

October 9, 2013

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR REVIEW OF MODEL NO.  
360

Dear Ms. Podolak:

By letters dated May 28, 2013, as supplemented July 17 and August 8, 2013, QSA Global Inc., submitted an application for a new Certificate of Compliance (CoC) No. 9371 for the Model No. 360 transportation package.

In connection with the staff's review, we need the information identified in the enclosure to this letter. We request you provide this information by November 1, 2013. Inform us at your earliest convenience, but no later than October 25, 2013, if a substantial date change is needed. To assist us in re-scheduling your review, you should include a new proposed submittal date.

If you have any questions regarding this matter, please contact me at 301-287-9241.

Sincerely,

/RA/

Huda Akhavannik  
Licensing Branch  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 71-9371  
TAC No. L24754

Enclosure: Request for Additional Information

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

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360

Dear Ms. Podolak:

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Enclosure: Request for Additional Information  
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**ADAMS Accession No.: ML13282A633**

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<b>DATE:</b>	9/23/13	9/24/13	9/23/13	9/24/13	9/23/13	09/25/13
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<b>DATE:</b>	09/25/13	10/09/13				

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**Request for Additional Information**  
**QSA Global, Inc.**  
**Docket No. 71-9371**  
**Model No. 360 Package**

**2.0 Structural and Materials**

*Structural*

- 2-1 Editorial – Section 2.7.3.4, “Summary of Results,” in the Safety Analysis Report (SAR) states the following:

As demonstrated in Test Plan 199, Report #2, and described and assessed in Sections 2.7.3.1 through 2.7.3.3, the Model No. 360 Series transport package constructions satisfies the hypothetical accident condition 1 m (3.3 ft) drop test requirements of 10 CFR 71.73(c)(2).

Hypothetical accident conditions require a drop of 9 m (30 ft). Revise the SAR text to reflect this requirement.

- 2-2 Provide expanded discussion of Section 2.1.2, “Design Criteria.”

The discussion presented for the design criteria is incomplete. Referencing regulatory requirements and stating the following does not constitute defining design criteria:

“All design criteria are evaluated by a straightforward application of the appropriate section of these requirements.”

This information is needed to determine compliance with 10 CFR 71.33.

- 2-3 Provide a discussion on acceptance criteria.

No discussion was provided in the main body of the SAR which describes the acceptance criteria nor how the design criteria relate to acceptance criteria.

This information is needed to determine compliance with 10 CFR 71.35.

*Materials*

- 2-4 Describe in detail how all shielding material is fabricated, poured, and/or machined.

The SAR discusses three shielding parts to each shield assembly: the bottom, the center, and the top shields.

This information is needed to ensure compliance with 10 CFR 71.33(a)(5)(iii) and 71.39.

- 2-5 Describe in detail what materials are used to encase all shielding material and how these encasing materials are fabricated to cover the shielding material.

The SAR discusses three shielding parts to each shield assembly: the bottom, the center, and the top shields.

This information is needed to ensure compliance with 10 CFR 71.33(a)(5)(iii) and 71.39.

- 2-6 Describe in detail weld joint design, contamination of welds, and degradation of shielding material, should welding be used to encase all shielding.

The SAR discusses three shielding parts to each shield assembly: the bottom, the center, and the top shields.

This information is needed to ensure compliance with 10 CFR 71.33(a)(5)(iii) and 71.39.

- 2-7 Describe in detail how all foam material is installed, poured, injected, sprayed, etc.

The SAR discusses that for the depleted uranium (DU) shield assemblies, the small void space within the encased assembly is filled with polyurethane foam.

This information is needed to ensure compliance with 10 CFR 71.33(a)(5)(iii) and 71.39.

- 2-8 Describe in detail weld joint design, contamination of welds, and degradation of foam material, should welding be used against or next to foam material.

The SAR discusses three shielding parts to each shield assembly: the bottom, the center, and top shields.

This information is needed to ensure compliance with 10 CFR 71.33(a)(5)(iii) and 71.39.

- 2-9 Describe in detail how all foam material properties are verified following installation.

The SAR discusses that for the DU shield assemblies, the small void space within the encased assembly is filled with polyurethane foam.

This information is needed to ensure compliance with 10 CFR 71.33(a)(5)(iii) and 71.39.

## **5.0 Shielding**

- 5-1 Provide the uncertainties and biases associated with the shielding analyses for Se-75 and Yb-169 isotopes, and demonstrate that the package still meets the regulatory dose rate limits.

The applicant stated that for the isotope Ir-192, the dose rates were based on direct measurements. This approach is acceptable by the staff. However, for Se-75 and Yb-169 isotopes, dose rates were calculated using MicroShield, Version 7.01. MicroShield uses dose conversion factors (DCFs) from ICRP 51 for calculating effective dose equivalent (EDE) as well as organ dose equivalents and rates. This is different from the dose rate quantities in 10 CFR Part 71 which are equivalent dose rates. ICRP 51 DCFs underestimates dose rates while DCFs from ANSI/ANS-6.1.1-1977 provides more accurate dose values. In addition, the proposed shielding analyses for Se-75 and Yb-169 isotopes are based on reverse calculations using the regulatory dose rate limits. This is an acceptable approach. However, staff's evaluation found that the uncertainties were not addressed in the calculations. One way of addressing the above inaccuracies and uncertainties may be to use established biases and uncertainties based on measured and calculated dose for Ir-192, provided the particle energy spectrum bound that for Se-75 and Yb-169.

This information is needed to confirm compliance with 10 CFR 71.47 and 71.51

### **Editorial Request**

Please provide a revised SAR which incorporates the changes resulting from responses to this round of RAIs in which the pages are in numerical order as opposed to split by proprietary versus non-proprietary. A revised SAR incorporating these changes facilitates a smoother review process.