

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



September 6, 2016

Ms. Lori Podolak
Regulatory Affairs Department
QSA Global, Inc.
40 North Avenue
Burlington, MA 01803

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR REVIEW OF THE MODEL
NO. SENTRY PACKAGE

Dear Ms. Podolak:

By letter dated May 18, 2016, QSA Global Inc., submitted an amendment request to the U.S Nuclear Regulatory Commission for Certificate of Compliance No. 9357 for the Model No. SENTRY transportation package.

In connection with the staff's review, we need the information identified in the enclosure to this letter. We request that you provide this information by September 30, 2016. Inform us at your earliest convenience, but no later than September 23, 2016, if you are not able to provide the information by that date. To assist us in re-scheduling your review, you should include a new proposed submittal date and the reasons for the delay.

Please reference Docket No. 71-9357 and CAC No. L25122 in future correspondence related to this request. The staff is available to clarify these questions, and if necessary to meet and discuss your proposed responses. If you have any questions regarding this matter, please contact me at 301-415-6577.

Sincerely,

/RA/

Bernard H. White IV, Senior Project Manager
Spent Fuel Licensing Branch
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-9357
CAC No. L25122

Enclosure:
Request for Additional Information

Ms. Lori Podolak
 Regulatory Affairs Department
 QSA Global, Inc.
 40 North Avenue
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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR REVIEW OF THE MODEL NO. SENTRY

Dear Ms. Podolak:

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Enclosure:
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NAME	MRahimi by email	JWise by email	JPiotter by email	JMcKirgan	
DATE	9/1/16	8/31/16	9/1/16	9/6/16	

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Request for Additional Information
QSA Global, Inc.
Docket No. 71-9357
Certificate of Compliance No. 9357
Model No. SENTRY Package

By application dated May 18, 2016, QSA Global, Inc., requested approval of an amendment for Certificate of Compliance No. 9357 for the Model No. SENTRY package. This request for additional information identifies information needed by the U.S. Nuclear Regulatory Commission (NRC) staff in connection with its review of the application. The requested information is listed by chapter number and title in the applicant's safety analysis report. NUREG-1609, "Standard Review Plan for Transportation Packages for Radioactive Materials," was used by the staff in its review of the application.

Each question describes information needed by the NRC staff for it to complete its review of the application and to determine whether the applicant has demonstrated compliance with regulatory requirements.

2.0 Structural Evaluation

1. For those components requested to be made of "300 series" or "400 series" stainless steels, specify the standard organization (i.e., ASTM or ASME materials) and publication date to which these materials will be fabricated, and show that there will not be any significant galvanic or chemical reactions that may occur as a result of contact between dissimilar materials.

It is assumed that a "300 series" or "400 series" refers to the ASME standard, however the drawings do not indicate the standard. It is unclear how these materials will interact metallurgically (galvanic or chemical reactions) with other components made of dissimilar materials that they may come into contact with. Additionally, it is not clear how future materials added to the 300 or 400 series standard will behave in this fashion.

This information is needed to determine compliance with Title 10 of the *Code of Federal Regulations* (10 CFR) 71.33(a)(5) and 71.43(d).

2. Provide the minimum yield strength, ultimate strength, and rupture strain for the following materials to be used for the washers, lock washers, rib nut, rib bolt, lock pin, shaft roll pin, shaft spring, retainer disc, knob, plunger lock screw, lock cover set screw, plunger lock screw, lock extension, and lock cover roll pin and cotter pin. Show that, for these components, the proposed material properties meet or exceed the material properties for the materials used in free drop for normal conditions of transport and hypothetical accident conditions and for lifting and tie-down.

Both "300 series" and "400 series" materials have a wide range of mechanical properties. These components will undergo loading during lifting, hypothetical accident conditions (free drop and puncture), and normal conditions of transport (vibration/fatigue and free drop). It is unclear how materials with potentially lesser mechanical properties

Enclosure

in the “300” or “400” series will behave during lifting/tie down operations, hypothetical accident conditions, and normal conditions of transport.

This information is needed to determine compliance with 10 CFR 71.45, 10 CFR 71.71, and 10 CFR 71.73.

3. Specify how shell Rivnuts, small Rivnuts, and large Rivnuts indicated on sheets 2 and 3 of the engineering drawings made of A493 material will meet or exceed currently approved material properties currently shown on the engineering drawings for these Rivnuts.

The applicant has requested the optional use of ASTM A493 steel for use with Rivnuts which potentially undergo loading during lifting and tie-down operations (shell Rivnuts), normal conditions of transportation (fatigue, vibration, drop tests) and hypothetical accident conditions (drop testing) for the large and small Rivnuts. This material specification includes a wide variety of mechanical material properties and variety of alloys. It is unclear how the mechanical properties of this material will continue to meet or exceed the mechanical properties of the NAS1330NBE-426 material used for Rivnuts currently called out on the plans and those used in the prototypes for drop testing the package. Specify the mechanical properties of the grade(s) to be used as there are many grades available within the ASTM A493 (Austenitic, Ferritic, and Martensitic are available) family with various yield strengths, ultimate strengths, and rupture strains. Also state how this material will preclude brittle fracture.

This information is needed to determine compliance with 10 CFR 71.45, 10 CFR 71.71, and 10 CFR 71.73.

4. Clarify the apparent discrepancy between Note 3 and Note 6 on Drawing No. R86000, Rev. No. S.

Note 3 requires “thread locker applied to all screws and rib bolts,” yet Note 6 on the same sheet indicates “lockwashers and thread lubricant used in place of threadlocker.” Combining both notes would clarify the use of lockwashers in lieu of threadlocker.

This information is needed to determine compliance with 10 CFR 71.33(a)(5).

5.0 Shielding Evaluation

Justify the use of reference dimensions for the depleted uranium shielding and show that the package can be expected to meet the regulatory dose rate limits in 10 CFR 71.47 accounting for expected manufacturing tolerances and defects.

NUREG-1609 "Standard Review Plan for Transportation Packages for Radioactive Materials" instructs the reviewer to evaluate design features important to shielding, specifically dimensions and tolerances. In addition, the standard review plan instructs the reviewer on two separate occasions to check for changes in dimensions and/or effectiveness of shielding resulting under normal conditions of transport or hypothetical accident conditions (Sections 5.5.3.1 and 5.5.3.2). Section 5.5.4.4 again mentions changes to shielding efficacy but instructs the reviewer to consider that, since pre-shipment measurements are required, other factors may be considered. However, the applicant has neither quantified expected changes to dose rates nor provided any justifications for bounding shielding assumptions in lieu of minimum dimensions.

This information is required to determine compliance with 10 CFR 71.47.