



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/0840/B(U)-96, REVISION 0
REVALIDATION OF CANADIAN COMPETENT AUTHORITY
CERTIFICATE CDN/2105/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 - R7021.
2. Package Description and Authorized Radioactive Contents - as described in Canadian Certificate of Competent Authority CDN/2105/B(U)-96, Revision 0 (attached). Authorized radioactive contents must be in special form approved under the IAEA Regulations for the Safe Transport of Radioactive Materials.
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 - Tiedowns must be restricted to those described in RTM 141.
 - 5. Marking and Labeling - The package shall bear the marking USA/0840/B(U)-96 in addition to other required markings and labeling.
 - 6. Expiration Date - This certificate expires on September 30, 2026.

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 November 1, 2021 petition by Nordion (Canada) Inc., Ottawa, Ontario, and in consideration of other information on file in this Office.

Certified By:



William Schoonover
Associate Administrator for Hazardous
Materials Safety

November 30, 2021
(DATE)

Revision 0 - Issued to endorse, with restrictions, Canadian Certificate CDN/2105/B(U)-96 (Rev. 0). Package was previously approved by the U.K. Certificate GB/3981A/B(U)-96 and endorsed by certificate USA/0788/B(U)-96.



Certificate

CDN/2105/B(U)-96 (Rev. 0)

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: **R7021, Serial Numbers 3981/08 to 3981/12**
Mode of Transport: **Air, Sea, Road, Rail**

IDENTIFICATION MARK

The package shall bear the competent authority identification mark "**CDN/2105/B(U)-96**".

PACKAGE DESCRIPTION

The model R7021 transport packaging, as shown on REVISS (Nordion UK) drawing No. R7021/001 (Issue H) consists of a cylindrical lead-shielded stainless steel flask with a shielded closure at the top, mounted on a pallet and protected from fire and impact by an outer jacket and top shield. The cylindrical cavity in the flask holds encapsulated radioactive sources in a basket. Containment is provided either by special form radioactive material or the flask itself with the three O-ring seals. Shielding is provided by lead with a radial thickness of 265 mm.

External fins are attached to the flask body to aid cooling and provide four lifting points. A stainless steel grill around the top of the jacket restricts access to hot surfaces. The closure has a vent point and the cavity has a drain tube to allow the flask to be operated in ponds as well as in cells. The closure and the drain and vent plugs are each equipped with an O-ring seal to maintain the containment.

An illustration of the package is shown on the attached drawing, Figure 1: R7021 transport container.



Any modification to the package design must be submitted to the Canadian Nuclear Safety Commission for approval prior to implementation.

The configuration of the package is as follows:

| | | | |
|---------|-----------------|---------------|----------------|
| Shape: | Cylinder | Shielding: | Lead |
| Mass: | 4600 kg | Outer Casing: | Steel |
| Length: | 1250 mm | Height: | 1685 mm |
| Width: | 1250 mm | Diameter: | n/a |

AUTHORIZED RADIOACTIVE CONTENTS

The package is authorized to contain not more than:

- a) 7.40 PBq (1.2 PBq when transported by air) of cobalt-60 in the form of metal pellets with the smallest overall dimension not less than 1 mm, maximum of 3,075 W of decay heat and contained in:
 - i. Nordion capsule models C-188, C-198, C-446, C-450 with a valid special form radioactive material certificate; or
 - ii. REVISS capsule models R2089, R1820, R2010 with a valid special form radioactive material certificate; or
 - iii. any other sealed source capsule models with a valid special form radioactive material certificate;

or

- b) 5.92 PBq (1.2 PBq when transported by air) of cobalt-60 in the form of metal pellets with the smallest overall dimension not less than 1 mm, maximum of 2,460 W of decay heat and contained in sealed capsule models that are non-special form radioactive material;

or

- c) 7.40 PBq (6.0 PBq when transported by air) of cesium-137 in the form of compressed cesium chloride powder, maximum of 969 W of decay heat and contained in:
 - i. REVISS 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 capsule models with a valid special form radioactive material certificate.

The basket design must prevent gross movement of the radioactive contents during routine, normal and accident conditions of transport.

MANAGEMENT SYSTEM

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

- Nordion Document No. IN/DS 2690 R7021 (1.0), "Design and Operating Specification for R7021 Transport





Package"

- Nordion (REVISS) Quality Manual, QM Issue 11*
- Nordion Document No. IN/QA 0224 Z000 (12)*, "Radioactive Material Transport Package Quality Plan"
- Nordion Document No. IN/QA 0562 A000 (5)*, "Sealed Source Quality Plan"
- Packaging and Transport of Nuclear Substances Regulations, 2015
- * or latest current revision

SHIPMENT

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

- Nordion Document No. IN/DS 2690 R7021 (1.0), "Design and Operating Specification for R7021 Transport Package"
- Packaging and Transport of Nuclear Substances Regulations, 2015

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 1.2 PBq of cobalt-60.

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.

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



Canada's Nuclear Regulator
L'organisme de réglementation
nucléaire du Canada

NOTES

Revision 0: September 24, 2021. New certificate.

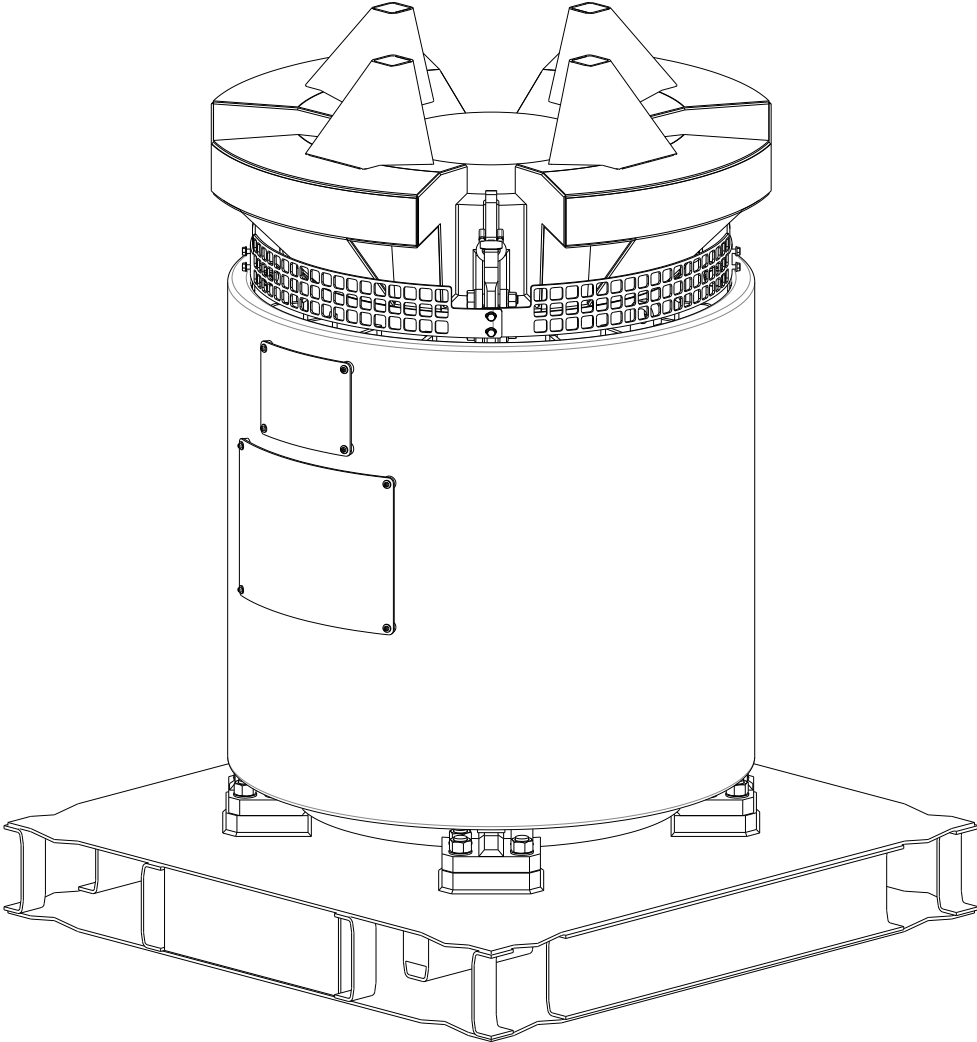


Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Canada

Figure 1: R7021 Transport Container





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CERTIFICATE NUMBER: USA/0840/B(U)-96

ORIGINAL REGISTRANT(S) :

Nordion (Canada) Inc.
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Ottawa, Ontario, K2K 1X8
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