented in the maintenance work package. The team found the M&TE program to be adequate with no concerns.