

August 30, 2017

MEMORANDUM TO: Tim J. McGinty, Director  
Division of Construction Inspection  
and Operational Programs  
Office of New Reactors

FROM: John P. Burke, Chief **/RA/**  
Quality Assurance Vendor Inspection Branch-2  
Division of Construction Inspection  
and Operational Programs  
Office of New Reactors

SUBJECT: TRIP REPORT BY THE NUCLEAR REGULATORY  
COMMISSION STAFF OF THE NUPIC JOINT UTILITY TEAM  
AUDIT AT WESTINGHOUSE COLUMBIA FUEL FABRICATION  
FACILITY

On August 21-25, 2017, Richard P. McIntyre and Ilka T. Berrios of the Office of New Reactors (NRO), Division of Construction Inspection and Operational Programs, observed the performance of a Nuclear Procurement Issues Committee (NUPIC) joint utility audit of the Westinghouse Columbia Fuel Fabrication Facility, in Hopkins, SC. Wolf Creek Nuclear Operating Corporation led the audit, with participation from American Electric Power, Arizona Public Service, Ameren Corporation, Duke Energy, Entergy, First Energy Corporation, Iberdrola, Next Era Energy, Pacific Gas & Electric, Public Service Electric & Gas, Southern Nuclear Corporation, Taiwan Power Company, and Tennessee Valley Authority using the NUPIC checklist. The purpose of the staff's observation was to assess the NUPIC quality assurance audit process used for suppliers of components to the nuclear industry. The trip report of the staff's observations, including a list of persons contacted, is enclosed.

Enclosure: As stated

CONTACT: Richard P. McIntyre, NRO/DCIP/QVIB-2  
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SUBJECT: TRIP REPORT BY THE NUCLEAR REGULATORY COMMISSION STAFF OF  
THE NUPIC JOINT UTILITY TEAM AUDIT AT WESTINGHOUSE COLUMBIA  
FUEL FABRICATION FACILITY

Dated: August 30, 2017

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<b>OFFICE</b>	NRO/DCIP	NRO/DCIP	NRO/DCIP
<b>NAME</b>	IBerrios	RMcIntyre (JBurke for)	JBurke
<b>DATE</b>	08/29/17	08/30/17	08/30/17

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**NUCLEAR PROCUREMENT ISSUES COMMITTEE AUDIT**  
**OBSERVATION TRIP REPORT**

Vendor Audited: Westinghouse Columbia Fuel Fabrication Facility  
5801 Bluff Road  
Hopkins, SC 29061

Lead Licensee: Wolf Creek Nuclear Operating Corporation

Lead Contact: Michael Buel and Kevin Schoolcraft

Nuclear Industry Activity: Westinghouse Columbia Fuel Fabrication Facility (WCFFF) is part of Westinghouse Electric Company's nuclear fuel and components manufacturing business and is one of the largest facilities of its kind in the world. The site houses commercial nuclear fuel manufacturing facilities, product engineering and testing laboratories, and fuel marketing and contract administration functions. The facility employs manufacturing and nuclear fuel experts and fabricates fuel rods and fuel pellets. WCFFF supplies to the nuclear power industry in United States, Asia, and Europe.

Observation Dates: August 21-25, 2017

Observers: Richard P. McIntyre NRO/DCIP/QVIB-2  
Ilka T. Berrios NRO/DCIP/QVIB-2

Approved by: John P. Burke, Chief  
Quality Assurance Vendor Inspection Branch-2  
Division of Construction Inspection  
and Operational Programs  
Office of New Reactors

Enclosure

## **Subject**

This trip report documents observations made by members of the U.S. Nuclear Regulatory Commission (NRC), Office of New Reactors (NRO), Division of Construction Inspection and Operational Programs (DCIP), during a NUPIC joint utility audit conducted on August 21-25, 2017, at WCFFF in Hopkins, SC.

## **Background/Purpose**

The Nuclear Procurement Issues Committee (NUPIC) was formed in 1989, by a partnership involving all domestic and several international nuclear utilities. The NUPIC program evaluates suppliers furnishing safety-related components and services and commercial-grade items to nuclear utilities. The NUPIC audit team followed the NUPIC audit process and plans to provide the results to NUPIC members that procure parts and services from WCFFF.

This audit was performed using the NUPIC audit checklist. The purpose of the audit was to evaluate the implementation and effectiveness of WCFFF Quality Assurance (QA) Program. The audit also included an assessment of the effectiveness of corrective actions that WCFFF had taken to previous findings in selected areas identified during the 2015 NUPIC audit led by PSEG Nuclear, LLC (PSE). This 19 person audit team was led by Wolf Creek Nuclear Operating Group (WCN) and included representatives from American Electric Power (AEP), Arizona Public Service (APS), Ameren Corporation (AUE), Duke Energy (DPC), Entergy (ENT), First Energy Corporation (FEC), Iberdrola (IBE), Next Era Energy (NEE), Pacific Gas & Electric (PGE), PSE, Southern Nuclear Corporation (SNC), Taiwan Power Company (TPC), and Tennessee Valley Authority (TVA).

The purpose of the NRC staff's observation of this audit was to ensure the NUPIC audit process continues to meet 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. "The NRC staff implemented Inspection Procedure 43005, "NRC Oversight of Third-Party Organizations Implementing Quality Assurance Requirements," during the observation.

## **Discussion**

WCFFF provided the Westinghouse Quality Management System-A manual and other implementing procedures to the NUPIC audit team. The NUPIC audit team reviewed the implementation of the requirements of Appendix B to 10 CFR Part 50 in the QA program and supporting implementing procedures, evaluated the documentation associated with the activities that had been performed, and discussed the activities with WCFFF personnel. The NUPIC audit team observed in-process work practices to verify activities were in accordance with applicable procedures.

The quality areas reviewed during the audit included the following: design control, commercial-grade dedication (CGD), procurement, special processes, software QA, audit, records, document control, organization, training, inspections, test control, measuring and test equipment (M&TE), material control, corrective action, nonconforming items and 10 CFR Part 21. Specific work activities reviewed by NUPIC and observed by the NRC observers included receiving inspection, fuel pellet manufacturing, rod loading, rod pressurization, rod girth and seal welding, top nozzle assembly, grid and strap assembly, skeleton build, and final fuel

assembly and inspection. The NUPIC audit team conducted daily team meetings to discuss their observations and findings and also conducted a daily briefing with WCFFF personnel.

As part of “Delivering the Nuclear Promise,” in June 2017, the Nuclear Energy Institute (NEI) issued Efficiency Bulletin: 16-28b, “Establish Common Finding/Deficiency Definitions Used During Vendor Audits” to implement a uniform approach for identification, follow-up and closure of performance issues found during NUPIC audits of supplier facilities. On June 1 2017, NUPIC implemented a new approach for identification, follow-up and closure of performance issues found during audits of supplier facilities. Before June 2017, the NUPIC process did not contain a definition for a Finding. Each utility conducted NUPIC Audits utilizing their utilities procedure in conjunction with NUPIC Joint Audit Procedure (Document Number 4) guidelines. The lack of specific NUPIC guidance allowed for differences in implementation between member utilities resulting in unproductive conflict and delays. To avoid this and other issues, NUPIC implemented the following definitions based on the NEI Efficiency Bulletin: 16-28b:

Finding: Any defect, characteristic, noncompliance or activity that detracts from the quality of products and/or services and is a condition that could have a credible impact to the intended function of the products and/or services provided. It also includes undesirable or abnormal pattern of events, failures, problems and programmatic issues.

Notes:

- Findings are documented on condition reports and follow-up is performed in accordance with the utilities implementing procedures and NUPIC guidelines.
- Immediate notification(s) in accordance with NUPIC guidelines shall be provided when Findings have the net result of placing the product's ability to function properly in its intended application in question such as:
  1. falsification of documentation,
  2. inadequate commercial grade dedication,
  3. nullified product qualification, or
  4. potential 10 CFR Part 21 issue

Deficiency: A deviation in the implementation of a Quality Assurance Program requirement or a deviation in the implementation of a QA procedure, including inadequate/conflicting procedures.

Notes:

- Deficiencies shall be documented in the vendor's corrective action program and referenced in the applicable Audit Report.
- Deficiency review may be performed during the next scheduled Audit under the Section 13 Checklist titled Corrective Action.

With the implementation of this approach, NUPIC is expecting identification of issues of significance at a common threshold and fewer items requiring follow-up being identified. The total number of audit findings issued should decrease and the need for follow-up should no longer be required for each shortcoming identified during audit performance. During the exit meeting, the NUPIC audit team presented 4 potential findings and 3 potential deficiencies to WCFFF management, including areas such as contract review, CGD, software QA, special processes, M&TE, and inspection.

With the exception of the audit findings identified, the NUPIC audit team determined that WCFFF was effectively implementing its QA program for the program elements that were audited. In addition, the NUPIC audit team concluded that the findings had no impact on product quality.

## **Conclusions**

For the audit observation, the NRC staff members each verified a sample of the audit checklist review areas. The NRC staff observed the NUPIC audit team members perform their portions of the audit. Specifically, the NRC staff observed NUPIC's review and evaluation processes for the implementation of WCFFF's QA program for ensuring licensee procurement requirements, design requirements and associated design specifications were adequately incorporated into the qualification and commercial-grade dedications.

The NRC staff observed the daily team meetings to verify that the NUPIC audit team was adequately addressing issues and effectively verifying the implementation of QA program requirements. The NRC staff observed shop manufacturing and inspection activities of pellets, grids, skeletons, rods and final fuel assemblies among others. The NRC staff noted that the NUPIC audit team engaged the NRC throughout the audit, and when requested, provided clarification on regulatory positions. The NRC also had access to all interactions between WCFFF and the NUPIC audit team, as well as access to the same records reviewed by them. In addition, the NUPIC audit team was technically capable and effectively engaged the vendor; asking the right questions and challenging the vendor as required. Furthermore, the NUPIC audit team was effective at communicating with each other.

The NRC concluded that the NUPIC checklist was effectively implemented and resulted in appropriate performance-based findings. The NRC staff found that this very large NUPIC audit team adequately addressed the specific areas of the checklist on which the NRC staff focused their review. The NRC inspectors also noted that the large NUPIC audit team was able to perform a technically focused audit for all areas of program implementation.

Since this was the first NUPIC audit observed by the NRC utilizing the new definitions of Finding and Deficiency, during the NRC observers debrief meeting with the two NUPIC co-team leaders at the end of the NUPIC audit, the NRC observers noted that as part of implementing NEI Efficiency Bulletin: 16-28b, NUPIC auditors should ensure that audit findings are not being diluted to deficiencies to save time and resources.

**List of Participants**

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>	<b>Entrance</b>	<b>Exit</b>
Mike Buel	Co-Team Leader	WCN	X	X
Kevin Schoolcraft	Co-Team Leader	WCN	X	X
John T. Talbott	Auditor	TVA	X	X
Leonard Weaver	Auditor	FEC	X	X
Tim Czuba	Auditor	ENT	X	X
Chin-Wei Liu	Auditor	TPP	X	X
Loren Ernst	Auditor	DPC	X	X
Manuel Sanchez	Auditor	IBE	X	X
Bob Carvel	Auditor	PGE	X	X
Dennis Segres	Auditor	SNC	X	X
Cindy Larson	Auditor	AEP	X	X
Earl Mayhorn	Auditor	AUE	X	X
Bruce Giles	Auditor	APS	X	X
Kirk Nordmeyer	Auditor	NEE	X	X
Van McPherson	Auditor	PSE	X	X
Pete Kennamore	Technical Specialist	WCN	X	X
Luke McIntyre	Technical Specialist	APS	X	X
Matt Morris	Technical Specialist	WCN	X	X
Colin Lancaster	Technical Specialist	DPC	X	X