U.S. Department of Transportation

Pipeline and Hazardous Materials Safety Administration

East Building, PHH-23
1200 New Jersey Ave, SE
Washington, D.C. 20590

COMPETENT AUTHORITY CERTIFICATION FOR A TYPE B(U) RADIOACTIVE MATERIALS PACKAGE DESIGN CERTIFICATE USA/9187/B(U), REVISION 16

The Competent Authority of the United States certifies that the radioactive material package design described in this certificate satisfies the regulatory requirements for a Type B(U) package as prescribed in the regulations of the International Atomic Energy Agency[1] and the United States of America[2] The package design is approved for use within the United States for import and export shipments made in accordance with applicable international and domestic transport regulations.

1. Package Identification - Model No. 865.

2. Package Description and Authorized Radioactive Contents - as described in U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9187, Revision 13 (attached).

3. General Conditions -

   a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.

   b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Engineering and Research, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.

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[1] "Regulations for the Safe Transport of Radioactive Material, 2018 Edition, No. SSR-6, Revision 1" published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

[2] Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

d. Records of Management System activities required by Paragraph 306 of the IAEA regulations[1] shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.

4. Special Conditions -

a. Aging Management protocols detailed in QSA Global In-Service Bulletin SB-29 dated January 2025 (attached) shall be followed.

5. Marking and Labeling - The package shall bear the marking USA/9187/B(U) in addition to other required markings and labeling.

6. Expiration Date - This certificate expires on August 31, 2028. Previous editions which have not reached their expiration date may continue to be used.

This certificate is issued in accordance with paragraph(s) 810 of the IAEA Regulations and Section 173.471 of Title 49 of the Code of Federal Regulations, in response to the July 30, 2025 petition by QSA Global, Inc., Burlington, MA, and in consideration of other information on file in this Office.

Certified By:

William Quade
Acting Associate Administrator for
Hazardous Materials Safety

September 03, 2025
(DATE)

Revision 16 - Issued to endorse U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9187, Revision 13 to the Regulations for the Safe Transport of Radioactive Material, 2018 Edition, No. SSR-6, Rev. 1.

NRC FORM 618
(8-2000)
10 CFR 71

U.S. NUCLEAR REGULATORY COMMISSION

CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES

a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE		PAGES
9187	13	71-9187	USA/9187/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 April 10, 2023, 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.: 865

(2) Description

A steel encased, uranium shielded radiographic exposure device 5" OD x 12.25" long. The device is provided with a handle and two triangular shaped legs. Primary components consist of an outer steel shell, internal bracing, depleted uranium shield, and a source tube. The contents are securely positioned in the source tube by a source holder assembly and actuator and locking assembly. Tamper-indicating seals are provided on the packaging and a 0.12-inch thick steel outer cover is bolted over the source actuator and locking assembly for additional protection during transport. The maximum total weight of the package is 60 pounds.

(3) Drawings

The packaging is constructed in accordance with QSA Global Drawing No. R86590, Sheets 1 through 7, Rev. M.

The package user should reference QSA Global, Inc., Drawing No. R865-User, Revision B, sheets 1-2.

5.(b) Contents

(1) Type and form of material:

Iridium-192 as sealed source must meet the requirements of special form radioactive material.

(2) Maximum quantity of material per package:

240 curies (8.9 TBq) (output)

Output curies are determined by measuring the source output at 1 meter and expressing its activity in curies derived from the following: 0.48 R/(h-Ci) Iridium-192 at 1 meter, (Ref: American National Standard N432-1980, "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography").

6. 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, as supplemented.

(b) Each packaging shall be maintained in accordance with the Maintenance Program in Section 8 of the application, as supplemented.

7. The packaging authorized by this certificate is hereby approved for use under the general license provision of 10 CFR 71.17.

8. Revision No. 12 of this certificate may be used until March 31, 2024.

9. Expiration date: March 31, 2029.

NRC FORM 618 (8-2000) 10 CFR 71			U.S. NUCLEAR REGULATORY COMMISSION		
CERTIFICATE OF COMPLIANCE FOR RADIOACTIVE MATERIAL PACKAGES					
a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
9187	13	71-9187	USA/9187/B(U)-96	3 OF	3

REFERENCES

QSA Global, Inc., application dated April 10, 2023.

Supplement(s) dated:

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Signed by Diaz-Sanabria, Yoira
on 08/15/23

Yoira Diaz-Sanabria, Chief
Storage and Transportation Licensing Branch
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

Date: August 15, 2023

QSA GLOBAL.

SERVICE BULLETIN.

865 Extended Inspection & Maintenance for IAEA SSR-6: 2018 Compliance

Purpose

This document provides information applicable to the inspection and maintenance of the Model 865 transport package to comply with IAEA SSR-6 (2018). In addition to ensuring the package is in accordance with the operating instructions supplied with the transport package, per 10 CFR 71.87 and 71.89, specifically Sections 7 & 8 of the Model 865 Safety Analysis Report, compliance with this bulletin is required for all packages shipped under a USDOT certificate, or other foreign Type B certification, endorsed to IAEA SSR-6 (2018).

Package Inspection & Maintenance Requirements

The Model 865 package must be maintained regularly by trained and qualified personnel to ensure the package complies with applicable Type B(U) or Type A approval requirements and the package maintains its integrity during transport.

The recommended inspection and maintenance requirements are based on the system's design, application, materials, anticipated work cycles, environmental factors of use under the normal and abnormal conditions of transport. A program of systematic maintenance will prolong the working life of the package in addition to ensuring safety during transport and use. By most national radiographic regulations, routine maintenance of the systems is required at intervals not to exceed 3 months in addition to the daily inspections for obvious defects. The complete annual servicing ensures the integrity of the system.

Maintenance program administrators must recognize the need for maintenance intervals that are less than the required 3-month interval especially in cases where the systems are used in severe environmental conditions. Maintenance program administrators must ensure the systems are completely serviced immediately after certain jobs in severe conditions. Extreme or severe conditions may include, but is not limited to conditions where the equipment was:

- Immersed in water or mud.
- Subjected to high-concentrations of particulate such as fly ash, sand or foundry green-sand.
- Subjected to hot radiography conditions.
- Subjected to salt-water conditions, caustic or acidic materials.
- Subjected to accidental drops or falling objects.
- Whenever subjected to extreme environmental conditions.

The routine maintenance performed every 3 months (see Section 4) requires a more indepth inspection and check of the package. The complete maintenance (performed once a year or after removal from long term storage – see Section 5) involves a complete disassembly, cleaning, inspection, re-lubrication and operational tests of the major assemblies on the package.

Personnel performing the inspections and maintenance in this bulletin must be adequately trained and approved to perform these duties. Personnel approved and qualified under either a USNRC approved QA program or an ISO 9001 QA program to perform Type B container inspection and maintenance would meet the training requirements in this bulletin.

865 Extended Inspection & Maintenance for IAEA SSR-6: 2018 Compliance

1. General Requirements

a. The Model 865 transport packages must be loaded and closed in accordance with procedures that, at a minimum, include the requirements in Sections 7 & 8 of the SAR and this bulletin. Shipment of Type B quantities of radioactive material are authorized for sources specified in Section 2. Maintenance and inspection of these packages is in accordance with the additional requirements specified in Section 3 through 5.

NOTE: Package conformance after storage and prior to use for Type B shipments is ensured by proper inspection and maintenance. The materials used in the Model 865 package are not vulnerable to degradation due to irradiation over time, and there will typically be no chemical/galvanic material interactions between package materials during storage so long that the package is not exposed to hazardous chemicals and is stored under controlled environmental conditions[1].

For packages removed from storage and prior to shipment, the package components are inspected for any degradation due to non-use/storage. Any degradation identified will prevent the package use for shipment until correction by replacement, service and/or repair. (Reference: IAEA SSR-6 §503(e) & 613A).

b. Results of package inspections and maintenance covered in this bulletin must be recorded and include, at a minimum,

- The date of inspection and maintenance.
- Name and signature of the qualified individual performing the required inspections.
- Problems found and maintenance or repairs performed.
- Model number and serial number of the exposure device and transport container.
- Associated equipment that was inspected and maintained.
- Part numbers and associated lot numbers or serial numbers of replacement parts installed

If any defective/damaged components are identified on the package or source, they must be removed from transport use and identified with a status indicator (tag, label, or tape) to prevent inadvertent shipment or use. Defective or damaged components must be repaired or replaced before continued use of the Model 865 package (or source assembly as applicable) in transport.

NOTE: Service/repair of any 865 package component, including replacement of any package components, must be performed by, or under the direction and approval of, QSA Global, Inc. only.

Contact QSA Global, Inc. if additional guidance or assistance is needed to determine actions needed to deal with defective/damaged equipment.

[1] Storage of the Model 865 package must be in a temperature and humidity controlled area away from chemicals or other hazardous substances to prevent degradation of the package integrity while in storage.

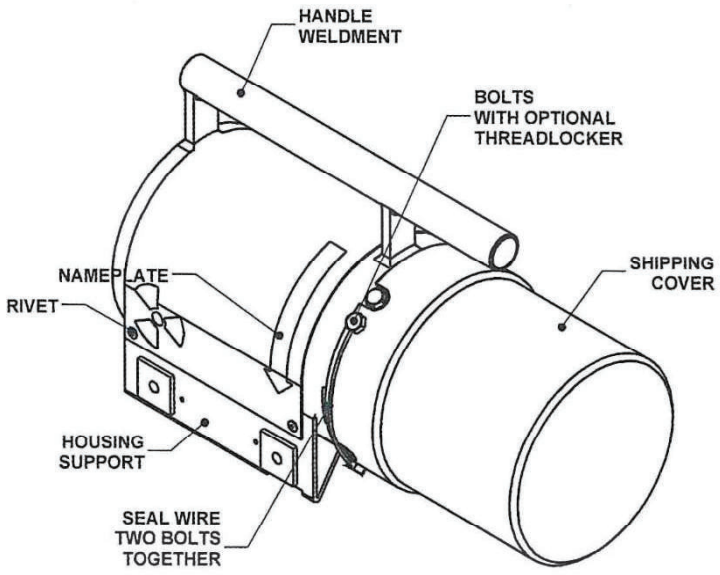
2. Authorized Package Contents

The Model 865 transport package is designed for use with a special form source capsules as approved under a U.S. Department of Transportation special form certification[2]. The Model 865 is approved for a maximum activity of 240 Ci (8.89 TBq) of Ir-192. Details of encapsulation as well as chemical and physical form of the radioactive material will comply with specifications approved under U.S. Department of Transportation or other Competent Authority special form certifications.

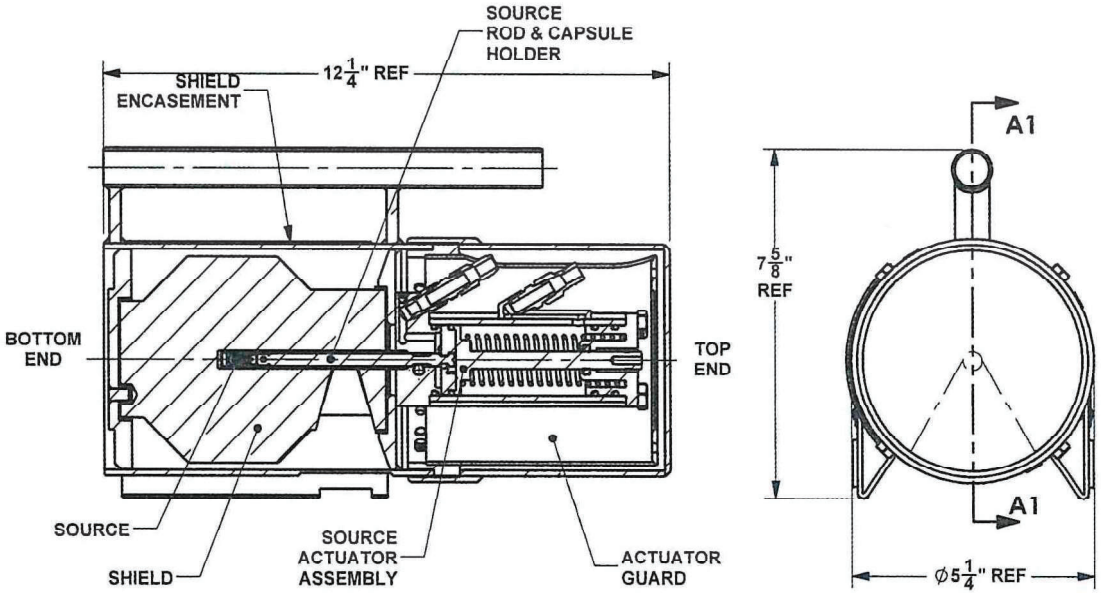
Table A: Model 865 Package Information

Model	Nuclide	Maximum Capacity[3]	Maximum DU Weight	Maximum Weight
865	Ir-192	240 Ci (8.89 TBq)	42 lbs (19 kg)	60 lbs (27 kg)

3. Packaging Maintenance and Inspection Prior to Shipment and Quarterly Maintenance and Inspection



[2] Special Form is defined in 10 CFR 71, 49 CFR 173, IAEA TS-R-1 and SSR-6.
[3] Maximum Capacity Activity for Ir-192 is defined as output Curies as required in ANSI N432 and 10 CFR 34.20 and in line with TS-R-1/SSR-6 and Rulemaking by the USNRC and the USDOT published in the Federal Register on 26 January 2004.



SECTION A1-A1

PART NAME	QTY
SHIELD ENCASEMENT	1
SHIELD	1
SOURCE ROD & CAPSULE HOLDER	1
SOURCE ACTUATOR ASSEMBLY	1
HANDLE WELDMENT	1
HOUSING SUPPORT	1
SHIPPING COVER	1
ACTUATOR GUARD	1
NAMEPLATE	1
RIVETS	4
BOLTS	8
SEAL WIRE	AR
THREADLOCKER	AR

a. If the package has been in storage for 1 year or longer, inspection to the requirements in Section 4 must be completed in addition to the maintenance and inspection listed in this section prior to making a Type B shipment of the package[4]. Contact QSA Global, Inc. for guidance on shipment of the package for full annual service.

b. Ensure all markings are legible and the labels are securely attached to the package. If a source is loaded in the package, inspect the legibility and attachment of the source identification tag that describes the radioactive source contained in the package.

c. Inspect the container for signs of significant degradation. Ensure all welds are intact, the container is free of heavy rust and cracks/damage to the steel housing which breaches the container. If there is any evidence of bent or cracked welds contact QSA Global, Inc. prior to shipping.

[4] Note that the source in the Model 865 must be decayed to a Type A quantity and the package relabeled for Type A shipment prior to return for service at QSA Global, Inc. and continued use of the package for Type B shipments.

d. Inspect the actuator assembly is securely attached to the body of the Model 865 package. Grasp the entire actuator assembly with one hand and try to move it to determine that the screws have not loosened due to vibration. Ensure that the actuator assembly attachment bolts are safety wired in pairs.

e. Inspect the plunger lock to ensure the lock will engage when the plunger is depressed, and the key is removed.

f. Assure all bolts and fasteners (hardware) required for assembly of the package and as specified on the drawings referenced on the Type B transport certificate are fit for use. Examine the visible external surfaces of the bolts/fasteners for any signs of damage including fatigue cracking. (NOTE: Do not remove the actuator assembly attachment bolts. Examine the bolt heads as installed for these bolts.)

   Note: A visual examination of the actuator attachment bolt thread condition is performed after removal from the exposure device as part of the Annual maintenance inspections required for radiography devices under 10 CFR 34.31 or equivalent Agreement State regulations and as specified in Section 4 of this bulletin.

   The bolts/fasteners must be replaced if they are no longer fit for use (e.g., threads stripped, unable to fully thread, signs of cracking, etc.). Ensure any replacement hardware meets all applicable specifications listed on the drawings referenced on the Type B transport certificate.

g. Return the protective cover to the package and secure it to the package with the plunger lock.

h. If the container fails any of the inspections in steps 3.a-g, remove the container from use until it can be brought into compliance with the Type B certificate.

i. Maintain records of the quarterly maintenance and inspection of the Model 865 package.

4. Packaging Annual Maintenance and Inspection

Model 865 package must receive inspection and maintenance at least once a year. Annual maintenance and inspection is performed by QSA Global, Inc. (or its approved service centers). The annual inspection and maintenance must be performed by individuals specifically trained, qualified and authorized for this work.

To perform the annual maintenance/inspection, the locking mechanism and actuator assembly must be removed from the package and disassembled for proper cleaning, inspection and lubrication of components that are critical to safety. These procedures can only be performed on an empty package, which requires transfer of the radioactive source assembly into an approved storage container.

A leak test of a sealed source must be performed every 6 months or prior to its first use after removal from storage. Acceptable results of a radio-assay must indicate removable contamination is less than <185 Bq (0.005 µCi). If the source requires a leak test, perform the test and obtain the results prior to transferring the source from the package into a source changer.

a. Complete the inspections in Section 3.b through 3.h.

b. Remove protective cover and the actuator guard from the Model 865 package by removing the 8, M6 x 1 x 12 mm hex head bolts that secure these items to the 865 body.

c. On the unloaded Model 865 (e.g., Ir-192 source removed), remove the actuator assembly and spacer sleeves (4) from the package by removing the safety wiring on the 4, 5/16-18 x 5" long actuator assembly attachment bolts and then removing the bolts from the package. Disassemble the actuator assembly. Remove the lock assembly from the actuator base by removing the 4-40 x 3/16 socket head caps screw from the actuator base and removing the assembly.

d. Replace all actuator assembly quad and O-ring seals. Place the remaining disassembled metallic parts into a pan filled with fresh, clean mineral spirits. Clean all parts using a brush to dislodge any dirt or grease. Once cleaned, remove the parts from the solvent bath, dry and place on a clean surface. Inspect all parts for signs of corrosion, excessive wear or damage. Replace worn parts as necessary.

e. Inspect the source rod and capsule holder components for damage/wear.

   i. Inspect the rod and source holder M6 threads for signs of damaged, stripping or galling. When assembled, the roll pin hole on both components must align to allow for insertion of the roll pin when loaded. Inspect the rod M7 threads used to attach the source rod to the actuator assembly for signs of damaged, stripping or galling. Ensure the source rod allows attachment to the actuator source engagement plate. Replace any damaged or non-conforming components.

   ii. The source rod and holder must not be bent or damaged in any way that would prevent smooth operation within the package for source exposure/retraction. Replace any damaged or non-conforming components.

   iii. Ensure the marking on the source holder is legible. Replace the source rod and holder is the marking is no longer legible.

f. Inspect the lock assembly for signs of wear or damage. Actuate the plunger lock and ensure the lock cylinder moves freely from the locked to the open positions. Replace any damaged or non-functional components. Reinstall the lock assembly into the actuator base by applying thread locker to the 4/40 x 3/16 socket head cap screw and securing the lock assembly to the base.

g. On the actuator assembly apply a light coat of lubricant to rings, piston, rod and inside of the cylinder then reassembly the actuator assembly. Reassembly the Model 865 package components minus the actuator guard and cover.

h. Pressurize the system to ensure the actuator assembly moves the source rod and holder assembly from the stored to the exposed position when energized and that the source rod and holder return to the stored position when pressure is removed. If the source rod/holder actuation is not smooth when pressurized/depressurized, the actuator assembly and source rod/holder assemblies must be disassembled and re-inspected to determine the cause for the operational issue.

i. If the package meets the requirements of 4 a. through h., complete an annual inspection sticker and apply to the top surface of the 865 body near the actuator base.

j. Reload the 865 with an Ir-192 source if desired. Safety wire the actuator assembly bolts in pairs after loading of the 865.

k. Re-attach the actuator guard and the cover to the 865 using the 8, M6 x 1 x 12 mm hex head bolts and attach a tamper indicating seal to two of these bolts prior to shipment.

l. Maintain records of this inspection and maintenance (see 1.b in this bulletin).

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1200 New Jersey Ave, SE
Washington, D.C. 20590

U.S. Department of
Transportation

**Pipeline and
Hazardous Materials
Safety Administration**

CERTIFICATE NUMBER: USA/9187/B(U)-96

ORIGINAL REGISTRANT(S):

QSA Global, Inc.
40 North Avenue
Burlington, MA, 01803
USA

Source Production and Equipment Company, Inc.
113 Teal Street
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