



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

August 13, 2021

MEMORANDUM TO: Christopher Regan, Deputy Director
Division of Fuel Management, NMSS

FROM: Bernard White, Senior Project Manager
Storage and Transportation Licensing Branch
Division of Fuel Management, NMSS

SUBJECT: SUMMARY OF JUNE 11, 2021, CLOSED MEETING WITH TN
AMERICAS LLC TO DISCUSS TN'S APPLICATION FOR THE TN
EAGLE-STC PACKAGE

Background

On June 11, 2021, a virtual, closed meeting was held, at the request of U.S. Nuclear Regulatory Commission (NRC) staff with TN Americas LLC. (TN) to discuss the proprietary shielding calculations for TN's application for the Model No. TN Eagle-STC spent fuel transportation package. The list of meeting attendees is provided as Enclosure 1.

On December 30, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20365A018), as supplemented on April 29, 2021 (ADAMS Accession No. ML21119A307), TN submitted an application for package approval. During the course of the initial review, the NRC requested clarification on some portions of the proprietary shielding evaluation. The TN Eagle-STC includes three overpack designs, two for the standard canister (SC) (Type B and Type C) and one for the large canister (LC) (Type A), and nine different canister designs.

Discussion

Given the large number of canisters and fuel assemblies requested for approval, the NRC requested clarification on several items related to the source term calculations performed by TN to reduce the NRC review time.

Much of the discussion centered on source term calculations, fuel qualification tables and how the source terms were used in various shielding evaluations. The NRC asked TN how it used the response function to rank the source terms from different fuel assemblies to determine bounding source term spectra. Given that there are over 25 fuel qualification tables, each with numerous different burnup, enrichment, and cooling time states in Chapter 8 of the SAR, the NRC wanted to clearly understand how TN was able to demonstrate that each point on the fuel qualification tables meet the dose rate requirements in Title 10 of the *Code of Federal Regulations*, Part 71 for both normal conditions of transport and hypothetical accident conditions.

CONTACT: Bernard White, NMSS/DFM
(301) 415-6577

The NRC and TN discussed the mesh tallies used in the response functions, including locations (radial and azimuthal) and heights around the package surface, to ensure that areas of higher dose rates were considered. Because the tallies used for the response functions were not detailed enough to represent dose around the entire cask, within the application, the applicant supplemented the response function calculations with direct dose calculations using selected source terms which they refer to as “design basis sources” from the allowable loading tables which contain a much more detailed mesh tally.

Dose rate calculations appear to focus on the side of package since those dose rates are typically closer to the regulatory limits than the top and bottom. The NRC asked for clarification on how the dose rate calculations on the top and bottom for both the response function and direct design-basis dose rates ensure the calculations captured the dose rates in areas with potentially lower shielding amounts or potentially higher source concentrations.

NRC and TN discussed TN’s methodology for evaluating damaged and failed fuel, since it was not clear whether TN explicitly calculated dose rates for damaged and failed fuel. It appears that TN relies on a comparison between the source terms for failed/damaged fuel and undamaged fuel, since the decay heat in a location containing damaged or failed fuel is lower than when that location contains an undamaged fuel assembly. NRC noted that in ORNL/SPR-2020/1441, “A Study on the Relationship between Dose Rate and Decay Heat for Spent Nuclear Fuel Casks,” Oak Ridge National Laboratory did not find a clear relationship between decay heat and dose rate for transportation and storage of spent fuel. TN stated that dose rates were calculated, however were not incorporated into the loading tables determined using the response functions because they stated that there is a negligible increase.

The NRC and TN discussed source term generation for control components and how the additional cooling time was determined for fuel assemblies that contain control components.

TN and the NRC discussed how the fuel qualification tables for the SC version of the TN Eagle-STC package were determined. It appears that fuel qualification tables for the SC version of the package were developed based on those for the LC version of the package.

At the conclusion of the meeting, the NRC stated that further review is needed to determine whether the application needs further clarification, via a request for additional information.

Docket No. 71-9382

EPID No. L-2021-NEW-0000

Enclosure: Meeting Attendees

SUBJECT: SUMMARY OF JUNE 11, 2021, CLOSED MEETING WITH TN AMERICAS LLC TO DISCUSS THE APPLICATION FOR THE TN-EAGLE-STC PACKAGE

DATE: August 13, 2021

Distribution: NRC Meeting Attendees
D. Marcano, NMSS
S. Kumar, NMSS

ADAMS Accession Number: ML21181A407

OFFICE	DFM	DFM	DFM	DFM	DFM
NAME	BWhite	SFiguroa	VWilson	JMarcano	JMcKirgan
DATE	7/1 /2021	7/1/2021	8/12/2021	8/12/2021	8/12/2021

MEETING ATTENDEES

Meeting Title: Summary of June 11, 2021, Closed Meeting with TN Americas LLC to Discuss the Application for the TN Eagle-STC Package

Participants: TN Americas LLC and the NRC

Date: June 11, 2021

Location: Videoconference

NAME	AFFILIATION
Bernie White	NRC/NMSS/DFM
John McKirgan	NRC/NMSS/DFM
Veronica Wilson	NRC/NMSS/DFM
Shikha Kumar	NRC/NMSS/DFM
Jonathan Marcano	NRC/NMSS/DFM
Peter Vescovi	TN Americas LLC
Lionel Antognelli	TN Americas LLC
Philippe Pham	TN Americas LLC
Jun Li	TN Americas LLC
Don Shaw	TN Americas LLC