



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

January 18, 2024

Brian Ocampos  
Quality Assurance Director  
TN Americas, LLC  
7160 Riverwood Drive, Suite 200  
Columbia, MD 21046

SUBJECT: TN AMERICAS, LLC – U.S. NUCLEAR REGULATORY COMMISSION  
INSPECTION REPORT NO. 71-0250/2023-201

Dear Brian Ocampos:

On November 14, 2023, through November 16, 2023, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an announced onsite inspection at the TN Americas, LLC (TN) corporate office in Columbia, Maryland. The staff continued the inspection activities with an in-office review through November 29, 2023, followed by an exit meeting on December 4, 2023.

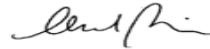
The purpose of the inspection was to verify and assess the adequacy of TN's implementation and compliance with the NRC requirements for the design, modification, fabrication, assembly, testing, maintenance, and procurement of the transportation packagings for which TN is the certificate of compliance (CoC) holder.

The inspection scope included reviews of records and interviews with personnel to determine whether transportation packagings are designed, fabricated, and maintained in accordance with the commitments and requirements specified in the applicable safety analysis report for packaging, the NRC's corresponding safety evaluation report, Title 10 of the *Code of Federal Regulations* (10 CFR) Part 71 and the CoC; and to determine whether design, fabrication, and maintenance activities are conducted in accordance with TN's NRC approved quality assurance program requirements. The enclosed report presents the results of this inspection.

No violations of more than minor significance were identified during this inspection.

In accordance with 10 CFR 2.390, "Public inspections, exemptions, requests for withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room (PDR) or from the Publicly Available Records component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html>. The PDR is open by appointment. To make an appointment to visit the PDR, please send an email to [PDR.Resource@nrc.gov](mailto:PDR.Resource@nrc.gov) or call 1-800-397-4209 or 301-415-4737, between 8 a.m. and 4 p.m. eastern time (ET), Monday through Friday, except Federal holidays.

Sincerely,



Signed by Rivera-Varona, Aida  
on 01/18/24

Aida Rivera-Varona, Chief  
Inspection and Oversight Branch  
Division of Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 71-0250

Enclosure:  
NRC Inspection Report No.  
71-0250/2023-201

SUBJECT: TN AMERICAS, LLC – U.S. NUCLEAR REGULATORY COMMISSION  
INSPECTION REPORT NO. 71-0250/2023-201

DOCUMENT DATED: January 18, 2024

**DISTRIBUTION:**

DFM r/f

**ADAMS Accession No.: ML24010A089**

OFFICE	NMSS/DFM	NMSS/DFM	NMSS/DFM
NAME	JTapp	WWheatley	ARivera-Varona
DATE	1/11/2024	1/12/2024	1/18/2024

**OFFICIAL RECORD COPY**

**U.S. NUCLEAR REGULATORY COMMISSION  
Office of Nuclear Material Safety and Safeguards  
Division of Fuel Management**

Docket: 71-0250

Report.: 71-0250/2023-201

Enterprise Identifier: I-2023-201-0057

Certificate Holder: TN Americas, LLC

Facility: Corporate Headquarters

Location: Columbia, MD

Inspection Dates: November 14, 2023, through November 29, 2023

Inspection Team: Jeremy Tapp, Transportation and Storage Safety Inspector, Team Leader  
Marlone Davis, Senior Transportation and Storage Safety Inspector  
Azmi Djapari, Transportation and Storage Safety Inspector

Approved By: Aida Rivera-Varona, Branch Chief  
Inspection and Oversight Branch  
Division of Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosure

**U.S. NUCLEAR REGULATORY COMMISSION**  
**Office of Nuclear Material Safety and Safeguards**  
**Division of Fuel Management**

**EXECUTIVE SUMMARY**

TN, Americas, LLC  
NRC Inspection Report 71-0250/2023-201

On November 14, 2023, through November 16, 2023, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an announced onsite inspection at the TN Americas, LLC (TN) corporate office in Columbia, Maryland. The staff continued inspection activities with an in-office review and held an exit meeting on December 4, 2023.

The purpose of the inspection was to verify and assess the adequacy of TN's implementation and compliance with the NRC requirements in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 71, "Packaging and Transportation of Radioactive Material," for the design, modification, fabrication, assembly, testing, maintenance, and procurement of the transportation packagings for which TN is the certificate of compliance (CoC) holder.

**Quality Assurance Program**

- The team determined that TN conducted quality related activities for their transportation packagings in accordance with their NRC approved quality assurance program (QAP). (section 1.1)

**10 CFR Part 21**

- The team determined that the provisions of 10 CFR Part 21 were implemented; TN's personnel were familiar with the reporting requirements of 10 CFR Part 21; and TN complied with 10 CFR 21.6, "Posting requirements." (section 1.2)

**Design Control**

- The team concluded that TN is effectively implementing its design control program and has adequate procedures in place to ensure compliance with the applicable regulations and QAP requirements. (section 1.3)

**Fabrication, Maintenance, and Testing**

- The team determined, for the items selected for observation and review that the licensee performed fabrication, maintenance, and testing in accordance with approved safety analysis report for packaging (SARP), written procedures, and specifications, as applicable. (section 1.4)

**Procurement**

- The team determined that materials, components, and other equipment received by TN met design procurement specifications, and the procurement specifications conformed to the design commitments and requirements contained in the SARP and CoC. (section 1.5)

### **Nonconformance and Corrective Action**

- The team determined that TN effectively implemented its nonconformance program and corrective action program (CAP) and has adequate procedures in place to ensure compliance with the applicable regulations and quality assurance (QA) requirements. (section 1.6)

### **Personnel Training and Quality Assurance Oversight**

- The team determined that TN had trained and qualified individuals performing activities affecting quality and that TN management provided appropriate oversight of quality related activities, as applicable. (section 1.7)

### **Audit Program**

- The team determined, for the items selected for review that TN was performing oversight and audits in accordance with their QAP. (section 1.8)

## REPORT DETAILS

### 1.0 Applicable portions of Inspection Procedure 86001 – Design, Fabrication, Testing, and Maintenance of Transportation Packagings

#### 1.1 Quality Assurance Program

##### 1.1.1 Inspection Scope

The team verified that TN's activities related to transportation packagings are being conducted in accordance with TN's CoCs, as well as their NRC approved QAP, and that implementing procedures are in place and effective. The team reviewed the QAPDM, "Quality Assurance Program Description Manual (QAPDM) for 10 CFR Part 71, Subpart H and 10 CFR Part 72, Subpart G," revision 17 and the associated implementing procedures to assess the adequacy and effectiveness of TN implementation of their QAP. The team conducted interviews with TN personnel about their implementation of the 10 CFR Part 71 QAP, and implementing procedures, to determine whether TN adequately controlled and implemented transportation packaging activities subject to the 10 CFR Part 71 requirements. The team also reviewed the QAP to determine if changes were made and if so that TN performed these changes in accordance with the requirements of 10 CFR 71.106, as applicable.

Additionally, the team reviewed the QAP authorities and responsibilities to determine if they were clearly defined and documented, and that the QA organization functioned as an independent group. The team also reviewed documents to verify that TN used a graded approach to quality as documented in the QAP to verify that TN identified important to safety (ITS) components in its packaging designs.

##### 1.1.2 Observation and Findings

The team assessed that TN currently has an adequate QAP that included applicable implementing procedures in place to conduct effective quality activities in accordance with the SARP, and 10 CFR Parts 21 and 71 requirements. The team verified that TN clearly defined and documented the QAP authorities and responsibilities and that the quality assurance organization functioned as an independent group as described in the TN QAPDM. The team also found that TN used a graded approach to categorize ITS components in its transportation packagings and made changes in accordance with 10 CFR 71.106.

No findings of significance were identified.

##### 1.1.3 Conclusions

The team determined that TN conducted quality related activities for their transportation packagings in accordance with their NRC approved QAP.

## **1.2 10 CFR Part 21**

### **1.2.1 Inspection Scope**

The team verified that provisions are in place for reporting defects which could cause a substantial safety hazard, as required by 10 CFR Part 21. The team reviewed the 10 CFR Part 21 procedure TN implementing procedure (TIP) 15.1, "Reportability Determinations and Postings," revision 19 to verify if provisions were in place for reporting defects that could cause a substantial safety hazard and whether TN would complete the required evaluation and notification in a timely manner. The team requested a list of 10 CFR Part 21 evaluations and notifications associated with any transportation activities and interviewed personnel to verify if TN was familiar with the implementing procedure. The team also verified if TN complied with 10 CFR 21.6, "Posting requirements."

### **1.2.2 Observation and Findings**

The team assessed that TN has provisions in place for evaluating deviations and reporting defects that could cause a substantial safety hazard, as required by 10 CFR Part 21. The team noted that the 10 CFR Part 21 posting at TN's headquarters' office met the applicable requirements of 10 CFR Part 21.

No findings of significance were identified.

### **1.2.3 Conclusions**

The team determined that the provisions of 10 CFR Part 21 were implemented; TN's personnel were familiar with the reporting requirements of 10 CFR Part 21; and TN complied with 10 CFR 21.6, "Posting requirements."

## **1.3 Design Control**

### **1.3.1 Inspection Scope**

The team interviewed selected personnel and reviewed selected design documentation to determine that adequate design controls are implemented. The team focused its review in the areas of design modifications, quality classification evaluation for structures, systems, and components (SSCs), review and control of design calculations, and verification of commercially available computer programs. The team specifically reviewed TN design activities related to CoC No. 9291 for the Liqui-Rad packaging, CoC No. 9382 for the TN Eagle packaging, CoC No. 9358 for the TN-LC packaging, and CoC No. 9342 for the Versa-Pac packaging. The team reviewed the following TN implementing procedures associated with design control to verify the procedures were adequate and adequately followed:

- TIP 2.5, "Order Entry and Project Planning," revision 17
- TIP 3.1, "Design Control," revision 29
- TIP 3.2, "Calculations," revision 17
- TIP 3.3, "Computer Software Test Control and Commercial Dedication," revision 14



- TIP 3.4, "Identification and Control of Computer Software Error Messages," revision 8
- TIP 3.6, "Quality Classification," revision 10
- TIP 3.7, "10 CFR Part 71 License Change Control," revision 2

The team reviewed a selection of transportation license changes (TLCs) regarding safety analysis and drawing changes for the Liqui-Rad, TN Eagle, and TN-LC packagings performed since the last inspection in March 2017. These included TLC Nos. 719291-0001, 719382-0006, 719382-0039, and 719358-0015. The TLCs were reviewed to determine if TN adequately followed TIP 3.7. The team also reviewed the initiating document that necessitated the transportation license change. This was typically an associated design change request (DCR) but also included a letter to the NRC. The team reviewed the associated DCRs to verify TN followed TIP 3.1 as required and the design changes were made in the associated safety analysis and drawings as described.

The team selected the TN Eagle packaging that was recently approved by the NRC to review the overall design process and determine if it was performed in accordance with TIP 3.1. The team reviewed the initiating project plan (project number 11031.FD1 (83016.001)) and design criteria document (DCD) no. TNEAGLE01-0101 to verify they were completed as required. The team then reviewed the design review meeting report, dated 12/17/2020, which included the comments from independent reviewers of the design drawings and calculations. Lastly, the team reviewed design report no. TNEAGLE01-0111, which provided justification that the design satisfied all requirements of the DCD.

With regards to design calculations and computer software programs, the team reviewed a selection of design calculations for the TN Eagle packaging performed since March 2017. These were reviewed to determine if TN followed TIP 3.2 and contained the required verification and approval. The team selected the Monte Carlo N-Particle Transport (MCNP) computer software program for review of the associated computer program verification documentation to determine if TN followed the requirements of TIP 3.3 and the program was verified and validated properly. The team also reviewed the most recent error report review sheet for MCNP to verify TN followed the requirements of TIP 3.4 and was reviewing software error reports on a periodic basis.

The team also reviewed a sample of quality classification evaluations for the TN-LC and Versa-Pac packagings. The team selected components classified as ITS Category B, C, and not important to safety to determine if the component was classified in accordance with the requirements in TIP 3.6 and the justification provided for the quality classification was appropriate.

### 1.3.2 Observation and Findings

The team assessed that TN had adequate and effective controls established by the implementing procedures for project planning, development of project quality requirements, implementing project controls, developing design specifications, design development and design controls, performing and reviewing design calculations, performing quality classification of SSCs, performing overall design reviews, and performing competent authority design licensing.

No findings of significance were identified.

### 1.3.3 Conclusions

The team concluded that TN is effectively implementing its design control program and has adequate procedures in place to ensure compliance with the applicable regulations and QAP requirements.

## 1.4 **Fabrication, Maintenance, and Testing**

### 1.4.1 Inspection Scope

The team reviewed selected drawings, procedures, and records to determine whether the fabrication, test, and maintenance activities of the TN-RAM package meet SARP design commitments and requirements documented in the CoC. The team reviewed the following documents:

- TIP 5.3, "Preparation of Test, Inspection, Maintenance, and Operations (TIMO) Procedures," revision 8
- TIP 10.1, "Inspections," revision 8
- TIP 11.1, "Test Control," revision 7
- TIP 14.1, "Inspection and Test Status," revision 6
- TIMO Procedure 106100-T-002, "TN-RAM Annual Maintenance and Containment Leakage Test," revision 8
- Operations & Maintenance Manual OM-07, "TN RAM Operations Manual," revision 17
- Work Order No. 00002847, "Leak Test Verification After Third Use"

The team reviewed maintenance and training records to verify that quality related activities were performed by qualified personnel, recorded data fell within acceptance criteria and were signed off in accordance with procedures.

### 1.4.2 Observation and Findings

Overall, the team assessed that TN performed maintenance activities in accordance with approved methods, procedures, and specifications and met SARP design commitments and requirements documented in the CoC. The team verified that TN captured all SARP requirements in their annual maintenance procedures and operating manuals and procedural steps were consistent with those described in the SARP. The operations manual also includes the reporting of defects and noncompliance as per 10 CFR Part 21.

No findings of significance were identified.

### 1.4.3 Conclusions

The team determined, for the items selected for observation and review that the licensee performed fabrication, maintenance, and testing in accordance with approved SARP, written procedures, and specifications, as applicable.

## 1.5 **Procurement**

### 1.5.1 Inspection Scope

The team reviewed processes and procedures that addressed procurement, including receipt inspection, traceability of material, and commercial grade dedication (CGD), as applicable. The team reviewed selected drawings and records and interviewed personnel to verify that procurement specifications for materials, fabrication, and inspection met design commitments and requirements contained in the SARP and CoC. The team reviewed TN implementing procedures, receipt inspection records, purchase orders (POs), and sampled CGD packages.

- TIP 7.3, "Dedication of Commercial Grade Items," revision 16
- TIP 7.6, "Commercial Grade Surveys," revision 9
- TIP 7.9, "Receipt Inspection," revision 12
- TIP 7.11, "Approved Suppliers List," revision 16
- PO# P2021-1330, revision 0
- PO# P2022-0290, revision 0
- CGD# 2021-009, revision 1
- CGD# 2021-20, revision 0
- TN-Eagle-011, "Procurement Specification for TN Eagle," revision A

### 1.5.2 Observation and Findings

Overall, the team assessed that TN had adequate control of the procurement process for the ITS components selected and reviewed. The team determined that TN procured ITS components consistent with design requirements and their QAP implementing procedures. TN also purchased and applied controls over subcontractors and vendors currently on the approved suppliers list. The team assessed that TN had adequate controls over material traceability, procurement, and receipt inspection. Additionally, TN verified and maintained the traceability throughout the procurement and receipt process. The material ordered and received met the design requirements, and the items that TN dedicated met the critical characteristics upon the receipt and acceptance criteria TN developed.

No findings of significance were identified.

### 1.5.3 Conclusions

The team determined that materials, components, and other equipment received by TN met design procurement specifications, and the procurement specifications conformed to the design commitments and requirements contained in the SARP and CoC.

## **1.6 Nonconformance and Corrective Actions**

### **1.6.1 Inspection Scope**

The team reviewed selected records and interviewed selected personnel to verify that a nonconformance control program is effectively implemented, and that corrective actions for identified deficiencies are technically sound and completed in a timely manner. The team reviewed the following implementing procedures for TN's nonconformance program and CAP:

TIP 7.13, "Supplier Findings and Corrective Actions," revision 13  
TIP 15.1, "Reportability Determinations and Postings," revision 19  
TIP 15.2, "Control of Nonconforming Items," revision 22  
TIP 15.3, "Review of Supplier Nonconformances," revision 22  
TIP 15.4, "Control of Fabrication of Nonconforming Items," revision 5  
TIP 16.1, "Corrective Action," revision 33  
TIP 16.3, "Corrective Action Review Board," revision 18

The team reviewed TN's nonconformance program to assess the effectiveness of controls established for the processing of nonconforming materials, parts, and components. The team reviewed a sample of 16 nonconformance reports (NCRs) for the TN-RAM and TN-40 packages since the last NRC Part 71 inspection in 2017. The review focused on NCRs that were dispositioned as "Use-As-Is" and "Repair," to determine if TN had justified their dispositions of the NCRs adequately.

The team also reviewed TN's CAP and reviewed a sample of corrective action reports (CARs) generated since the last inspection in 2017, including CAR 2017-080 which had been initiated as a result of that inspection. The CARs were reviewed to determine whether TN completed corrective actions for identified deficiencies in a technically sound and timely manner. The review focused on the processing of Level 1 CARs which involved significant conditions adverse to quality, as well as Level 2 and Level 3 CARs which were considered less significant.

### **1.6.2 Observation and Findings**

Overall, the team assessed that TN had adequate nonconformance controls and CAP in place to identify, track, and resolve quality related deficiencies and deviations. Nonconformances and corrective actions reviewed were appropriately dispositioned and resolved in a timely manner and in accordance with implementing procedures.

No findings of significance were identified.

### **1.6.3 Conclusions**

The team determined that TN effectively implemented its nonconformance program and CAP and has adequate procedures in place to ensure compliance with the applicable regulations and QA requirements.

## **1.7 Personnel Training and Quality Assurance Oversight**

### **1.7.1 Inspection Scope**

The team reviewed selected records and procedures, and interviewed selected personnel to verify that individuals performing activities affecting quality are properly trained and qualified, and to verify that management and QA staff are cognizant and provide appropriate oversight.

Specifically, the team reviewed the indoctrination and training records for three selected TN employees and contractors that have performed design engineering activities to verify the training was adequate. The team reviewed records for two employees that have performed quality related maintenance activities for the TN-RAM package. The review also included audit personnel.

### **1.7.2 Observation and Findings**

The team noted that the design engineering training included the QAP and applicable TIPs, including newly issued TIPs, for example TIP 3.7, after the initial training was completed.

No findings of significance were identified.

### **1.7.3 Conclusions**

The team determined that TN had trained and qualified individuals performing activities affecting quality and that TN management provided appropriate oversight of quality related activities, as applicable.

## **1.8 Audit Program**

### **1.8.1 Inspection Scope**

The team verified that audits of the QAP and activities affecting the safety aspects of the packaging are scheduled, have been performed as scheduled, and that identified deficiencies have been satisfactorily resolved in a timely manner. The team reviewed the audit program to verify that TN scheduled, planned, and performed audits in accordance with their NRC approved QAP and implementing procedures. The team reviewed the audit results to determine if TN identified deficiencies and addressed these deficiencies within their CAP.

The team selected a sample of internal and external audits and interviewed personnel to verify that TN effectively implemented their audit program from 2017 to the present. This sample included a review of lead auditor certifications and qualifications. In addition, the team reviewed the last two management reviews of the QAP to determine whether TN management performed the reviews as required and if the reviews were an effective tool to use for the overall health of the program.

The team reviewed external audits for suppliers of ITS materials, equipment, and services. The team reviewed the following TN implementing procedures:

- TIP 18.1, "Internal Audits," revision 18
- TIP 18.2, "Surveillances," revision 2
- TIP 7.2, "Supplier Audits," revision 13

### 1.8.2 Observation and Findings

Overall, the team assessed that for the audits sampled TN generally conducted audits with qualified and certified personnel, scheduled and evaluated applicable elements of their QA program. The team noted that TN identified observations and findings as applicable within the audits and documented as necessary in accordance with the approved quality procedures. Additionally, the team noted that TN addressed the observations and findings identified within their CAP.

No findings of significance were identified.

### 1.8.3 Conclusions

The team determined, for the items selected for review that TN was performing oversight and audits in accordance with their QAP.

## **2.0 Entrance and Exit Meeting**

On November 14, 2023, the NRC inspection team discussed the scope of the inspection during an entrance meeting with the TN staff. On November 16, 2023, the NRC inspection team discussed the preliminary results and observations during an onsite debrief meeting with the TN staff. The team continued the inspection activities with an in-office review of responses to questions related to commercial grade dedication. The team completed the inspection activities on November 29, 2023, and held an exit meeting on December 4, 2023, with TN staff. Section 1 of the attachment to this report shows the attendance for the entrance, debrief, and exit meetings.

ATTACHMENT

1. ENTRANCE/EXIT MEETING ATTENDEES AND INDIVIDUALS INTERVIEWED

Name	Title	Affiliation	Entrance	Debrief	Exit
Jeremy Tapp	Inspection Team Leader	NRC	X	X	X
Azmi Djapari	Inspector	NRC	X	X	X
Marlone Davis	Inspector	NRC	X	X	
Amir Vexler	CEO	TN Americas	X		
Brad Beard	COO	TN Americas	X		
Prakash Narayana	CTO	TN Americas			X
Brian Ocampos	QA Director	TN Americas	X	X	X
Raheel Haroon	Design Engineering Director	TN Americas	X		X
Jay Thomas	Waste & Transportation Director	TN Americas	X	X	X
Marlin Stoltz II	Fabrication Engineering Director	TN Americas			X
Mike Cameron	TNF Plant Manager	TN Americas	X		
Don Shaw	Licensing Manager	TN Americas	X	X	X
Tammy Johnson	QA & EHS Manager	TN Americas	X	X	X
John Burchfield	TNF QA Manager	TN Americas		X	X
Kristin Vesely	Document Control Manager	TN Americas	X	X	X
Peter Vescovi	Licensing Engineer	TN Americas	X		
Glenn Mathues	Licensing Engineer	TN Americas		X	X
Rick Flinn	Quality Assurance Engineer	TN Americas	X	X	

2. INSPECTION PROCEDURES USED

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

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Item Number</u>	<u>Status</u>	<u>Type</u>	<u>Description</u>
None	None	None	None

4. LIST OF ACRONYMS USED

10 CFR                      Title 10 of the *Code of Federal Regulations*  
 ADAMS                      Agencywide Documents Access and Management System  
 CAP                          Corrective Action Program  
 CAR                          Corrective Action Report

CGD	Commercial Grade Dedication
CoC	Certificate of Compliance
DCD	Design Criteria Document
DCR	Design Change Request
IMC	Inspection Manual Chapter
IP	Inspection Procedure
ITS	Important to Safety
MCNP	Monte Carlo N-Particle Transport
NCR	Nonconformance Report
NRC	U.S. Nuclear Regulatory Commission
PDR	Public Document Room
PO	Purchase Order
QA	Quality Assurance
QAPDM	Quality Assurance Program Description Manual
QAP	Quality Assurance Program
SARP	Safety Analysis Report for Packaging
SSC	Structure, System, and Component
TIP	TN Implementing Procedure
TLC	Transportation License Change
TN	TN Americas, LLC

5. DOCUMENTS REVIEWED

Certificate holder documents reviewed during the inspection were specifically identified in the Report Details above.