
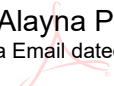


INSPECTOR NOTES COVER SHEET

Licensee/Certificate Holder (name and address)	TN Americas, LLC/Orano 7135 Minstrel Way, Suite 300 Columbia, MD 21045
Licensee/Certificate Holder contact and phone number	Douglas Brownson, Director of Quality Assurance 410-910-6963
Docket No.	072-01042
Inspection Report No.	072-1042/2020-201
Inspection Dates(s)	February 11-13, 2020
Inspection Location(s)	Kernersville, NC
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>On February 11-13, 2020, the U.S. Nuclear Regulatory Commission (NRC) performed an announced inspection of TN Americas LLC's (TN), Fabrication (TNF), located in Kernersville, NC. The purpose of the inspection was to assess TN's compliance with 10 CFR Parts 21 & 72, and to ensure that the storage system for which TN is the Certificate of Compliance (CoC) holder can be verified to comply with Part 72 in design, procurement, and fabrication requirements, as applicable. The focus of the inspection was to determine whether TN activities specific to the NUHOMS® EOS-37PTH Dry Shielded Canisters (DSCs) are in accordance with TN's NRC- approved Quality Assurance (QA) program requirements, regulatory requirements, and CoC No. 72-1042.</p> <p>The inspection focused on EOS DSC fabrication, assembly and testing activities. The inspection included observations of EOS-37PTH basket assembly, as well as, basket insertion into a DSC shell assembly.</p> <p>Overall, no findings were identified.</p>
Lead Inspector Signature/Date	 03/25/2020
Inspector Notes Approval Branch Chief Signature/Date	 Alayna Pearson Via Email dated 3/26/2020

Inspection Background

TN was granted an NRC 10 CFR Part 71 (also applicable to Part 72) QA Program Approval (71-0250), Revision 16, to the TN QA Program Description Manual (QAPDM) for 10 CFR Part 71, Subpart H and 10 CFR Part 72, Subpart G, as a prerequisite to using Type B Casks for storage of radioactive material. The inspection was specific to fabrication, assembly and testing activities of the NUHOMS EOS-37PTH DSC as described in the TN safety analysis report (SAR) and NRC safety evaluation report.

<u>Part 72 Model #</u>	<u>Docket #</u>	<u>Amend. #</u>	<u>Effective Date</u>	<u>SAR</u>
EOS-37PTH, and -89BTH	72-1042	0 A1/R8 A2/R2	June 07, 2017 Rulemaking Application accepted 11/2019	Rev. 7 Rev. 1

Inspection History

The NRC last inspected TNF in December 2019. The inspection was limited in scope in part because there were no EOS fabrication/assembly activities occurring at the shop due to a change in overall shop production schedules and an alteration in prioritization due to schedule demands of other NUHOMS dry shielded canister systems. Instead, the team assessed TN's compliance with 10 CFR Parts 21 & 72, and to ensure that the storage system for which TN is the CoC holder can be verified to comply with Part 72 in the areas of nonconformance and corrective action controls, documentation controls, audit program, material procurement, and welder/inspector qualifications. Overall, the focus of the inspection was to assess TNF's programmatic controls with respect to the NUHOMS® EOS-37PTH Dry Shielded Canisters (DSCs) for compliance to TN's NRC- approved QA program requirements, regulatory requirements, and CoC No. 72-1042. The team identified a Non-Cited Violation (NCV) with two examples where TNF did not follow prescribed procedures for activities affecting quality. Specifically, the team identified that TNF failed to: a) properly identify and segregate from production an important-to-safety nonconforming basket assembly component, Transition Rail (R45), associated with a TNF nonconformance report (No.19-527), and b) remove from storage an important-to-safety nonconforming dry shielded canister assembly component, Outer Top Cover Plate, dispositioned as "Scrap."

Primary Inspection Procedures/Guidance Documents

IP-60852, "ISFSI Component Fabrication by Outside Fabricators "
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 60852 WERE PERFORMED DURING THE INSPECTION WITH RESULTS DOCUMENTED BELOW UNDER THE BASIC HEADINGS OUTLINED IN NUREG-6314.

4.1 Management Controls

4.1.2 Corrective Action Controls

The team reviewed TNF's corrective actions associated with the NCV with two examples identified during the 2019 inspection in order to verify the corrective actions had been adequately completed. The first example of the violation was regarding TNF's tag or segregate a nonconforming R45 transition rail. The item was not in the normal nonconforming item storage area and was found mixed in with other acceptable items. TNF wrote Corrective Action Report (CAR) No. 2019-497, dated December 05, 2019, to document TNF's corrective actions for the violation. For this issue, TNF 1) segregated the rail by placing in a clearly identified hold area; and 2) provided training to Quality Control inspectors, Material Handlers, and Manufacturing Supervisors of the procedural requirements for segregation of nonconformance material. The team determined the corrective actions in response to the first example of the NCV was adequate.

The second example of the violation was regarding TNF's failure to affix a red tag to an important to safety (ITS), Category A component, outer top cover plate (OTCP), marked "Scrap." without a red tag affixed to the cover. This item was documented on a closed TNF Nonconformance Report (NCR) No. 19-295, dispositioned as scrap without proper disposal and NCR closure. TNF wrote CAR 2019-498, dated December 05, 2019 to document TNF's corrective actions for the violation. For this issue, TNF appropriately scraped the OTCP. In addition, the OTCP was classified for use as a component to be used for welding a mockup at TNF's Aiken, SC facility. The team determined the corrective actions in response to the first example of the NCV was adequate.

The team assessed TNF's corrective actions taken and/or planned specific to observations of welder/welding operator qualifications CAR (No. 2019-413), initiated as a result of a 2019 welding program internal audit (No. IA-2019-10). The team noted that the CAR identified administrative errors associated with a welder/welding operator qualification matrix and qualification test records and that TNF's assessment of extent of condition and corrective/preventative and apparent cause actions was on-going. The NRC will follow-up on TN's actions at the time of the next TNF inspection.

4.3 Fabrication Controls

4.3.1 Material Procurement

The team reviewed ITS related purchase order (PO) and receiving inspection records of EOS basket assembly R45 Rails. The team noted that the PO required the work to be done in accordance with the supplier QA program as audited and approved by TN and that the provisions of 10 CFR Part 21 applied. The team verified that the supplier was audited and approved and listed on TN's Approved Suppliers List (ASL), E-20798, revision 140, dated November 07, 2019.

4.3.2-3 Fabrication and Assembly / Test and Inspection

The team witnessed assembly of an EOS-37PTH DSC basket assembly in accordance with an approved traveler and fabrication drawings. The team noted that the assembly area was staged with assembly sub-components that were adequity controlled for exclusive use. The basket assembly consisted of interlocking slotted plates that formed a grid of 37 fuel compartments. The team noted that the grid structure was composed of a steel plate, an aluminum plate and a neutron absorber plate made of borated metal matrix composites that provide criticality control. In addition, the team observed assembly of extruded aluminum basket rails that cylindrically transitioned the rectangular basket structure to match the inside surface of the DSC shell.

Upon final assembly and visual examination, TNF identified a nonconformance condition to a rail in the form of a small gouge. Following, documented instructions the rail was disassembled, reworked, inspected and reassembled onto the basket. The team observed weld repair of this

basket rail and reviewed the completed document package for this special process, including records to evaluate if trained and certified individuals were performing quality related activities in special processes as required. The team reviewed procedures to determine how TNF controlled welding, obtained the correct weld procedure specification (WPS) for fabrication and repair use, assigned qualified welders, and tracked welder qualifications. The team reviewed the following documents related to this repair:

- WPS 23231-101
- Traveler EOS 01-1011-R45-168
- 2020-068-WR, Revision 0

Overall, the team noted that the WPS provided for the weld repair contained appropriate essential and nonessential variables as appropriate. The team noted that the welder who performed the repair met performance qualifications and his welder continuities conformed to Section IX of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. The team also verified that TN had controls in place for the welding process and the storage of the weld filler material used to conduct the repair. There were no issues identified with the welding process used for the repair of the EOS basket rail.

Upon completion of basket assembly, the team witnessed basket insertion into a DSC shell in the vertical configuration. Prior to basket insertion, the team noted TNF's heating of the shell in order to increase in the basket to shell gap to allow for ease of insertion and to prevent any basket to shell interferences, of which, there were none. The team noted, in accordance with TNF procedure, heating was limited to not more than 700°F and was monitored throughout the entire process. Overall, no findings were identified. The team noted that basket assembly and DSC shell insertion were adequately controlled in accordance with shop traveler instructions and compliant to TNF fabrication/assembly procedures and fabrication drawings.

The team reviewed welded cylinder shell with forging, radiograph evaluation reports specific to longitudinal and circumferential weld joints 1-4 of DSC (s/n: NAN-EOS-37PTH-001-B). The team noted no rejectable indications were reported and that examinations were satisfactorily performed, and results documented in accordance with TNF Quality Inspection Procedure, RT, Revision 7. The team verified that NDE personnel were qualified and certified to perform the level of radiograph examination.

Documentation Reviewed

- Standard Operating Procedure (SOP) 017, Revision 1, "EOS Basket Assembly"
- TNF 7, Quality Control Inspector, Certification of Inspector/Test Qualification, dated 2/5/2019
- TNF-3, Quality Control Inspector, NDE Personnel Certification Record, dated 8/20/2019
- TNF-22, Quality Control Inspector, NDE Personnel Certification Record, dated 1/22/2019
- EOS-0105, Revision 5, "Procurement Specification for the NUHOMS EOS 37PTH Dry Shielded Canisters"
- Purchase Order, P2020-0149, dated 2/6/2020, "EOS R45 Angle Plates"
- EOS37-1011-14-TK, Procurement Specification for EOS R45 Rails
- SE 2019-047, dated 3/27/2019, TW Metals Supplier Evaluation
- EOS-01-1010, Revision 9, Design Drawing, "NUHOMS EOS System Transportable Canister 37PTH Basket Assembly-168"
- EOS01-1010-168, Revision 0, Fabrication Drawing, "37PTH Basket Assembly-168"
- EOS01-1010-50-51-168, Revision 0, Fabrication Drawing, "Section III Aluminum Shims for 168" DSC Basket"

- EOS01-1011-R90-168, Revision 1, Fabrication Drawing, "R90 Transition Rails 168" Basket Length"
- DSC Controlled Procedures, Master Binder, dated 2/6/2020, "DSC W.O. 18-022 (1049A.FD4) & 18-023 (1049A.FD3)"
- CAR No. 2019-413, dated 11/11/2019, Internal Quality Audit Findings