

**CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES**

| 1. | a. CERTIFICATE NUMBER | b. REVISION NUMBER | c. DOCKET NUMBER | d. PACKAGE IDENTIFICATION NUMBER | PAGE | PAGES |
|----|-----------------------|--------------------|------------------|----------------------------------|------|-------|
| | 9027 | 21 | 71-9027 | USA/9027/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

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| <p>a. ISSUED TO (<i>Name and Address</i>)</p> <p>QSA Global Inc. 40 North Avenue Burlington, MA 01803</p> | <p>b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION</p> <p>QSA Global Inc., application dated August 30, 2010, Revision No. 11, as supplemented.</p> |
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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.: 741-OP
- (2) Description

The Model No. 741-OP consists of a gamma ray projector within a protective carbon steel container. The protective container is of welded steel construction and is approximately 32 inches (813 mm) long, 19 inches (483 mm) wide, and 18.5 inches (470 mm) high. Polyurethane foam and wood inserts locate the Model No. 741 series projectors in the center of the container and provide impact protection.

The 741 series projectors include the Model Nos. 741, 741A, 741B, 741E, 741AE, and 741BE. 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 ¼-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 19 1/8 inches (486 mm) long, 13 7/8 inches (352 mm) wide, and 11 3/8 inches (289 mm) in height. The maximum weight of the package is 510 pounds (231 kg), and the maximum weight of the projector is 360 pounds (162 kg).

(3) Drawings

The package is constructed in accordance with QSA Global Inc., Drawing Nos. R74190, Rev. M, sheets 1-7; R741-OP, Rev. J, sheets 1-7.

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5.

(b) Contents

(1) Type and form of material

Cobalt-60 as sealed source which meets the requirements of special form radioactive material.

(2) Maximum quantity of material per package:

Co-60: 33 curies (1.22 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) (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)

The content weight value is based on the weight of the full source wire assembly that can be transported in the package

(4) Maximum decay heat: 0.55 watts

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 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 nameplate 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 shall be prepared for shipment and operated in accordance with the Operating Procedures in Section 7 of the application; and

(b) The package must meet the Acceptance Tests and Maintenance Program of Section 8.0 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 welding repair or no new fabrication of the projector is authorized.

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11. Revision No. 20 of this certificate may be used until October 31, 2011.

12. Expiration date: October 31, 2015.

REFERENCES

QSA Inc., application dated August 30, 2010, Revision No. 11.

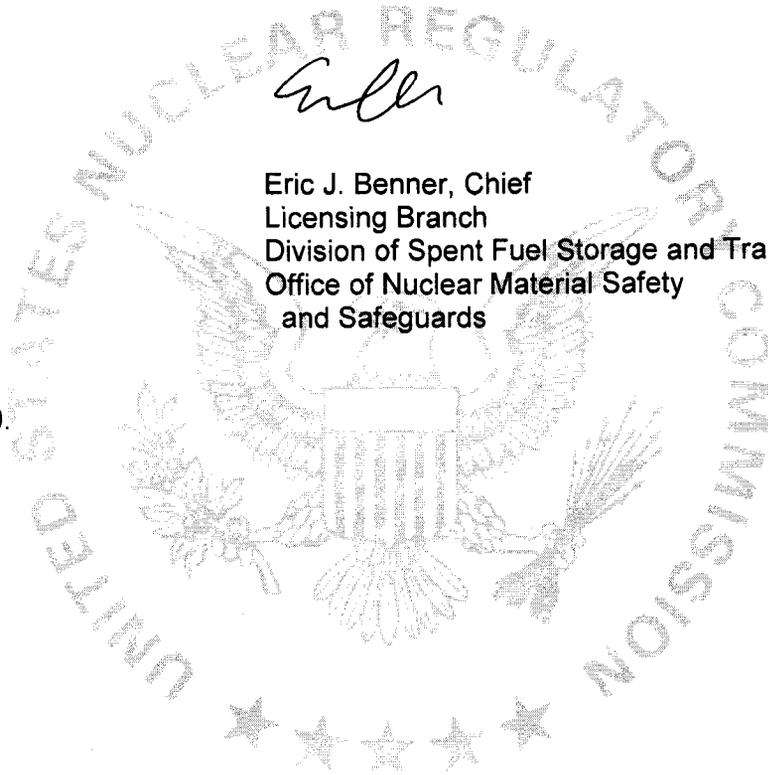
Supplement dated: September 28, 2010.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION



Eric J. Benner, Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Date: October 12, 2010.





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

SAFETY EVALUATION REPORT
Model No. 741-OP Package
Certificate of Compliance No. 9027
Revision No. 21

SUMMARY

By application dated February 22, 2010, and supplemented March 26, March 29, April 15, August 30, and September 28, 2010, QSA Global, Inc., (QSA) submitted an amendment request for the Model No. 741-OP package to include corrective measures taken to address issues identified in the 10 CFR 71.95 letter dated February 9, 2009. QSA also requested renewal of the Certificate of Compliance No. USA/9027/B(U)-96 for the Model No. 741-OP package. QSA submitted a consolidated application and requested that the package application review includes consideration of NUREG-1886, "Joint Canada-United States Guide for Approval of Type B(U) and Fissile Material Transportation Packages." The certificate has been renewed for a five year term.

NRC staff reviewed the application using the guidance in NUREG-1609, "Standard Review Plan for Transportation Packages for Radioactive Material" and NUREG-1886. Based on the statements and representation in the application, as supplemented, and the conditions listed below, the staff concludes that these changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71. Staff reviewed the application against NUREG-1886, and found that the highlighted areas of emphasis have been appropriately addressed.

EVALUATION

By application dated February 22, 2010, and supplemented March 26 and 29, April 15, August 30, and September 28, 2010, QSA submitted an amendment request for Certificate of Compliance (CoC) No. 9027 for the Model No. 741-OP package. The amendment request addressed issues identified in the 10 CFR 71.95 letter dated February 9, 2009. QSA also requested renewal of the Certificate of Compliance No. USA/9027/B(U)-96, and provided a consolidated application as specified in 10 CFR 71.38(c). QSA requested approval of the package under the auspices of NUREG-1886.

On February 9, 2009, QSA submitted a 10 CFR 71.95 report. The applicant had identified that documented weights for four Models No. 741-OP exceeded the maximum weight for the device and shield, i.e., 235 pounds (lbs) versus a maximum depleted uranium shield weight of 225 lbs as referenced on Drawing No. R74190, Revision G. The applicant submitted a first amendment request dated August 13, 2009. The applicant received a Request for Additional Information letter dated October 1, 2009, and responded by submitting a consolidated application on February 22, 2010, supplemented March 26 and 29, April 15, August 30, and September 28, 2010.

The amendment request included an increased maximum weight for the depleted uranium shield from 225 lbs to 235 lbs to correct the discrepancy noted above, and the documentation of all historical fabrication of the inner devices contained within the Model No. 741-OP transport package.

The requested increase of the maximum weight for the depleted uranium shield from 225 lbs to 235 lbs translates to a weight increase of less than 5%. Despite this increase, the permissible maximum weight of the projector, as well as the permissible maximum overall weight of the entire package, including its overpack of 510 lbs, does not increase. According to Test Plan 82, accompanying the December 1998 application, additional lead was added around the shield to limit the surface dose of radiation, such that the maximum weight of the projectors used in testing was 358 lbs, representing the heaviest unit in the field. By increasing the mass of the depleted uranium shield, the applicant is proposing to reduce the maximum weight of additional lead, but not to alter the total mass of the shield material(s). Therefore, the staff finds that the applicant's request is reasonable and does not require any additional engineering evaluation. In addition, the staff notes that from a thermal and radiological standpoint, the increased weight of the depleted uranium shield (and resultant decrease of the maximum quantity of lead added to the exterior of the shield) could be considered beneficial, as some of the added lead shielding will melt during hypothetical fire accident conditions.

The applicant clarified that component safety classification is based on NUREG/CR-6407 and that Quality Class A components on the package are important to safety (ITS). The licensing drawings have been revised to specify the welding codes used.

Material specifications for the steel components of the overpack box have been specified on the licensing drawings and the applicant clarified that the ITS steel sheet, i.e., shell weldment of the Model No. 741 projector, will meet the American Society for Testing and Materials (ASTM) A1018 standard. The A1018 does not list mandatory minimum properties, only typical properties. Since the projector itself was not damaged during the drop accident, the staff finds this clarification acceptable.

The applicant requested that the nylon webbing applied to the wood inserts inside the overpack be considered optional. As this will not affect the operation of the package, the staff finds this change acceptable.

The applicant clarified that the locking component is either a lock slide (for Model Nos. 741B, 741BE, 741A or 741BE) or locking pins (for Model Nos. 741 or 741E) and that, in both cases, the locking component is a Quality Class A item machined to drawings supplied by QSA. Materials' specifications for the lock slide and locking pin components have been added to the licensing drawings, as components important to safety.

The applicant clarified that fasteners which are important to the safe operation of the Model No. 741-OP package, which are replaced as part of the maintenance program, will either have minimum mechanical properties specified on the licensing drawings or will be specified by an ASTM or SAE standard. This change is consistent with the guidance in Section 2.5.2.1 of NUREG 1609, "Standard Review Plan for Transportation Packages for Radioactive Material," which the staff finds acceptable. This change ensures that the minimum mechanical properties for the fasteners are equal to or superior to the nominal properties of the fasteners already used. The applicant also noted the components of the Posilock assembly that are safety related and applied ASTM standards to the materials used for the fabrication of such components. The staff finds that the ASTM standards specified by the applicant are acceptable. The applicant also stated that there will be no support for replacement of non-Posilock style assemblies after September 2010. The staff finds these changes acceptable.

The applicant stated that there will be no future welding, including weld repairs, performed for the Model No. 741 radiography device, i.e., projector, described on drawing No. R74190,

Revision No. M. No new fabrication of this device will be performed. Only service and repair of the existing Model No. 741 projectors will continue, and such service and/or repair excludes welding. However, new overpacks for the Model No. 741 package will be fabricated.

The staff reviewed the consolidated application, as supplemented, and determined that the required documentation is available and complete. No changes were made to the operating and maintenance procedures.

Changes to Certificate of Compliance

The following changes have been made to the Certificate:

Condition No. 5(a)(3) was updated to include Revision M of Drawing Nos. R74190, and Rev. J, of Drawings Nos. R741-OP, sheets 1-7.

Condition No. 5(b)(2) was revised to clarify the derivation of the maximum quantity of Cobalt-60 in terms of output terabecquerels, and to include the corresponding radioactivity in units of curies.

Condition No. 5(b)(3) was added to indicate the maximum weight of the contents based on the weight of the full source wire assembly.

Condition No. 5(b)(4) was added to indicate the maximum source decay heat for Cobalt-60.

Condition No. 10 of the certificate was included to specify that no new fabrication or no new welding repair of the projector is authorized.

Condition No. 11 (previously known as Condition No. 10 in Revision No. 20 of the certificate) was revised to authorize use of the previous revision of the certificate for a period of approximately one year.

The August 30, 2010, submittal, supplemented September 28, 2010, supersedes all previous revisions of the application and was included in the References Section.

CONCLUSION

The certificate has been renewed for a five year term which expires on October 31, 2015. Based on the statements and representations contained in the application, as supplemented, and the conditions listed above, the staff concludes that the design of the Model No. 741-OP package has been adequately described and evaluated. 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. 9027, Revision No. 21,
on October 12, 2010.