



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

November 21, 2022

Abdulsalam Shakhatreh
Engineering Manager
Robatel Technologies
5115 Bernard Drive
Suite 304
Roanoke, VA 24018

**SUBJECT: APPLICATION FOR AMENDMENT TO CERTIFICATE OF COMPLIANCE FOR
THE MODEL NO. RT-100 PACKAGE – SUPPLEMENTAL INFORMATION
NEEDED**

Dear Abdulsalam Shakhatreh:

By letter dated August 29, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22262A264), Robatel Technologies, LLC submitted an application to amend Certificate of Compliance 9365 for the Model No. RT-100 package. The amendment would add activated hardware as new contents and provide flexibility to ship filters of varying activities. Staff performed an acceptance review of the application to determine if it contained 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 as a Request for Supplemental Information (RSI). In order to schedule our technical review, the RSI response should be provided by December 9, 2022. If the RSI responses are not received by this date, the review of this application may be delayed.

The staff also included observations. Observations are not the result of a detailed technical review and may be resolved once staff begins a detailed review. Responses to observations are not required for staff to begin a detailed technical review. However, staff is providing these observations to allow you to address items which may potentially become a request for additional information if your application is accepted for review.

If you have any questions regarding this matter, please contact me at (301) 415-6877.

Sincerely,

A handwritten signature in cursive script that reads "William C. Allen".

Signed by Allen, William
on 11/21/22

William C Allen, Project Manager
Storage and Transportation Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-9365
EPID No. L-2022-LLA-0134

Enclosures:

1. Request for Supplemental Information
2. Observations

cc w/encls
71bw9365all@listmgr.nrc.gov

Request for Supplemental Information
Docket No. 71-9365
Model No. RT-100 Package

By letter dated August 29, 2022 (ADAMS Accession No. ML22262A264), Robatel Technologies, LLC submitted an application to add activated hardware as new contents and provide flexibility to ship filters of varying activities. This request for supplemental information (RSI) letter identifies information needed by the staff in connection with its review of the application. NUREG-2216, "Standard Review Plan for Transportation Packages for Spent Fuel and Radioactive Material," was used by the staff in its review of the application.

Each individual RSI describes information needed by the U.S. Nuclear Regulatory Commission (NRC) staff to complete its review of the application to determine whether the applicant has demonstrated compliance with the regulatory requirements.

GENERAL INFORMATION

- 1.1 Provide updated drawings that have legible title blocks.

The title blocks of all drawings are either very difficult or impossible to read even after significantly increasing the magnification. Staff needs legible copies of all drawings.

This information is necessary for the staff to evaluate compliance Title 10 of the *Code of Federal Regulations* (10 CFR) 71.33(a).

STRUCTURAL

- 2.1 Explain whether prying action effects were considered for vibration-induced loads in the lid closure bolts, and the total vibration loads were included in the calculation of Normal Conditions of Transport (NCT) Load Combinations.

It appears that Safety Analysis Report (SAR) Rev. 8, Section 2.6.5, which presents vibration effects on closure bolts, does not determine the portion of tensile loads induced by prying action. It also appears that the total vibration-induced bolt tensile loads are omitted from NCT load combinations determined in SAR Section 2.13.2.4.2.

Section 8 of NUREG/CR-6007 provides guidance that the total vertical vibration-induced bolt loading includes the effects of prying action. NUREG/CR-6007, Tables 6.1 and 6.2, and NUREG-2216, Section 2.4.5.5, provide guidance that the total vibration-induced bolt loads also be combined with others generated by NCT loads.

This information is necessary to evaluate compliance with 10 CFR 71.71(c)(5).

Observations
Docket No. 71-9365
Model No. RT-100 Package

STRUCTURAL

- 2.1 For the primary lid closure bolts, demonstrate that the maximum vertical gap that occurs between the bottom of the primary lid and the top of cask wall when applied NCT and Hypothetical Accident Conditions (HAC) bolt tensile loads exceed the bolt preload:

- 1) does not exceed the gap sealed by the O-rings causing the containment barrier to be breached, and
- 2) does not remove a shielding barrier causing regulatory radiation limits to be exceeded.

SAR Sections 2.13.2.3 and 2.13.3 indicate that the elastic-range, tensile, lid closure bolt loads resulting from NCT and HAC exceed the 130 kN bolt preload. As a result, a gap between components would occur.

This information is necessary to demonstrate compliance with 10 CFR Parts 71.43(f), 71.51(a)(1) and 71.51(a)(2).

- 2.2 For the secondary lid closure bolts, demonstrate that the maximum vertical gap that occurs between the bottom of the secondary lid and top of the primary lid when applied NCT and HAC bolt tensile loads exceed the bolt preload:

- 1) does not exceed the gap sealed by the O-rings causing the containment barrier to be breached, and
- 2) does not remove a shielding barrier causing regulatory radiation limits to be exceeded.

SAR Sections 2.13.2.3 and 2.13.3 indicate that the elastic-range, tensile, lid closure bolt loads resulting from NCT and HAC exceed the 130 kN bolt preload. As a result, a gap between components would occur.

This information is necessary to demonstrate compliance with 10 CFR Parts 71.43(f), 71.51(a)(1) and 71.51(a)(2).

- 2.3 Demonstrate that the primary and secondary closure bolt capacities will not be exceeded if the bolt shear effects are included. Alternately, the applicant may provide a reference to confirm that lid/bolt installation procedures include verification that the planned minimum horizontal gap, (of 2.75 mm) between the bolt face and the interior face of the bolt hole in the lid, exists around the bolt circumference at every lid closure bolt location after lid installation is complete.

SAR Section 2.13.2.1.1 states that shear load effects on the primary lid bolts are prevented due to existing gaps between lid and cask wall, and subsequently lid and bolt, including fabrication tolerances shown on the design drawings. However, it is possible that this gap may be reduced in width or be eliminated entirely during installation of the primary lid. If shear loads were to be imparted to these bolts, it is not clear whether the

bolts would have the capacity to withstand the additional loading, during either NCT or HAC loading combinations. SAR Section 2.13.2.1.3 for the secondary lid closure bolt evaluation presents a similar justification for omitting shear load considerations.

This information is necessary to demonstrate compliance with 10 CFR Parts 71.43(f), 71.51(a)(1) and 71.51(a)(2).

CONTAINMENT

- 4.1 Clarify the intent of the added “nuclear industry standards” edit at the beginning of SAR Section 4 and clarify the section of NUREG/CR-6673 that is different from the hydrogen generation procedure described in the SAR.

SAR Section 4 refers to “Nuclear Industry standards” and Note 2 in SAR Section 4.4.5 states that a user can, alternately, follow NUREG/CR-6673 to determine the shipping time to reach a hydrogen concentration of 5%. It is unclear whether “Nuclear Industry standards” refers to NUREG/CR-6673 or some other document. Likewise, it is unclear which section of NUREG/CR-6673 is being referenced as an alternate procedure, considering that the premise and aspects regarding hydrogen gas generation described in SAR Chapter 4 often refer to NUREG/CR-6673. A discussion explaining the differences and showing the sensitivity of the different approaches (e.g., differences in allowable shipment times, including for bounding cases) also should be provided so that an assessment of the alternate procedure can be performed.

This information is needed to determine compliance with 10 CFR 71.43(g), and 71.51.

- 4.2 Clarify how new activated hardware content is incorporated into SAR Equation 4.6 and Equation 4.7, which calculate acceptable decay heat and shipment time to maintain hydrogen concentration below its allowable value.

SAR Equation 4.8 and Equation 4.9 incorporated the impact of activated hardware volume (V_H) when calculating acceptable hydrogen concentration, decay heat, and shipment times. Although the SAR indicates that these equations are based on SAR Equation 4.6 and Equation 4.7, there was no clear derivation (i.e., from V parameter to the V_{waste} , V_C , and V_H parameters), recognizing that activated hardware volume (V_H) is not explicitly stated in Equations 4.6 and 4.7. In addition, specify the parameters (e.g., V , V_C , P_o , T_o , G_{Ti} , G_{TC} , G_{TW} , α_i , α_C , α_w) of Equation 4.6 and Equation 4.7 that are used to generate the bounding curve in SAR Figure 4.4.4-1.

This information is needed to determine compliance with 10 CFR 71.43(g).

Application for Amendment to Certificate of Compliance for the Model No. RT-100 Package –
Supplemental Information Needed DATE November 21, 2022

DISTRIBUTION: Docket No. 71-9365

ADAMS Accession No.: ML22312A362; Ltr ML22312A362

*** via email**

OFFICE	NMSS/DFM/CTCFB	NMSS/DFM/STLB	NMSS/DFM/MSB*	NMSS/DFM/MSB
NAME	JBorowsky <i>JB</i>	SFigueroa <i>SF</i>	JSmith <i>JS</i>	TBoyce <i>TB</i>
DATE	Nov 15, 2022	Nov 14, 2022	Nov 15, 2022	Nov 21, 2022
OFFICE	NMSS/DFM/CTCFB	NMSS/DFM/STLB	NMSS/DFM/STLB	
NAME	DMarcano <i>DM</i>	YDiaz-Sanabria <i>YD</i>	WAllen <i>WA</i>	
DATE	Nov 16, 2022	Nov 21, 2022	Nov 21, 2022	

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