

August 6, 2014

Mr. Richard W. Boyle, Chief
Sciences Branch
Division of Engineering and Research
Office of Hazardous Materials Safety
U.S. Department of Transportation
1200 New Jersey Ave., S.E.
Washington, D.C. 20590

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE MODEL NO. MG1
PACKAGE

Dear Mr. Boyle:

By letter dated March 26, 2014, the Department of Transportation submitted a request for review of the Argentine Certificate of Approval No. RA-099-B(U)F-96, Revision 2, for the Model No. MG1 package. On April 29, 2014, the Department of Transportation resubmitted the documents necessary for the review of this package, which had apparently been misplaced after delivery to the mailroom.

In connection with the staff's detailed technical review, we need the information identified in the enclosure to this letter.

The applicant should notify the Department of Transportation when it can provide the requested information.

Please reference Docket No. 71-3086 and TAC No. L24907 in future correspondence related to this revalidation action. If you have any questions regarding this matter, you may contact me at (301) 287-0759.

Sincerely,

/RA/

Pierre M. Saverot, Project Manager
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-3086
TAC No. L24907

Enclosure: Request for Additional Information

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Enclosure: Request for Additional Information

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Request for Additional Information
Docket No. 71-3086
Model No. MG1 Package

By letter dated March 26, 2014, the Department of Transportation submitted a request for review of the Argentine Certificate of Approval No. RA-099-B(U)F-96, Revision 2, for the Model No. MG1 package. On April 29, 2014, the Department of Transportation resubmitted the documents necessary for the review of this package.

This request for additional information (RAI) identifies information needed by the U.S. Nuclear Regulatory Commission staff in connection with its review of the Model No. MG1 package to determine whether the applicant has demonstrated compliance with the International Atomic Energy Agency, "Regulations for the Safe Transport of Radioactive Material," TS-R-1, 2009 edition.

I. Description of the Package

- 1.1 Provide legible drawings with clear descriptions of the materials of construction, including any design standards used (e.g., ASME SA 240, Aluminum 6061-T6). If the drawings do not include a detailed description of the materials of construction, provide a bill of materials that can be used as cross-reference for the drawing components. Ensure all drawings referenced in the text of the application have been included

Many of the drawings provided in the application do not provide legible dimensions and often only include text in Spanish. The drawings do not reference the materials of construction, nor was a bill of materials provided to cross-check with the drawings. Additionally, the application does not include all drawings referenced in the text, e.g., Figure 4 in document 2A is repeated twice, yet Figure 3 is not provided.

Statements such as those in page 20 of document 2A cannot be verified: "There is no welding between aluminum- and steel-made components."

This information is required to determine compliance with the requirements of paragraph 807(b) of IAEA TS-R-1

II Structural and Materials Evaluation

- 2.1 Provide the at-temperature material properties, such as yield strength, ultimate strength, etc., for all load-bearing structural components as well as the references from which these values were obtained.

This information is required to determine compliance with the requirements of paragraph 807(b) of IAEA TS-R-1.

- 2.2 Provide a table with the stress acceptance criteria for all structural components. This should include the containment system (closure bolts and non-bolt components) and the

lifting and hoisting system (hoisting eyes and 50 mm holes in the external sleeve). Include the calculated stresses and the stress allowables for normal conditions of transport and hypothetical accident conditions.

Several, but not all, calculated stresses are compared to the material yield strengths of the material, which are not necessarily associated with stress acceptance criteria in general.

This information is required to determine compliance with the requirements of paragraph 607 of IAEA TS-R-1.

- 2.3 Provide a drawing depicting the design details of how the hoisting eyes are attached to the container. Provide all calculations that demonstrate the acceptance of the hoisting eyes for all lifting configurations presented (Figures 8 and 9 of the document) and for tie-down forces (Figure 10 of the document). Include any dynamic load factors considered for lifting operations and any fatigue or vibratory affects considered for transportation (tie-down) operations. Additionally, clarify the angles Φ and α .

The statement is made that “The hoisting eye supports this stress easily...” with no computational justification. The tie-down angles in Figure 10 of INVAP S.E. No. 0541-0303-30ZSS-401-10 contradicts those in Figure 5 of CDAD-1001-EMIGC-002-A, MG1 Bulk Operations and Shipment Manual.

This information is required to determine compliance with the requirements of paragraphs 607 and 612 of IAEA TS-R-1.

- 2.4 Explain how the 50 mm diameter holes in the external sleeve will be rendered incapable of being used during transport, or demonstrate these holes can support the transportation forces in the same manner as the hoisting eyes.

The 50 mm holes in the external sleeve are used for positioning the container with its vertical axle, as specified in Figure 11 of the document. No mention is made as to how to prevent the inadvertent use of this package feature or whether the holes can support the transportation forces.

This information is required to determine compliance with the requirements of paragraph 608 of IAEA TS-R-1.

- 2.5 Provide all values of force, pressure, stress and torque in the appropriate SI units that are used in TS-R-1.

Throughout the document, force is presented in Kg vice N or KN, pressure and stress are presented in Kg/cm² vice Pa, kPa or MPa and torque is presented in Kgm vice N-m. These are the standard units used in TS-R-1 and TS-G-1.1.

This information is required to determine compliance with the requirements of paragraph 807(c) of IAEA TS-R-1.

- 2.6 Justify the use of railway transportation only for calculating the forces on the hoisting eyes.

The application states that "From analysis of Table I.1, it is evidently noticed that the most unfavorable case is railway transport." Table I.1, however, indicates that the downward acceleration for aircraft transport (6 g) is greater than that of railway transport (4 g), indicating that railway transport is not completely bounding.

Since the package is being certified for land, sea, and air transport, the inertia forces that bound all transportation cases should be considered.

This information is required to determine compliance with the requirements of paragraph 612 of IAEA TS-R-1.

- 2.7 Ensure the English translation is accurate and reflective of the text in the Spanish version of the application.

Staff has identified instances where the English translation is not accurate to the Spanish version, including changes to chemical formulas (e.g., O3O8 instead of U_3O_8), dimensions (e.g., 1 E-S Ci/g instead of $1E-5$ Ci/g) and other statements without a clear meaning, e.g., "Besides, aluminum is in contact with stainless steel components that do sustain any galvanic corrosion" - page 20 of document 2A and, "These stresses are much higher than the steel yield stress. Thus, the container is not affected by this test." (page 37 of document 2a).

This information is required to determine compliance with the requirements of paragraph 807 of IAEA TS-R-1.