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

September 23, 2024

Richard W. Boyle, Chief of Research
and Development Branch
Radioactive Materials Branch
U.S. Department of Transportation
1200 New Jersey Avenue SE
Washington, D.C. 20590

SUBJECT: REQUEST FOR REVIEW OF APPLICATION FOR MODEL 880 SERIES PACKAGES - SUPPLEMENTAL INFORMATION NEEDED - ENTERPRISE PROJECT IDENTIFICATION NUMBER L-2024-LLA-0112

Dear Richard Boyle:

By letter dated July 18, 2024 (Agencywide Documents Access and Management System [ADAM] Accession No. ML24261B174), the U.S. Department of Transportation requested that the U.S. Nuclear Regulatory Commission (NRC) staff perform a review of QSA Global application for issuance of a revision to the Competent Authority Certificate No. USA/9296/B(U)-96, for the Model No. 880 Series transport package and make a recommendation concerning the endorsement of the package to the International Atomic Energy Agency Regulations for the Safe Transport of Radioactive Material, 2018 Edition, No. SSR-6 (Rev. 1).

The NRC staff performed an acceptance review of the application to determine if the application contains sufficient technical information in scope and depth to allow the staff to complete the detailed technical review. This letter is to advise you that, based on our acceptance review, the application does not contain sufficient technical information. The information needed to continue our review is described in the enclosure to this letter. In order to schedule our technical review, this information should be provided by November 8, 2024.

In accordance with Title 10 of the *Code of Federal Regulation*s Part 2, "Agency Rules of Practice and Procedure," a copy of this letter 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 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 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 Stroud, Heath
on 09/23/24

Heath Stroud, Project Manager
Storage and Transportation Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

Docket No.: 71-9296
License/Certificate No.: 9296
EPID: L-2024-LLA-0112

Enclosure:
Request for Supplemental Information

SUBJECT: REQUEST FOR REVIEW OF APPLICATION FOR MODEL 880 SERIES PACKAGES - SUPPLEMENTAL INFORMATION NEEDED - ENTERPRISE PROJECT IDENTIFICATION NUMBER L-2024-LLA-0112

DOCUMENT DATE: September 23, 2024

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Request for Supplemental Information
Certificate of Compliance No. 9296
Docket No. 71-9296
Revision 12

The questions below describe information needed by the staff for it to begin its review of the application and to determine whether the applicant has demonstrated compliance with regulatory requirements.

Structural Review

RSI-St-1:
Provide a complete fatigue evaluation for the important-to-safety reusable package components, for the expected service life (i.e. number of years that the applicant expects the package to be in use), that considers the combined effects of all applicable types of accumulated stress cycles during normal service conditions.

If such a complete fatigue evaluation cannot be performed, or if the fatigue evaluation cannot show adequate protection against fatigue failure considering the combined effects of all applicable types of accumulated stress cycles in components, provide the following information:

1. A description about how periodic maintenance inspections will be used to identify and address fatigue cracks in components of the package.

2. A description of the corrective actions that will be taken for any detected fatigue cracks, such as analytical flaw evaluation with follow-up inspections, repair/replacement of components with cracks, etc.

Per the International Atomic Energy Agency (IAEA) SSG-26, Revision 1, Paragraph 613A.1 guidance, to determine that fatigue is not an aging concern, the applicant needs to provide a complete fatigue evaluation that considers the combined effects of all applicable types of stress cycles during normal service, including consideration of the lifting cycles, pressurization cycles, thermal stress cycles, and vibration cycles (during transport). The fatigue evaluation should also consider stress concentration factors to account for any stress increases at a local discontinuity or change in cross section of a member. If certain types of stress cycles are not applicable or negligible for certain components, explain why these are not applicable or are negligible.

This information is requested to determine compliance with the requirements in Paragraphs 613A of the IAEA SSR-6, 2018 Edition.

Materials Review

RSI-Ma-1:
Please describe any national or international codes, standards, and/or other methods, programs, or procedures that are implemented to ensure that package maintenance activities (including visual inspections, screening and evaluation of visual indications, and corrective actions such as component repairs and replacements) are adequate to manage the effects of aging in metallic package components that would see long-term use, such that the package components are capable of performing their requisite safety functions throughout the period of use.

The staff requests that this description address the following criteria:

1. Inspection methods (e.g., bare metal visual exams and/or other types of nondestructive exams such as liquid penetrant exams or ultrasonic exams) for detection, characterization, and sizing of localized aging effects such as cracks, pits, and crevice corrosion.

2. Inspection equipment and personnel qualification requirements (e.g., lighting and visual acuity requirements for performing visual exams) to ensure reliable inspections that can adequately detect and characterize indications of localized aging effects prior to component failure or loss of safety function.

3. Acceptance criteria for aging effects such as early stage fatigue cracks and localized corrosion of stainless steel components, such as chloride induced stress corrosion cracking (SCC), pitting, and crevice corrosion. Examples of visual indications that may indicate potential localized corrosion of stainless steel components include the accumulation of atmospheric deposits such as salts, buildup of corrosion products, rust colored stains or deposits, and surface discontinuities or flaws associated with pitting, crevice corrosion, and/or SCC.

4. Describe any surface cleaning requirements that are implemented to ensure that bare metal visual inspections of component surfaces are capable of detecting surface flaws, and for ensuring adequate removal of atmospheric deposits such as salts or other chemical compounds that may contribute to localized corrosion of stainless steel components.

5. Describe any flaw evaluation methods (such as flaw sizing and flaw analysis methods) and associated flaw acceptance criteria that may be used to determine whether components containing flaws are acceptable for continued service.

Per IAEA SSG-26, Paragraph 613A.3, "…the package should be evaluated during the design phase in the demonstration of compliance with the Transport Regulations. Based on this evaluation, an inspection and maintenance programme should be developed. The programme should be structure so that the assumptions (e.g. thickness of containment wall, leaktightness, neutron absorber effectiveness) used in the demonstration of compliance of the package are confirmed to be valid through the lifetime of the packaging."

This information is requested in order to verify compliance with requirements of the 2018 Edition of IAEA SSR-6, Paragraphs 503(e), 613A, and 809(f).

RSI-Ma-2:

The staff requests the applicant to provide a discussion on abrasion being evaluated as an aging mechanism.

Per IAEA SSG-26, Paragraph 613A.1, "The designer of a package should evaluate the potential degradation phenomena over time, such as corrosion, abrasion, fatigue, crack propagation, changes of material compositions or mechanical properties due to thermal loadings or radiation, generation of decomposition gases and the impact of these phenomena on performance of safety functions."

This information is requested in order to verify compliance with requirements of the 2018 Edition of IAEA SSR-6, Paragraph 613A.

RSI-Ma-3:

The staff requests the applicant to provide the aging management program (per the structure and procedure in IAEA SSG-26, Paragraph 613A.3) and gap analysis program.

Per IAEA SSG-26, Paragraph 613A.5, “For designs of Type B(U), B(M) and Type C packages these programmes are required to be included in the application for approval of packages for shipment after storage (see paras 809(f) and (k) of the Transport Regulations). The results of the ageing management programme and the gap analysis programme should be taken into account when preparing an inspection plan prior to transport.” The staff was not able to locate an aging management program or gap analysis program as required by IAEA SSR-6, Paragraphs 809(f) and (k).

This information is requested in order to verify compliance with requirements of the 2018 Edition of IAEA SSR-6, Paragraphs 809(f) and (k).