



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/0832/B(U)-96, REVISION 1**

**REVALIDATION OF CANADIAN COMPETENT AUTHORITY
CERTIFICATE CDN/2100/B(U)-96**

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 Agency¹ and the United States of America² 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 - R7008, Serial Nos. 3750/01 to 3750/09 and 3750/17 to 3750/20.
2. Package Description and Authorized Radioactive Contents - as described in Canadian Certificate of Competent Authority CDN/2100/B(U)-96, Revision 1 (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, 2012 Edition, No. SSR-6" published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

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

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- 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 regulations¹ 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. Authorized radioactive contents must be in special form approved under the IAEA Regulations for the Safe Transport of Radioactive Materials.
- b. The contents must be limited in decay heat such that the maximum source temperature does not exceed 525 degrees centigrade under normal conditions of transport. The assessment of source temperature should be based on air being present in the cask cavity and in the shield region cavity.
- c. Authorized contents for air transport are restricted in accordance with paragraph 433 of the IAEA regulations cited by this certificate.

5. Marking and Labeling - The package shall bear the marking USA/0832/B(U)-96 in addition to other required markings and labeling.

6. Expiration Date - This certificate expires on March 31, 2025. Previous editions which have not reached their expiration date may continue to be used.

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This certificate is issued in accordance with paragraph(s) 810 of the IAEA Regulations and Section 173.473 of Title 49 of the Code of Federal Regulations, in response to the May 15, 2020 petition by Nordion (Canada) Inc., Ottawa, Ontario, and in consideration of other information on file in this Office.

Certified By:



May 22, 2020

(DATE)

 William Schoonover
Associate Administrator for Hazardous
Materials Safety

Revision 1 - Issued to revalidate Canadian Certificate of Approval
No. CDN/2100/B(U)-96, Rev. 1.



Certificate

CDN/2100/B(U)-96 (Rev. 1)

Transport Package Design

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, 2012 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: **Nordion (Canada) Inc.**
Make/Model: **R7008, Serial Nos. 3750/01 to 3750/09 and 3750/17 to 3750/20**
Mode of Transport: **Air, Sea, Road, Rail**

IDENTIFICATION MARK

The package shall bear the competent authority identification mark "**CDN/2100/B(U)-96**".

PACKAGE DESCRIPTION

The Model R7008 transport packaging, as shown on Reviss (Nordion UK) Drawing No. P/3750A/001, consists of a finned stainless steel encased depleted uranium (DU) shielded container, source holder, pallet and outer protective cage.

Shielding is provided by the interlocking DU with a radial thickness of 150 mm and the containment is provided by the special form capsules. The mass of depleted uranium is approximately 2,100 kg. The DU shielding is totally enclosed and sealed within the stainless steel structure, which provides mechanical and corrosion protection. The package is secured to a transport pallet and enclosed with a stainless steel wire mesh covered cage. The pallet allows the assembly to be handled by fork lift, transmits tie-down loads to the flask and acts as an energy absorber in certain impact orientations. The cage provides lifting and tiedown points and prevents access to hot flask surfaces whilst allowing free air circulation. The container is equipped with a removable shielding plug and drainline. Apart from the shielding all constructional materials, including the fasteners, are austenitic stainless steel.



An illustration of the package is shown on attached drawing R-7008 Transport Package.

Any modification to the package design must be submitted to the CNSC for approval prior to implementation.

The configuration of the package is as follows:

Shape:	Box	Shielding:	Depleted Uranium
Mass:	3573 kg	Outer Casing:	n/a
Length:	1360 mm	Height:	1370 mm
Width:	1360 mm	Diameter:	n/a

AUTHORIZED RADIOACTIVE CONTENTS

The R7008 package is authorized to contain not more than:

a) 12.6 PBq (340,200 Ci) of cobalt-60 in the form of metal pellets, slugs or wafers within the following capsules retained within a holder that distributes them throughout the cavity volume:

- i) capsule models C-188, C-198, C-446, C-450, R2089, R1820, R2010 with a valid special form radioactive material certificate; or
- ii) any other sealed source capsules with a valid special form radioactive material certificate;

or

b) 5.55 PBq (149,850 Ci) of cesium-137 in the form of cesium chloride within the following capsules retained within a holder that distributes them throughout the cavity volume:

- i) capsule models R6000, R6010, R6020, R6030, R6040, R6050, R6060, R6100, R6150, R6160, R6200, R6220, R6240, R6260 & R6270 with a valid special form radioactive material certificate; or
- ii) any other sealed source capsules with a valid special form radioactive material certificate.

The maximum content weight including the capsule holder is 27 kg.

The total decay heat shall not exceed 5.24 kW.

QUALITY ASSURANCE

Quality assurance for the design, manufacture, testing, documentation, use, maintenance and inspection of the package shall be in accordance with:

- Nordion Document No. IN/DS 2681 R7008 (1), "Design and Operating Specification for R7008 Transport Package"
- Nordion Document No. IN/QA 0224 Z000 (12)*, "Radioactive Material Transport Package Quality Plan"
- Nordion (Revis) Quality Manual, QM Issue 10 (applicable to packages designed and manufactured prior to March 1, 2020)



- Nordion (Reviss) Quality Manual, QM Issue 11* (applicable to packages designed and manufactured after March 1, 2020)
- Nordion Document No. IN/QA 0562 A000 (5)*, "Sealed Source Quality Plan"
- Packaging and Transport of Nuclear Substances Regulations, 2015
- IAEA Regulations for the Safe Transport of Radioactive Material, 2012 Edition
- * or latest current revision

SHIPMENT

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

- Nordion Document No. IN/DS 2681 R7008 (1), "Design and Operating Specification for R7008 Transport Package"
- Packaging and Transport of Nuclear Substances Regulations, 2015
- IAEA Regulations for the Safe Transport of Radioactive Material, 2012 Edition

For heat fluxes exceeding 15 W/m^2 , supplementary arrangements must be made with the carrier to ensure adequate heat dissipation.

Shipment under exclusive use is required when the content exceeds 10.8 PBq of cobalt-60 due to the surface temperature of the package.

The package shall not contain more than 1.2 PBq of cobalt-60 when transported by air.

This certificate does not relieve the consignor from compliance with any requirement of the government of any country through or into which the package will be transported.

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



NOTES

Revision 0: April 6, 2020. New certificate.

Revision 1: May 13, 2020. Certificate amended to correct Nordion's document number.



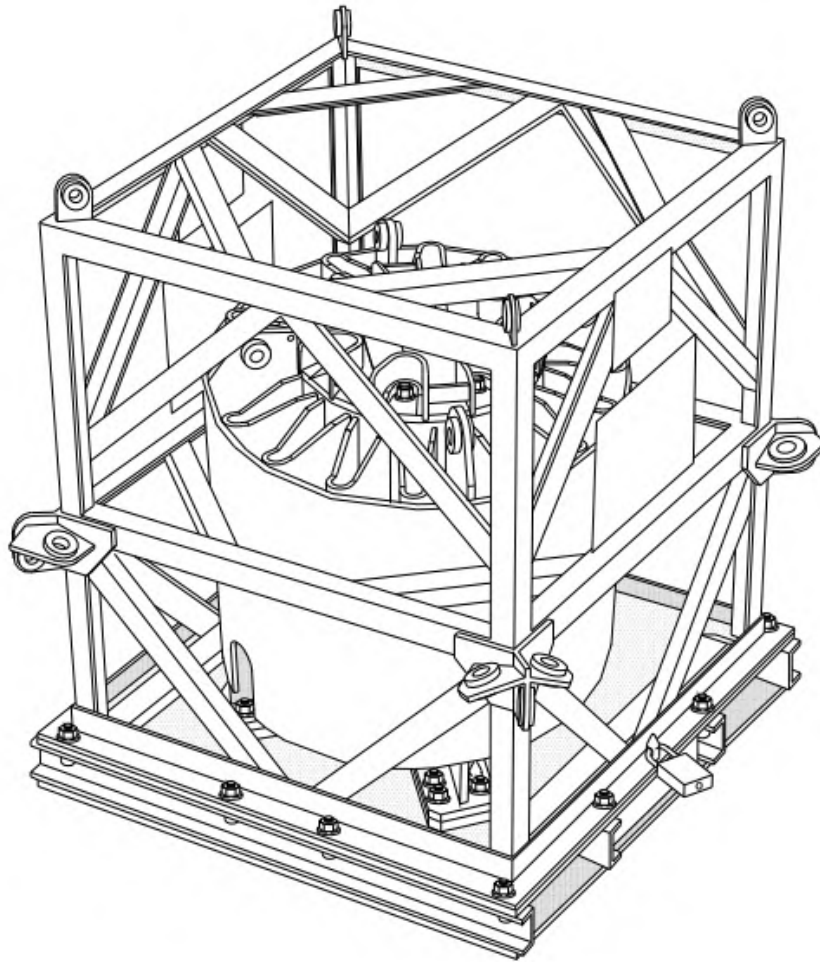


Illustration of R-7008 Transport Package



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CERTIFICATE NUMBER: USA/0832/B(U)-96

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