



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

June 20, 2023

MEMORANDUM TO: Russ Felts, Director
Division of Reactor Oversight
Office of Nuclear Reactor Regulation

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

SUBJECT: TRIP REPORT BY THE NUCLEAR REGULATORY COMMISSION'S
STAFF OF THE NUPIC JOINT UTILITY TEAM AUDIT AT ORANO, TN
AMERICAS, LLC.

Kerri Kavanagh Signed by Kavanagh, Kerri
on 06/20/23

On May 8-12, 2023, Greg Galletti of the Office of Nuclear Reactor Regulation, Division of Reactor Oversight, and Matthew Learn, of the Office of Nuclear Materials Safety and Safeguards, Division of Fuel Management, Inspections and Operations Branch, observed the performance of a Nuclear Procurement Issues Corporation (NUPIC) joint utility audit of ORANO, TN Americas, LLC., (TN Americas) in Columbia, Maryland and Kernersville, North Carolina. Energy Harbor Nuclear, LLC., led the audit, with participation from Duke Energy, Xcel Energy, Pacific Gas & Electric, Entergy, Talen Energy, Omaha Public Power District, Constellation, Sacramento Municipal Utility District and the Electric Power Research Institute, using the NUPIC checklist and performance-based supplier audit (PBSA) worksheet. The TN Americas audit number is 25417. 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 includes a list of the NUPIC audit team members that participated in the audit.

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Matthew Learn NMSS/DFM (630) 829-9603

SUBJECT: TRIP REPORT BY THE NUCLEAR REGULATORY COMMISSION STAFF'S OF
THE NUPIC JOINT UTILITY TEAM AUDIT AT ORANO, TN AMERICAS, LLC.
DATE: June 20, 2023

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DATE	6/1/2023	6/1/2023	6/20/2023

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NUCLEAR PROCUREMENT ISSUES CORPORATION AUDIT
OBSERVATION TRIP REPORT

Vendor Audited: ORANO, TN Americas, LLC (TN Americas)
20 Bradley Park Road, East Granby, CT 06026

Lead Licensee: Energy Harbor Nuclear, LLC.

Lead Contact: Leonard Weaver
NUPIC Lead Auditor
Energy Harbor Nuclear, LLC.
weaverl@energyharbor.com

Nuclear Industry Activity: TN Americas, located in Columbia, MD, and Kernersville, NC,
produces spent fuel cannisters and transportation casks to the
commercial nuclear industry.

Observation Dates: May 8 - 12, 2023

Observer: Greg Galletti, NRR/DRO/IQVB
Matthew Learn, NMSS/DFM/IOB

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

Subject

This trip report documents the observations made members of the U.S. Nuclear Regulatory Commission (NRC), Office Nuclear Reactor Regulation (NRR), Division of Reactor Oversight (DRO), during a Nuclear Procurement Issues Corporation (NUPIC) joint utility audit conducted on May 8-12, 2023, at the ORANO, TN Americas, LLC., (TN Americas) locations in Columbia, MD, and Kernersville, NC.

Background/Purpose

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, services, and commercial-grade items to nuclear utilities. The NUPIC audit was performed using Revision 22 of the NUPIC audit checklist and the results will be provided to NUPIC members that procure parts and services from TN Americas.

The purpose of the NUPIC audit was to evaluate the implementation and effectiveness of TN Americas' Quality Assurance (QA) Program at the Columbia and Kernersville facilities. The audit team was comprised of individuals from the following NUPIC member utilities: Energy Harbor Nuclear, LLC., (EHN) who led the audit, with participation from Duke Energy (DPC), Xcel Energy (EXL), Pacific Gas & Electric (PGE), Entergy (ENT), Talen Energy (TLN), Omaha Public Power District (OPP), Constellation (CEG), Sacramento Municipal Utility District (SMD), and the Electric Power Research Institute (EPRI). The technical specialist's responsibility was to verify TN Americas' ability to control the critical characteristics identified on the Performance Based Supplier Audit Worksheet (PBSA).

The purpose of the NRC staff's observation of this audit was to ensure that 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," 10 CFR Part 71, "Packaging and Transportation of Radioactive Material," and 10 CFR Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste." The NRC staff implemented Inspection Procedure 43005, "NRC Oversight of Third-Party Organizations Implementing Quality Assurance Requirements," during the observation.

Observation Activities

The NRC staff independently assessed and reviewed TN Americas' implementation of selected portions of their QA program including special processes and testing, to evaluate whether NUPIC effectively identified and responded to issues. TN Americas provided the QA manual, implementing procedures, and samples of completed work products including, but not limited to, design packages, commercial-grade item dedication technical evaluations and plans, training and qualification records, shop fabrication drawings and process sheets (travelers), and corrective action reports to the NUPIC audit team. The TN Americas' QA manual is based on the American Society of Mechanical Engineers Nuclear Quality Assurance standard NQA-1, "Quality Assurance Requirements for Nuclear Facility Applications," 2008/2009 Addenda.

The NRC staff observed that NUPIC appropriately focused their audit efforts on the Appendix B to 10 CFR Part 50 criteria most relevant to TN Americas' activities such as design control, commercial-grade dedication, corrective action, control of special processes, inspection, control

of measurement and test equipment (M&TE), nonconforming materials, parts, and components, document control, and procurement document control. In addition, the NRC staff observed the NUPIC technical specialist focused on the critical areas described in the PBSA and the technical specialist's conclusions were drawn from a review of objective evidence reflective of TN Americas performance. The NRC staff reviewed samples of the documentation provided by TN Americas for the audit team to draw independent conclusions in the areas of special processes and test control and observed activities in progress related to these areas as well as component fabrication. The NRC staff participated in discussions between the NUPIC audit team members and TN Americas staff, while refrained from directing or leading NUPIC, as to not interfere with the conduct of NUPIC's audit.

The QA areas reviewed during the audit by the NUPIC member-representatives included the following areas from the NUPIC audit checklist: contract review, design, commercial-grade dedication, procurement, fabrication/assembly activities, material control and handling, storage and shipping, special processes, tests, inspections and calibration, document control/adequacy, organization/program, nonconforming items/10 CFR Part 21, "Reporting of Defects and Noncompliance," internal audits, corrective action, and training/certification. The NRC staff accompanied the NUPIC team members while they performed walkdowns of portions of the facility, observations of in-process production activities included: special processes (nondestructive examination and welding), MT&E, and material handling and control, as well as attending discussions between the NUPIC audit team members and TN Americas personnel.

Specific work activities reviewed by NUPIC and observed by the NRC staff, included, but were not limited to: TN Americas' design packages, procurement of safety-related and important to safety materials, special processes (circumferential welding of the dry storage cask (DSC) bottom lid, liquid penetrant testing (PT) and visual testing (VT) of the DSC shell), control of M&TE, identification of material tagging, storage of quality related materials and the issuance process for these materials for fabrication, nonconformance control including designated isolation areas for non-conforming materials, in-process fabrication (machining of the DSC shell edges and assembly of the basket structural plates), commercial grade-dedication associated with calibration and testing services, field services, and training and qualification records.

Discussion

The NRC staff verified that NUPIC adequately considered TN Americas' scope of supply and observed in-process work practices and completed work products to verify that activities were performed in accordance with TN Americas' applicable procedures. The NRC staff confirmed the NUPIC audit team was implementing the latest revision of the NUPIC audit checklist, Revision 22, and NUPIC Document No. 11, "Joint Audit & Checklist Implementation Guideline," Revision 24, to conduct their assessment activities. The NRC staff observed the NUPIC audit team members completing sections of the NUPIC checklist and documenting objective evidence to support the conclusions discussed during the daily team meetings. The NRC staff also observed NUPIC's process for evaluating potential findings and deficiencies, including discussions during internal NUPIC daily team discussions meetings, and during debriefing activities with TN Americas' personnel. The NRC staff also discussed their observations with NUPIC's lead auditor and team members.

The NUPIC audit team concluded that TN Americas' is effectively implementing their QA program in accordance with the applicable requirements of Appendix B to 10 CFR Part 50 and 10 CFR Part 21. There were two findings identified from the audit regarding: (1) lack of positive weld wire program and implementation controls, and (2) a lack of adequate procedural guidance

and failure to perform adequate commercial-grade dedications associated with the International Laboratory Accreditation Cooperation (ILAC) accredited calibration services. Additionally, several deficiencies were identified in the following areas: (1) documentation of software verification personnel on test reports, (2) use of sampling plans during receipt inspections and as part of commercial-grade dedication activities, and (3) lack of adequate documentation of personnel qualification and training for a sample of inspection, test, and nondestructive examination (NDE) personnel. The NRC staff observed that TN Americas was generally receptive to the deficiencies identified by the NUPIC audit team and initiated corrective actions to address those deficiencies.

Conclusion

The NRC staff observed the NUPIC audit team conduct a review of the TN Americas' QA program. The NRC staff confirmed that the NUPIC audit team focused on the most relevant portions of the QA program consistent with the TN Americas' scope of supply and performed their assessment activities through a combination of direct observation of in-process work activities and a review of completed work products. The NRC staff confirmed that the NUPIC audit team adequately implemented the guidance in the NUPIC audit checklist, documented objective evidence to support their conclusions, and conducted the audit in a courteous and professional manner. The NRC staff concluded that the NUPIC auditors and the technical specialist adequately completed their assigned programmatic elements in accordance with the NUPIC policies and procedures for conducting joint audit activities and resulted in a thorough and comprehensive evaluation of the vendors program.

Specifically, the NRC staff determined that the NUPIC auditors effectively audited appropriate elements of TN Americas' QA program by selecting appropriate representative samples of applicable QA functional areas. The NRC staff determined that the NUPIC auditors possessed the relevant technical knowledge to perform the audit and supplemented technical experts in the areas of dry storage systems, and transportation systems where necessary. Accordingly, the NRC staff determined the NUPIC audit provided elements of effective independent oversight to qualify TN Americas as an approved supplier in accordance with the requirements of Appendix B to 10 CFR Part 50, 10 CFR Part 71, and 10 CFR Part 72 and 10 CFR Part 21.

List of Participants

Name	Title	Affiliation	Entrance	Exit
Len Weaver	Audit Team Leader	EHN	X	X
Jasper Adams	Audit Team Member	DPC	X	X
Leslie McGinnis Bensend	Audit Team Member	XEL	X	X
Mike Fussell	Audit Team Member	PGE	X	X
Dan Gallagher	Audit Team Member	EHN	X	X
Daryl Gruver	Audit Team Member in Training	EHN	X	X
Randy Hugenroth	Audit Team Member	OPP	X	X
Herbert Mayes	Audit Team Member	ETN	X	X

Kyle Millenaar	Audit Team Member	PGE	X	X
Susan Miller	Audit Team Member	TLN	X	X
Carrie Wilson	Audit Team Member	DPC	X	X
Jay Wingfield	Audit Team Member	CEG	X	X
Doug Wright	Audit Team Member	SMD	X	X
Steve Mroz	Technical Specialist	EHN	X	X
Keith Waldrop	Technical Specialist	EPRI	X	X
John Birchfield	Quality Assurance Manager	TN Americas	X	X
Marlin Stoltz	Director, TN Project Engineer	TN Americas	X	X
Mike Cameron	Plant Manager	TN Americas	X	X
Cheryl Morrisette	QA Engineer	TN Americas	X	X
Phillip Morris	Level III NDE	TN Americas		X
Austin Craven	Welder	TN Americas		
Mark Burleson	Can Line Lead	TN Americas		
Lance Gun	Manufacturing Lead	TN Americas		
Nelson Melendez	Quality Control (QC) Inspector	TN Americas		
Matt Eubank	QA Engineer	TN Americas	X	X
Sam Webb	Welder	TN Americas	X	
Tim Allread	Welder	TN Americas	X	
Russ Snyder	Shop Superintendent	TN Americas		
James Gandy	Lead, EOS basket	TN Americas		
Mike Edmunds	MTE Coordinator	TN Americas		
Brandon Reeves	QC Inspector	TN Americas		
John Sprole	Coatings Technician	TN Americas		
Dakota Webber	NDE Inspector	TN Americas		
Penny Collins	Material Control Coordinator	TN Americas		
Steve Nestor	Welder	TN Americas		
Mike Carpenter	Welder	TN Americas		
John Brewer	Consulting Level II PT/Radiographic Testing	TN Americas		
Brian Boss	Director Field Services	TN Americas		
Tammy Johnson	QA Lead Auditor	TN Americas		
Jennifer Yee	Document Control Records Specialist	TN Americas		

Kristen Vesely	Document Control Supervisor	TN Americas		
Glady Llanto	Fabrication Project Manager	TN Americas		
Laura Alamillo	Human Resources Manager	TN Americas		
Doumer Arcila	Machine Operator	TN Americas		
Greg Galletti	NRC Inspector	NRC	X	X
Mathew Learn	NRC Inspector	NRC	X	X

Documents Reviewed

TN Americas

TN Americas LLC, "Quality Assurance Program Description Manual For 10 CFR Part 71, Subpart H And 10 CFR Part 72, Subpart G," Revision 17, dated February 25, 2022

TNFQAP, "Quality Assurance Plan for TN Fabrication (TNF)," Revision 2, dated May 3, 2022
 FPM 2.3, "Qualification & Certification of Non-Destructive Examination Personnel" Revision 1, dated January 5, 2020

FPM 9.1, "Control of Special Process and Test," dated April 6, 2023

FPM 9.2, "Welding Performance Qualification Testing and Records," Revision 5, dated July 28, 2022

NDE-PT; "Liquid Penetrant Examination Procedure," Revision 1, dated August 31, 2021

NDE-VT, "Non-Destructive Examination Procedure Exhibit A, Visual Examination Report," dated August 21, 2021

DSC-AIR, "DSC Pneumatic Test Procedure," Revision 0, dated November 16, 2022

Implementation Procedure (TIP) 3.5, "Licensing Reviews," Revision 33, dated February 23, 2023

TIP 11.1, "Test Control," Revision 7, dated January 6, 2017

TIP 16.1; "Corrective Action," Revision 33, January 24, 2023

A risk informed sample of corrective action review documents.

A risk informed sample of 10 CFR 72.48 evaluations.

NUPIC

NUPIC audit checklist, Revision 22

NUPIC Document No. 11, "Joint Audit & Checklist Implementation Guideline," Revision 24