

**CERTIFICATE OF COMPLIANCE  
FOR RADIOACTIVE MATERIAL PACKAGES**

a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
9035	23	71-9035	USA/9035/B(U)-96	1 OF	3

2. PREAMBLE

- a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."
- b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

- a. ISSUED TO (*Name and Address*)  
QSA Global, Inc.  
40 North Avenue  
Burlington, MA 01803
- b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION  
QSA Global, Inc., application dated  
August 30, 2010, as supplemented.

4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

(a) Packaging

- (1) Model No.: 680-OP
- (2) Description

The Model No. 680-OP consists of a gamma ray projector within a protective steel container. The protective container is of welded steel construction and is approximately 32 inches (813 mm) long, 19 inches (483 mm) wide, and 18-1/2 inches (470 mm) high. Polyurethane foam and wood inserts locate the Model 680 series projectors in the center of the container and provide impact protection.

The 680 series projectors include the Model Nos. 680, 680E, 680A, 680AE, 680B and 680BE. The primary components of the projector consist of an outer steel shell, internal bracing, polyurethane foam, depleted uranium shield, and an "S" tube. The radioactive contents are securely positioned in the "S" tube by a source cable locking device and shipping plug. A 1/4-inch thick steel shipping plate is bolted over the source locking mechanism for additional protection during transport. Tamper-proof seals are provided on the outer steel container. The dimensions of the projector are approximately 21 inches (530 mm) long, 14-5/8 inches (372 mm) wide, and 11-13/16 inches (300 mm) high. The maximum weight of the package is 615 pounds (279 kg), and the maximum weight of the projector is 465 pounds (211 kg).

(3) Drawings

The packaging is constructed in accordance with QSA Global Inc., Drawing No. R68090, sheets 1-7, Rev. N, and R680-OP, sheets 1-7, Rev. N.

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	9035	23	71-9035	USA/9035/B(U)-96	2 OF	3

5.(b) Contents

(1) Type and form of material:

Cobalt-60 as sealed sources which meet the requirements of special form radioactive material.

(2) Maximum quantity of material per package:

110 curies (4.1 TBq) (output)

Output curies are determined by measuring the source output at 1 meter and expressing its activity in curies derived from the following: 1.30 R/h-Ci cobalt-60 at 1 meter (Ref: American National Standards Institute, N432-1980, "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography").

(3) Maximum weight of contents: 0.09 pounds (40 grams)

6. The source shall be secured in the shielded position of the packaging by the source assembly lock; lock cap and safety plug assembly. The source assembly lock, lock cap and safety plug assembly must be fabricated of materials capable of resisting a 1475°F fire environment for one half hour and maintaining their positioning function. The locking ball of the source assembly must engage the locking device. The flexible cable of the source assembly and shipping plug must be of sufficient length and diameter to provide positive positioning of the source in the shielded position.

7. The nameplates shall be fabricated of materials capable of resisting the fire test of 10 CFR Part 71 and maintaining their legibility.

8. In addition to the requirements of Subpart G of 10 CFR Part 71:

(a) The package must meet the Acceptance Tests and Maintenance Program of Section 8 of the application; and

(b) Each package shall be operated and prepared for shipment in accordance with Section 7 of the application.

9. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.

10. No support for replacement of "non-Posilock style" assemblies is allowed after September 2010. However, future manufacture and production of all package components, including the inner device, is authorized.

11. Lock assembly plate attachment bolts are authorized to be steel or stainless steel until July 31, 2016.

12. Revision No. 22 of this certificate may be used until July 31, 2016.

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9035	23	71-9035	USA/9035/B(U)-96	3 OF	3

13. Expiration date: October 31, 2020.

REFERENCES

QSA Global, Inc., application dated August 30, 2010.

Supplements dated: September 21 and 28, 2010; June 2, 2015.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION



Mark Lombard, Director  
Division of Spent Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Date: 6/19/15





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

**SAFETY EVALUATION REPORT**  
**Docket No. 71-9035**  
**Model No. 680-OP**  
**Certificate of Compliance No. 9035**  
**Revision No. 23**

**SUMMARY**

By application dated June 2, 2015, QSA Global, Inc. (QSA), requested amendment to Certificate of Compliance (CoC) No. 9035, for the Model No. 680-OP transportation package. QSA requested revising the CoC to include the ability to use a new version of the drawings. The drawings have been updated to include changes on the lock assembly plate attachment bolts, the end plate connecting tubes, the shell, the side frames, the lock (rear) plates, the selector ring, the door track, and the nameplate. Additionally, QSA requested removing American Welding Standard (AWS) revision dates and allowing the optional painting of steel components, excluding hardware.

As part of their request, QSA also requested renewal of the package.

Staff reviewed these changes and concludes that they do not affect the ability of the package to meet the requirements of 10 CFR Part 71. The package has been renewed for a 5 year term.

**EVALUATION**

By application dated June 2, 2015, QSA requested amendment to CoC No. 9035, for the Model No. 680-OP transportation package. QSA requested revising the CoC to include the ability to use a new version of the drawings. The drawings have been updated to include changes on the lock assembly plate attachment bolts, the end plate connecting tubes, the side frames, the shell, the lock (rear) plates, the selector ring, the door track, and the nameplate. Additionally, QSA requested removing AWS revision dates and allowing the optional painting of steel components, excluding hardware. These changes are discussed in greater detail below.

In a previous revision of the licensing drawings, the lock assembly plate attachment bolts were supposed to be either steel or stainless steel. A later revision of the drawings done in 2010 required the bolts to be 302, 304, 304L, or 305 stainless steel meeting specifications listed in a table. It was later determined by the applicant that it would not be possible to demonstrate that the bolts are in compliance with the specifications in the table. Therefore, the table has been removed from the drawings and instead QSA requests specifying that the lock assembly plate attachment bolts are compliant with the requirements of ASTM F879, austenitic alloy Group 1, in either CW or CW1 condition. Additionally, QSA requested amending the CoC to allow for continued use of the packages with the stainless steel attachment bolts for a period of 1 year until all packages in service are updated to meet ASTM F879, austenitic alloy Group 1, in either CW or CW1 condition. Staff has reviewed the specified ASTM standard and determined as the minimum tensile strengths of ASTM F879, austenitic alloy Group 1, in either CW or CW1 condition is greater than those for ASTM 302, 304, 304L, or 305 steel, it is acceptable from the structural adequacy point of view. Additionally, staff had previously approved the already

installed steel or stainless steel bolts and determined the package will continue to be operated safely as they are replaced over the course of a year.

Another requirement added in 2010 is that the connecting tubes comply with ASTM A500. Previously, these parts were original cold drawn seamless low carbon steel. However, it was discovered that the production drawings in 2010 were not updated to include the standard. It was also discovered that some of the parts received include material certifications to ASTM A513 as opposed to ASTM A500. Therefore, QSA requests that the material specification for the connecting tubes allow for the previously approved cold drawn seamless low carbon steel, and also allow for the option of either the previously approved ASTM A500 standard or ASTM A513 for packages manufactured after June 2015. Any future service of already manufactured packages will have their parts replaced to meet these standards. Staff has reviewed the ASTM A513 standard and determined in addition to the previously approved options for cold drawn seamless low carbon steel and ASTM A500, it will provide assurance of safety and meet the requirements of 10 CFR Part 71.

Additionally, in 2010, a requirement was added which specified that the side frames of the package meet ASTM A36 as opposed to the original hot rolled steel. However, it was discovered that the production drawings were not updated with this change and so the side frames of the packages fabricated after the change do not comply with ASTM A36. As the hot rolled steel was an already approved material, QSA requests updating the drawings to specify that the material specification for the side frames allows for both the hot rolled steel and ASTM A36 for those packages fabricated after June 2015. Staff reviewed the application and determined that both the previously approved and already installed hot rolled steel and ASTM A36 previously approved in 2010 provide assurance of safety and meet the requirements of 10 CFR Part 71.

Another requirement added in 2010 was that the lock (rear) plate material complies with hot rolled steel to ASTM A1018. Previously, the material was specified to be cold drawn, flat 1018 steel. Again the production drawings were not updated with these changes at that time. QSA also asserts that hot rolled steel to ASTM A36 or ASTM A1011 will perform as well as parts compliant to ASTM A1018. Therefore, QSA requests updating the materials specification for this material to continue to allow for the previously approved and already installed cold drawn, flat 1018 steel but specify that plates installed after June 2015 meet ASTM A36, ASTM A1011, or the ASTM A1018 previously approved in 2010. Staff has reviewed and confirmed that hot rolled steels meeting ASTM A36 or ASTM A1011 will perform as well as previously approved ASTM A1018 material and will therefore provide assurance of safety and meet the requirements of 10 CFR Part 71.

Additionally, in 2010, a requirement for the selector ring material was added that it meets 304 stainless steel, compliant to CF-8 per ASTM A743. Previously, the material was approved as stainless steel not compliant to that standard. In this case, the production drawing was changed, but some of the parts accepted for use on the package in October 2010 were not certified to ASTM A743. These parts are accepted as 304 stainless steel without certification to ASTM A743. QSA requests updating the materials specification for the selector ring to be 304 stainless steel material, but that rings made after October 2010 must comply with the already approved CF-8 per ASTM A743. As both 304 stainless steel and 304 stainless steel complying with CF-8 per ASTM A743 have been previously approved, staff believes the use of these materials will continue to provide assurance of safety and meet the requirements of 10 CFR Part 71.

In 2010, a requirement to comply with ASTM A36 for the shell was added. Previously, the shell was specified to be hot rolled steel. The fabrication drawings were not updated at that time, and the parts accepted were compliant to ASTM A1018 as opposed to ASTM A36. Material compliant to ASTM A1018 is an appurtenant material for hot rolled sheets and strips. Therefore, QSA requested updating the drawing to allow for the hot rolled steel material and to also allow for shells made after June 2015 that are compliant with ASTM A36. Staff has reviewed ASTM A1018 and confirms that it is a form of hot rolled steel material. Staff additionally confirmed that the previously approved and already installed hot rolled steel material and the 2010 approval of material meeting ASTM A36 will continue to provide assurance of safety and meet the requirements of 10 CFR Part 71.

Another change requested by QSA on the shell is the weld specification called out on the drawings. The weld symbol has been changed to the correct symbol. A clarification was also added through a note in the drawing to specify that the welding will be completed to AWS D1.3 or AWS D1.1 as well as inspected by weld inspectors qualified to ASNT SNT-TC-1A. QSA indicated that although not specified previously, the welding on the shell assembly has always been performed and inspected to these standards and therefore are in compliance with the CoC. Staff reviewed the note and the corrected weld symbol and determined these clarifications and corrections will continue to meet the requirements of 10 CFR Part 71.

During continued review of the drawings, it was noted by the applicant that the quantity specified for the door track is currently listed as "2" when it should be "4." Additionally, a review was completed by the applicant on the nameplate and QSA requested changing note 9 on Drawing No. R680-OP, sheet 2, to exclude the nameplate. This note specifies meeting ASTM standards while the nameplate material is simply fireproof steel. Staff agrees that the steel fireproof material is adequate for the nameplate and has already required the material to be fireproof in Condition No. 7 of the CoC. The final changes requested are to remove all the AWS revision dates from the standards referenced in the drawings and to allow for optional painting of steel components, excluding hardware. Staff agrees that these changes would not affect the ability of the package to meet the structural and materials requirements of 10 CFR Part 71.

## **CONDITIONS**

Condition No. 5.(a)(3), "Drawings," has been updated to include the latest revision of the drawings, Revision N.

Condition No. 11 has been changed to allow authorization of stainless steel lock assembly plate attachment bolts for the period of a year.

Condition No. 12 used to be Condition No. 11 and has been updated to allow for continued use of the previous revision of this certificate for a year.

Condition No. 13 used to be Condition No. 12 and has been updated to reflect the new expiration date of October 31, 2020.

The references section has been updated to include this request.

## **CONCLUSION**

Based on the statements contained in the application, and the conditions listed above, the staff concludes that the changes indicated do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No. 9035, Revision No. 23,  
on 6/19/15.