



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/0756/B(U)-96, REVISION 0

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

REVALIDATION OF CANADIAN COMPETENT AUTHORITY
CERTIFICATE CDN/2085/B(U)-96

This certifies that the radioactive material package design described is hereby approved for use within the United States for import and export shipments only. Shipments must be made in accordance with the applicable regulations of the International Atomic Energy Agency¹ and the United States of America².

1. Package Identification - MDS Nordion Model No. F-294 Transport Package.
2. Package Description and Authorized Radioactive Contents - as described in Canada Certificate of Competent Authority CDN/2085/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 Hazardous Materials Technology, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.
 - 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.

¹ "Regulations for the Safe Transport of Radioactive Material, 1996 Edition (Revised), No. TS-R-1 (ST-1, Revised)," 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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- d. Records of Quality Assurance activities required by Paragraph 310 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. Marking and Labeling - The package shall bear the marking USA/0756/B(U)-96 in addition to other required markings and labeling.
5. Expiration Date - This certificate expires on June 30, 2012.

This certificate is issued in accordance with paragraph 808 of the IAEA Regulations and Section 173.473 of Title 49 of the Code of Federal Regulations, in response to the February 27, 2008 petition by MDS Nordion, Ottawa, Ontario, and in consideration of other information on file in this Office.

Certified By:



Robert A. Richard
Deputy Associate Administrator for Hazardous Materials Safety

Jul 09 2008
(DATE)

Revision 0 - Issued to revalidate Canadian Certificate of Approval No. CDN/2085/B(U)-96, Revision 1.



Canadian Certificate No. CDN/2085/B(U)-96 (Rev. 1)	Issue Date May-01-2008	Expiry Date Jun-30-2012	CNSC File 30-A2-220-0
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Certificate for 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 Section 7 of the *Packaging and Transport of Nuclear Substances Regulations*, and to the 1996 Edition (Revised) of the *IAEA Regulations for the Safe Transport of Radioactive Material*.

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: **MDS Nordion**
Make/Model: **F-294 Transport Package**
Mode of Transport: **Air, Sea, Road, Rail**

IDENTIFICATION MARK

The package shall bear the competent authority identification mark "**CDN/2085/B(U) - 96**".

PACKAGE DESCRIPTION

The F-294, as shown on Drawing No. F629401-001 (Sheets 1 and 2, Rev. F), (Sheet 3, Rev. D), (Sheets 4 and 5, Rev. F), consists of a 915 mm diameter cylindrical flask body with cooling fins and a removable cylindrical fireshield, a closure plug, a top crush shield, a permanent skid and a removable shipping skid. The radioactive content is held within a source carrier in the transport flask cavity. The flask body is constructed of a 12.7 mm thick stainless steel inner and outer shell. The annulus between the two shells is filled with approximately 292 mm thick lead. The flask is closed by a closure plug composed of a 546 mm diameter by 63.5 mm thick stainless steel plate and a 373 mm diameter by 279 mm thick lead shield. The plug is secured using 16 - 1 inch diameter bolts. Stainless steel fins are welded onto the exterior of the flask to dissipate heat. The removable exterior fireshield is constructed of ceramic fibre thermal insulation encased in mild steel shells. A composite assembly consisting of a finned crush shield that acts as impact limiter and a fireshield is bolted to the top end of the flask. The fixed skid includes a sheet of thermal insulation enclosed in steel. The containment system consists of the special form capsule assemblies and the cavity of the F-294 packaging.

An illustration of the package is shown on attached Drawing No. F-294 (96)(Issue 1).



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The configuration of the package is as follows:

Shape: Cylinder	Shielding: Lead
Mass: 9545 kg	Outer Casing: n/a
Length: 1980 mm	Height: 2045 mm
Width: 1980 mm	Diameter: n/a

AUTHORIZED RADIOACTIVE CONTENTS

The package is authorized to contain not more than 13.3 PBq (360,000 Ci) of Cobalt 60 contained within a maximum of 40 special form capsules of the MDS Nordion C-188, or similar design, when carried within a MDS Nordion F-313 source carrier or up to a maximum of 80 special form capsules of the MDS Nordion C-188, or similar design, when carried within a MDS Nordion F-457 source carrier.

For shipment by air, the activity is limited to 1200 TBq of Cobalt 60.

QUALITY ASSURANCE

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

- MDS Nordion Document No. IN/DS 2058 F294 (2), "Design, Manufacturing and Operating Specification for the F-294 Transport Package"
- Canadian Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations

SHIPMENT

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

- MDS Nordion Document No. IN/DS 2058 F294 (2), "Design, Manufacturing and Operating Specification for the F-294 Transport Package"
- Canadian Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations



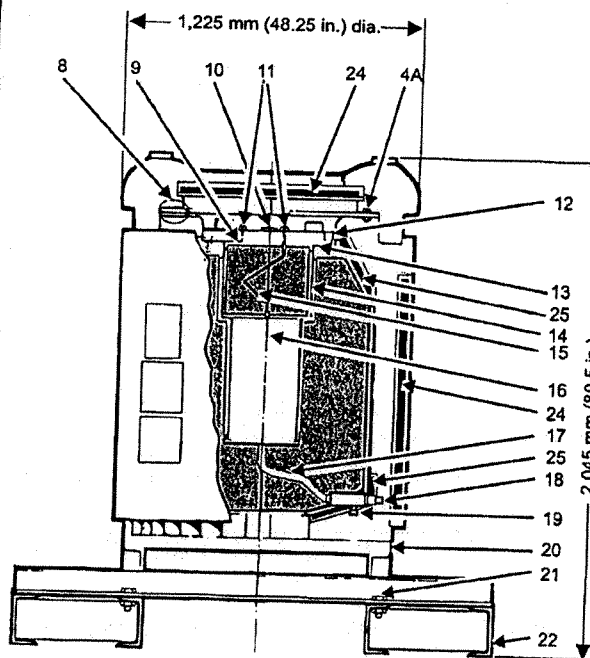
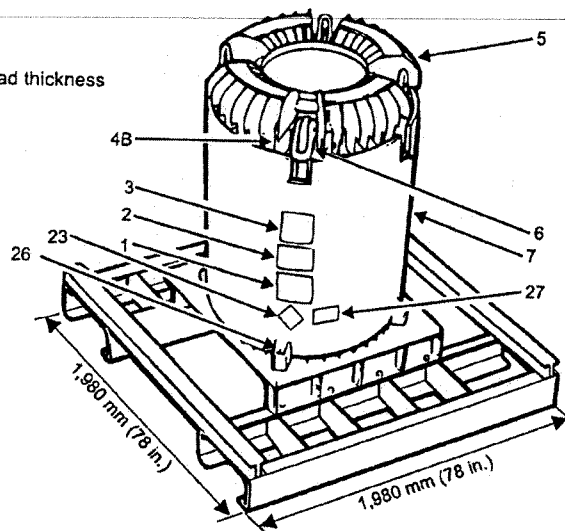
Canadian Certificate No. CDN/2085/B(U)-96 (Rev. 1)	Issue Date May-01-2008	Expiry Date Jun-30-2012	CNSC File 30-A2-220-0
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This certificate does not relieve the shipper from any requirement of the government of any country through or into which the package will be transported.

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

Notes

1. Capacity: 13,320 TBq (360,000 Ci) of cobalt-60
2. Source carriers for C-188 sealed sources
3. Shielding: lead - stainless steel encased - 286 mm (11.25 in.) lead thickness
4. Gross weight: 9,545 kg (21,000 lb.)
5. Closure plug weight: 490 kg (1,070 lb.)
6. Projected floor loading: 2,450 kg/m² (500 lb./ft.²)



Parts List

1. Warning plate "CAUTION—HEAT EMITTER"
2. MDS Nordion identification plate (2)
3. Radiation caution plate (2)
- 4A. Crush shield retaining bolts (8) - top
- 4B. Crush shield retaining bolts (8) - side
5. Crush shield
6. Container lift lugs & shackles (4)
7. Cylindrical fireshield
8. Wire seal
9. Closure plug vent
10. Closure plug lifting lug
11. Vent caps (2)
12. Cavity closure plug retaining bolts (16)
13. Neoprene gasket
14. Cavity closure plug
15. Vent tube
16. Cavity: 292 mm dia. x 502 mm high (11.5 in. dia. x 19.75 in.)
17. Drain line
18. Drain line cap
19. Pressure line fitting
20. Fibre cement insulation: 25 mm (1 in.) steel encased
21. Skid retaining bolts (8)
22. Removable shipping skid
23. Category label (2): on two opposite sides
24. Ceramic fibre thermal insulation: 25 mm (1 in.) steel encased
25. Ceramic fibre thermal insulation: 10 mm (0.38 in.) steel encased
26. Fireshield to skid fasteners (8)
27. UN Number label (2): one next to each of the radioactive category labels

MDS Nordion

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THIS DRAWING IS THE PROPERTY OF MDS NORDION INC. AND IS SUBMITTED FOR CONSIDERATION ON THE UNDERSTANDING THAT THERE SHALL BE NO EXPLOITATION OF ANY INFORMATION CONTAINED HEREIN EXCEPT WITH THE SPECIFIC WRITTEN AGREEMENT OF MDS NORDION INC.

TITLE

**F-294 Transport Package
 (To IAEA 1996 Transport Regulations)**

REF. IN/SS 1951 F294(96) F629401-001	REVISED July 03	DCN A1699-D-12A
DATE Jun 03	No.	ISSUE
DRAWN [Signature]	CHECKED [Signature]	APPROVED [Signature]
F-294(96)		1
SHEET 1 OF 1		



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CERTIFICATE NUMBER: USA/0756/B(U)-96, Revision 0

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