Canadian Certificate No.: **CDN/E175/ (Rev. 12)**
Issue Date: **Jun-25-2025**
Expiry Date: **Jul-04-2026**
CNSC File: **30-10-2-169**

Certificate

CDN/E175/ (Rev. 12)

Endorsement of Transport Package Design

No. USA/9269/B(U) (Rev. 14)

The transport package design identified below is certified by the Canadian Nuclear Safety Commission pursuant to paragraph 21(1)(h) of the *Nuclear Safety and Control Act* and Subsection 10(1) of the *Packaging and Transport of Nuclear Substances Regulations*, 2015 and to the IAEA's *Regulations for the Safe Transport of Radioactive Material*, 2018 Edition.

REGISTRATION OF USE OF PACKAGES

All users of this authorization shall register their identity in writing with the Canadian Nuclear Safety Commission prior to the first use of this authorization and shall certify that they possess the instructions necessary for preparation of the package for shipment.

PACKAGE IDENTIFICATION

Designer:	**QSA Global Inc.**
Make/Model:	**650L Source Changer**
Mode of Transport:	**Air, Sea, Road, Rail**

IDENTIFICATION MARK

The package shall bear the competent authority identification mark **"USA/9269/B(U)".**

PACKAGE DESCRIPTION

The QSA Global model 650L source changer, as further described in foreign certificate no. USA/9269/B(U) (Rev. 14), consists of a depleted uranium shielding assembly and a protective lid. The shield assembly has an inner rectangular shell surrounding the depleted uranium shielding and an outer cylindrical shell all positioned between top and bottom stainless steel plates retained by 4 stainless steel through bolts. A titanium "U" shaped source tube extends from the top plate into the depleted uranium. The free space between the uranium shielding and the inner and outer shells is filled with rigid polyurethane foam. Two radiography cable type source assemblies can be retained within the source tube, one on each side of the "U", with each positively retained in a locking assembly. A spring cap is screwed over each tube, to ensure that the source is held in the fully shielded position, and then the protective lid is bolted to the shield assembly. The locking arrangement positively retains each source in the shielded position through the use of a sliding key slot that captures the locking ball on the source cable either above or below the top plate of the shielding unit.

The containment system consists of the radioactive sealed sources. The sources are shielded with depleted uranium having a mass of approximately 20 kg.

An illustration of the package is shown on attached Drawing No. R65006 (Rev. R).

The configuration of the package is as follows:

Shape:	**Rectangular Cube**	Shielding:	**Depleted Uranium**
Mass:	**41 kg**	Outer Casing:	**Steel or Stainless Steel**
Length:	**254 mm**	Height:	**337 mm**
Width:	**210 mm**	Diameter:	**n/a**

AUTHORIZED RADIOACTIVE CONTENTS

The 650L source changer is authorized to contain either:

a) not more than 8.9 TBq output activity* of Ir-192 encapsulated in a sealed source with a valid special form radioactive material certificate, as follows:

i) QSA Global source Model No. 875 Series (source assembly Model Nos. A424-9, A426-1, 969 or 87703); or

ii) Source Production & Equipment Company source Model No. G-60; or

iii) Industrial Nuclear Company Inc. source Model No. A (source assembly Model No. 32); or

b) not more than 11.1 TBq of Se-75 encapsulated in QSA Global source Model No. A424-25W, A426-2 with a valid special form radioactive material certificate, within source assembly Model No. X540/1.

* Output activity is determined by measuring the dose rate at 1 meter and expressing its activity in Bq derived from the following gamma constant: 130 µSv/h-GBq (0.48 R/h-Ci) at 1 meter.

MANAGEMENT SYSTEM

The management system for the design, manufacture, testing, documentation, use, maintenance and inspection of the package shall be in accordance with:

- Foreign certificate no. USA/9269/B(U) (Rev. 14)
- Packaging and Transport of Nuclear Substances Regulations, 2015

SHIPMENT

The preparation for shipment of the package shall be in accordance with:

- Foreign certificate no. USA/9269/B(U) (Rev. 14)
- Packaging and Transport of Nuclear Substances Regulations, 2015

This certificate is valid only in Canada.

I. Tremblay
Designated Officer pursuant to paragraph 37(2)(a)
of the Nuclear Safety and Control Act

NOTES

Foreign Certificate No. USA/9269/B(U) (Rev. 14) attached.

Revision 6: December 15, 2014. Certificate revised.
Revision 7: October 29, 2015. Incorporation of revision 10 of the foreign certificate; certificate renewed.
Revision 8: July 18, 2017. Incorporation of revision 11 of the foreign certificate.
Revision 9: November 26, 2020. Incorporation of revision 12 of the foreign certificate.
Revision 10: August 22, 2023. Incorporation of revision 13 of the foreign certificate.
Revision 11: March 18, 2025. Certificate revised to incorporate new source assembly models (A426-1 and A426-2).
Revision 12: June 25, 2025. Incorporation of revision 14 of the foreign certificate.

Numéro du certificat canadien : **CDN/E175/ (Rév. 12)**
Date de délivrance : **juin-25-2025**
Date d'expiration : **juil.-4-2026**
Dossier de la CNSC : **30-10-2-169**

Certificat d'homologation

CDN/E175/ (Rév. 12)

Acceptation de la conception de colis de transport de l'étranger

n° USA/9269/B(U) (Rév. 14)

La Commission canadienne de sûreté nucléaire a procédé à l'homologation du modèle de colis décrit plus loin en vertu de l'alinéa 21(1)(h) de la *Loi sur la sûreté et la réglementation nucléaires* et de l'article 10(1) du *Règlement sur l'emballage et le transport des substances nucléaires* (2015) du Canada et du Règlement de l'AIEA, Édition de 2018, *Règlement de transport des matières radioactives* de l'Agence internationale de l'énergie atomique.

INSCRIPTION DE L'USAGE DU COLIS

Toute personne qui prévoit utiliser la présente autorisation pour la première fois doit s'inscrire par écrit auprès de la Commission canadienne de sûreté nucléaire et attester qu'elle possède les instructions nécessaires pour préparer le colis pour fins d'expédition.

IDENTIFICATION DU COLIS

Concepteur :	**QSA Global Inc.**
Marque/Modèle :	**changeur de source, modèle 650L**
Modes de transport :	**aérien, maritime, routier, ferroviaire**

MARQUE D'IDENTIFICATION

Le colis porte la marque d'identification **<<USA/9269/B(U)>>** de l'autorité compétente.

DESCRIPTION DU COLIS

Le changeur de source modèle 650L de QSA Global, tel que décrit plus en détail dans le certificat de l'étranger nº USA-9269/B(U) (rév. 14), est constitué d'un blindage d'uranium appauvri et d'un couvercle de protection. Le blindage est constitué d'une enveloppe interne rectangulaire entourrant le blindage d'uranium appauvri et d'une enveloppe cylindrique, le tout positionné entre une plaque supérieure et inférieure en acier inoxydable retenu par 4 boulons en acier inoxydable passant au travers. Un tube de source en "U" fait en titane s'étend de la plaque suppérieur jusque dans l'uranium appauvri. L'espace entre le blindage d'uranium et les enveloppes interne et externe est rempli de mousse de polyuréthane rigide. Deux assemblages de source de type à câble peuvent être retenues à l'intérieur du tube de source, une de chaque côté du tube en "U", chacune retenue par un appareil de verrouillage. Un capuchon à ressort est vissé sur chacun des tubes pour assurer le maintient de la source en position blindée et par la suite, un couvercle de protection est boulonné à l'assemblage blindé. L'arrangement du système de verrouillage retient positivement chacune des sources dans la position blindée par l'utilisation d'un

logement de clavette coulissante qui capture la bague de verrouillage du câble de source, soit au-dessus ou en-dessous de la plaque supérieure de l'unité blindée.

L'enveloppe de confinement est constituée des sources radioactives scellées. Le blindage pour les sources est constitué d'uranium appauvri d'une masse approximative de 20 kg.

Une illustration du colis est montrée sur le dessin nº R65006 (Rév. R), ci-joint.

La configuration du colis est la suivante:

Forme :	**Cube rectangulaire**	Blindage :	**Uranium Appauvri**
Masse :	**41 kg**	Enveloppe extérieure :	**Acier ou Acier inoxydable**
Longueur :	**254 mm**	Hauteur :	**337 mm**
Largeur :	**210 mm**	Diamètre :	**n/a**

CONTENU RADIOACTIF AUTORISÉ

Le changeur de source de modèle 650L ne doit pas contenir plus de :

a) 8,9 TBq en activité de sortie* d'iridium 192 encapsulé dans une source scellée ayant un certificat de matière radioactive sous forme spéciale valide, comme suit:

i) un modèle de source de la série nº 875 de QSA Global (modèles d'assemblage de la source nº A424-9, A426-1, 969 ou 87703); ou

ii) le modèle de source nº G-60 de Source Production & Equipment Company; ou

iii) le modèle de source nº A de Industrial Nuclear Company Inc. (modèle d'assemblage de la source nº 32); ou

b) 11,1 TBq de sélénium 75 encapsulé dans le modèle de source nº A424-25W, A426-2 de QSA Global, ayant un certificat de matière radioactive sous forme spéciale valide, et contenu dans le modèle d'assemblage de la source nº X540/1.

*L'activité de sortie est déterminée en mesurant le débit de dose à 1 mètre et en exprimant son activité en Bq telle que dérivée de la constante gamma suivante : 130 µSv/h-GBq (0,48 R/h-Ci) à 1 mètre.

SYSTÈME DE GESTION

Le système de gestion visant la conception, la fabrication, les épreuves, l'établissement des documents, l'utilisation, l'entretien et l'inspection du colis doit être conforme aux :

- Certificat de l'étranger nº USA/9269/B(U) (rév. 14)
- Règlement sur l'emballage et le transport des substances nucléaires (2015)

EXPÉDITION

La préparation du colis pour fins d'expédition doit être conforme aux :

- Certificat de l'étranger nº USA/9269/B(U) (rév. 14)
- Règlement sur l'emballage et le transport des substances nucléaires (2015)

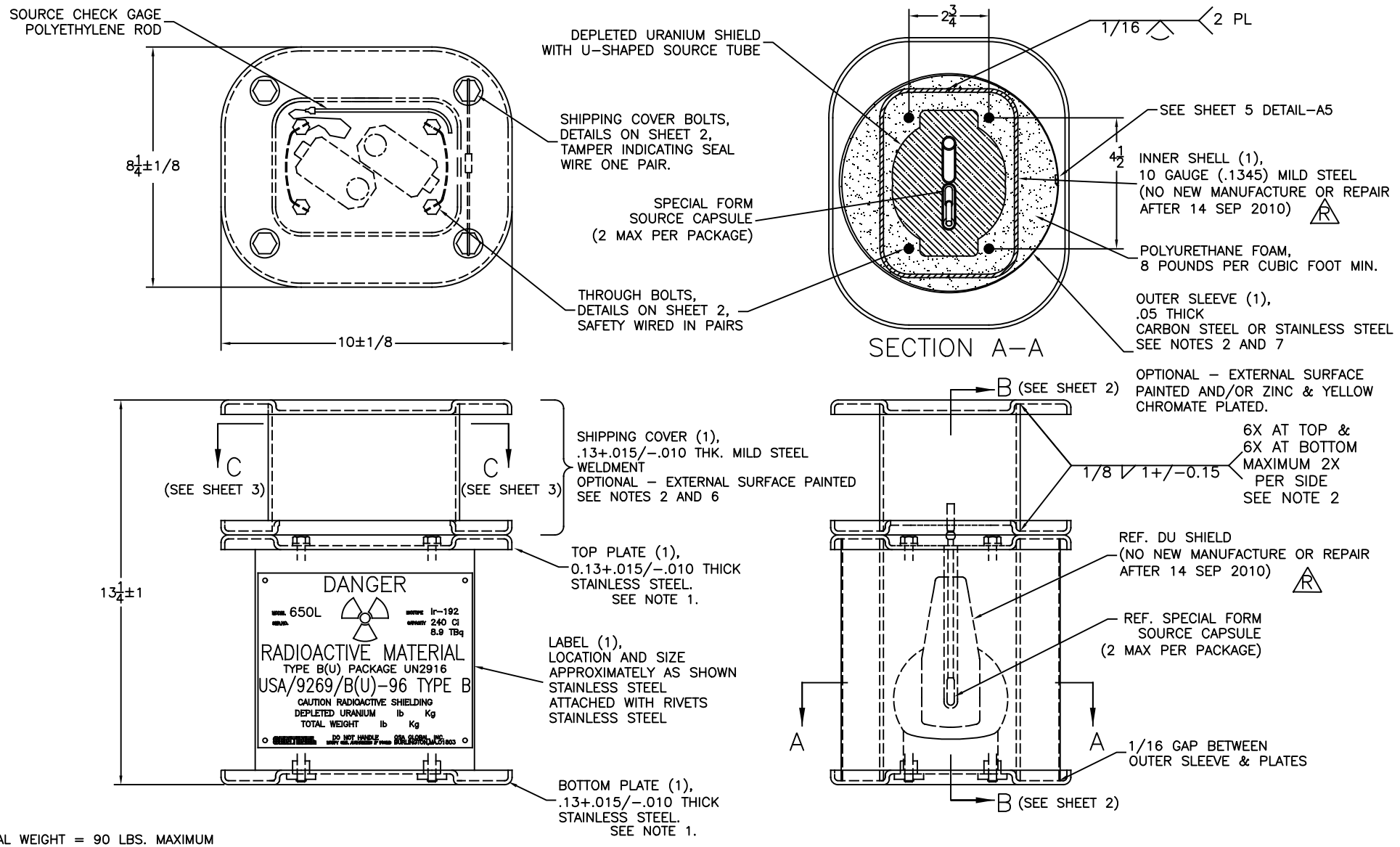
Le présent certificat n'est valide qu'au Canada.

I. Tremblay
Fonctionnaire désignée en vertu de l'alinéa 37(2)(a)
de la *Loi sur la sûreté et la réglementation nucléaires*

NOTES

Certificat de l'étranger nº USA/9269/B(U) (Rév. 14) ci-joint.

Révision 6 : le 15 décembre 2014 : Certificat révisé.
Révision 7 : le 29 octobre 2015. Incorporation de la révision 10 du certificat de l'étranger; renouvellement du certificat.
Révision 8 : le 18 juillet 2017. Incorporation de la révision 11 du certificat de l'étranger.
Révision 9 : le 26 novembre 2020. Incorporation de la révision 12 du certificat de l'étranger.
Révision 10 : le 22 août 2023. Incorporation de la révision 13 du certificat de l'étranger.
Révision 11 : le 18 mars 2025. Révision du certificat afin d'ajouter deux nouveaux modèles d'assemblage de source (A426-1 et A426-2).
Révision 12 : le 25 juin 2025. Incorporation de la révision 14 du certificat de l'étranger.



TOTAL WEIGHT = 90 LBS. MAXIMUM

DEPLETED URANIUM SHIELD WEIGHT = 44 LBS. MAXIMUM

SUPPLEMENTAL LEAD WEIGHT = 10 LBS. MAXIMUM.

SEE SHEET 5 FOR ADDITIONAL NOTES.

E-SIGNED by Lori Podolak on 2022-10-25 13:18:28 GMT

E-SIGNED by Paul Benson on 2022-10-25 13:02:30 GMT

E-SIGNED by Dave wood on 2022-10-25 12:59:26 GMT

REVISIONS			
DESCRIPTION	APPROVALS	DATE	LTR
SEE ERF 4478			R

DIMENSIONS IN INCHES

TOLERANCES:
FRACTIONS ± 1/16
.X ± 0.1
.XX ± 0.01
.XXX ± 0.005

QSA GLOBAL.

40 NORTH AVE, BURLINGTON, MA 01803

DESCRIPTIVE DRAWING

TITLE 650L SOURCE CHANGER

SIZE	DWG. NO.	REV
A	R65006	R

SCALE: NONE | SHEET 1 OF 5

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

U.S. Department of Transportation

Pipeline and Hazardous Materials Safety Administration

COMPETENT AUTHORITY CERTIFICATION FOR A TYPE B(U) RADIOACTIVE MATERIALS PACKAGE DESIGN CERTIFICATE USA/9269/B(U), REVISION 14

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 650L Source Changer.

2. Package Description and Authorized Radioactive Contents - as described in U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9269, Revision 14 (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.

[1] "Regulations for the Safe Transport of Radioactive Material, 2018 Edition, No. SSR-6. Rev. 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-25 dated December 2024 (attached) shall be followed.

5. Marking and Labeling - The package shall bear the marking USA/9269/B(U) in addition to other required markings and labeling.

6. Expiration Date - This certificate expires on July 4, 2026. 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 February 20, 2025 petition by QSA Global, Inc., Burlington, MA, and in consideration of other information on file in this Office.

Certified By:

William Schoonover
Associate Administrator for Hazardous Materials Safety

March 03, 2025
(DATE)

Revision 14 - Issued to endorse U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9269, Revision 14, 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
9269	14	71-9269	USA/9269/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., consolidated application dated October 9, 2024.

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.: 650L

(2) Description

A welded carbon or stainless steel cylindrical outer shell encases a welded carbon or stainless steel rectangular inner shell. The inner shell contains a titanium "U" tube set in depleted uranium along with internal supports. The tube is crimped in the middle of the "U" to provide a positive stop for the source assembly. Additional shielding is provided by lead or tungsten positioned at various locations around the depleted uranium shield. The Model No. 650L has two source locking assemblies, mounted on the top cover plate, that are used to secure the radioactive special form source, Iridium-192 or Selenium-75, in a shielded position during transport. The packaging measures approximately 10-inches (254 mm) wide, 13.25-inches (337 mm) high and 8.25-inches (210 mm) deep. The maximum weight of the packaging is 90 pounds (41 kg).

(3) Drawings

The packaging is constructed in accordance with QSA Global, Inc., Drawing No. R65006, Revision R, sheets 1-5.

(b) Contents

(1) Type and form of material

Iridium-192 as sealed sources which meet the requirements of special form radioactive material.

5.(b) Contents (continued)

Selenium-75 as sealed sources which meet the requirements of special form radioactive material.

(2) Maximum quantity of material per package

Ir-192: 240 curies (8.9 TBq) (output)

Se-75: 300 curies (11.1 TBq) (content)

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").

(3) Maximum weight of contents

0.08 pounds (36 grams), including the mass of radioactive material and the weight of the source capsule handling wire assembly for a shipment containing two source wire assemblies.

(4) Maximum decay heat

Ir-192: 4.8 Watts

Se-75: 1.52 Watts

6. The source shall be secured in the shielded position of the packaging by the source assembly. The source assembly must be fabricated of materials capable of resisting a 1475ºF fire environment for one-half hour and maintaining its positioning function. The cable of the source assembly must engage the source hold-down assembly. The flexible cable of the source assembly must be of sufficient length and diameter to provide positive positioning of the source at the crimp of the "U" tube.

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 shall be prepared for shipment in accordance with the Operating Procedures in Chapter 7 of the application, and

(b) The packaging shall be maintained in accordance with the Maintenance Program in Chapter 8 of the application.

9. Fabrication of new packagings is not authorized. Fabrication of replacement components needed to support shipment of existing packages is authorized, except for the depleted uranium shield and the inner carbon steel shell.

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

11. Expiration date: November 30, 2030.

REFERENCES

QSA Global, Inc., consolidated application dated October 9, 2024.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

THOMAS BOYCE

Digitally signed by THOMAS BOYCE
Date: 2025.02.19 18:18:01 -05'00'

Tom Boyce, Acting Chief
Storage and Transportation Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

Date: February 19, 2025

QSA GLOBAL.

SERVICE BULLETIN.

650L Extended Inspection & Maintenance for IAEA SSR-6: 2018 Compliance

Purpose

This document provides information applicable to the inspection and maintenance of the Model 650L 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 650L 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 650L packages 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. Routine inspection of the package is required prior to each shipment. In addition, a complete annual servicing of the 650L package is necessary to ensure the package integrity.

Maintenance program administrators must recognize the need for maintenance intervals that are less than the required annual interval, especially in cases where the package is used in severe environmental conditions. Maintenance program administrators must ensure the systems are completely serviced immediately after observed damage or after exposure to severe conditions. Extreme or severe conditions may include, but is not limited to, conditions where the package 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 complete, annual inspection and maintenance (also required after removal from long term storage – see Section 4) involves an enhanced inspection and service for package components and major assemblies.

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.

1. General Requirements

a. The Model 650L transport package 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 and 4.

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 650L packages 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 as 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 annual 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.
- Package model number (e.g., 650L) and the serial number.
- Associated equipment that was inspected and maintained.
- Part numbers and associated lot numbers or serial numbers, when applicable, of replacement parts installed.

If any defective/damaged components are identified on the package or source(s) contained in the 650L, 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 650L package in transport.

NOTE: Repair of any 650L package 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 to deal with defective/damaged 650L transport packages.

2. Authorized Package Contents

The Model 650L 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 approved isotopes and maximum package activity limits are shown in Table A. 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.

[1] Storage of the Model 650L packages should 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] Special Form is defined in 10 CFR 71, 49 CFR 173, IAEA TS-R-1 and SSR-6.

Table A: Isotopes Permitted in the Model 650L[3]

Isotope	Maximum Capacity[4]	Maximum DU Weight	Maximum Package Weight
Ir-192	240 Ci	44 lbs (20 kg)	90 lbs (41 kg)
Se-75	300 Ci		

3. Packaging Maintenance and Inspection Prior to Shipment

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.

b. Ensure all markings are legible including the package serial number and that the labels are securely attached to the package. Labels should be easily legible at a distance of roughly 3 ft (1 m) and contain all necessary information.

c. Inspect the package components for signs of damage or significant degradation. Ensure all welds are intact, the components are free of heavy rust and cracks/damage to the lid and container body, the lid and container flanges with no bends ≥ 20° from normal. If there is any evidence of damage which could adversely impact the package integrity for Type B transport, contact QSA Global, Inc. prior to shipping.

d. Assure all bolts, washers, nuts 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. Except for the lid cover bolts and fasteners, do not disassemble any of the other package hardware to perform this inspection. Examine the visible external surfaces for any signs of damage including fatigue cracking.

   Note: The hardware must be replaced if no longer fit for use (e.g., threads stripped, unable to fully thread, signs of cracking, galling, etc.). If replacement hardware is required, contact QSA Global, Inc. to obtain parts. This is necessary to ensure replacement hardware meets all applicable specifications listed on the drawings referenced on the Type B transport certificate.

e. Ensure the locking assemblies allow free movement of the lock slide when performing an operational test and that the plunger lock engages and is functional. Ensure the shipping caps install and secure over the source tubes on the lock assemblies.

f. Ensure the threaded holes used to secure the lid to the container body do not have damaged threads and engage the cover bolts. Threaded holes must not allow pass through without threading.

g. Ensure the package can be assembled, including attachment of a seal wire as identified on drawing R65009 Revision R.

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[3] Sources allowed for transport in the 650L as Type B quantities limited to special form as defined in 10 CFR 71, 49 CFR 173, IAEA TS-R-1 and SSR-6.
[4] 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.

h. If the 650L fails any of the inspections in steps 3.a-g, remove the package from use until it can be brought into compliance with the Type B certificate.

4. Packaging Annual Maintenance and Inspection

Model 650L packages must receive inspection and maintenance at least once a year. Annual maintenance and inspection must be performed by individuals specifically trained, qualified and authorized for this work.

NOTE: QSA Global, Inc. can perform annual inspection for customer owned 650Ls upon receiving a request for service.

To perform the annual maintenance/inspection, parts of the package must be disassembled and the major package sub-assemblies thoroughly cleaned and inspected to ensure the integrity 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(ies) 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. If the package has not received an annual inspection per this section within the last year or the package has been in storage for 1 year or longer, inspection to the requirements in this section must be completed.

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

c. Remove each lock assembly and disassemble. Replace all springs. Inspect all screws and fasteners (hardware) required for assembly of the lock assembly. Examine the screws and hardware visible external surfaces for any signs of damage including fatigue cracking.

Note: The hardware must be replaced if they are no longer fit for use (e.g., threads stripped, unable to fully thread, signs of cracking, galling, etc.). If replacement hardware or other lock assembly parts are required, contact QSA Global, Inc. to obtain parts. This is necessary to ensure replacement components meet all applicable specifications listed on the drawings referenced on the Type B transport certificate.

Reassembly both lock assemblies and attach them to the 650L container base. Ensure the locking assemblies allow free movement of the lock slide when performing an operational test and that the plunger lock engages and is functional. Install a safety wire to the lock assembly attachment screws as detailed on Sheet 3 of Drawing R65006 Rev R.

d. If the package meets the requirements of 4 b. through c., complete an annual inspection sticker and apply one to the 650L top plate near the serial number stamping.

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