



U.S. Department
of Transportation
**Research and
Special Programs
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

**COMPETENT AUTHORITY CERTIFICATION
FOR A TYPE B(U)
RADIOACTIVE MATERIALS PACKAGE DESIGN
CERTIFICATE USA/0125/B(U), REVISION 11**

REVALIDATION OF CANADIAN COMPETENT AUTHORITY CERTIFICATE CDN/2037/B(U)

This certifies that the radioactive materials package design described below 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 Inc. Model No. F-327/F-247 Serial Nos. 1 to 10 inclusive, and 12 to 41 inclusive.
2. Packaging Description and Authorized Radioactive Contents - as described in Canadian Certificate of Competent Authority CDN/2037/B(U), Revision 10 (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 in accordance with the endorsed certificate.
 - b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Hazardous Materials Technology, (DHM-23), Research and Special Programs 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.
4. Marking and Labeling - The package shall bear the marking USA/0125/B(U) in addition to other required markings and labeling.
5. Expiration Date - This certificate expires on January 31, 2002.

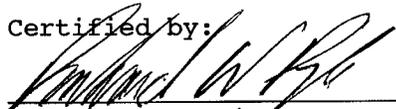
1 "Safety Series No. 6, Regulations for the Safe Transport of Radioactive Materials, 1973 Revised Edition, as amended," published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

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

CERTIFICATE USA/0125/B(U), REVISION 11

This certificate is issued in accordance with paragraph 806 of the IAEA Regulations and Section 173.473 of Title 49 of the Code of Federal Regulations, in response to the petition and information dated August 9, 2001 submitted by MDS Nordion Inc., Kanata, Ontario, Canada, and in consideration of other information on file in this Office.

Certified by:



Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

OCT 19 2001

(DATE)

Revision 11 - Issued to incorporate Canadian Nuclear Safety Commission Amendment No. 1, dated August 9, 2001, to Certificate CDN/2037/B(U), Rev. 10, and to extend the expiration date.



Certification



Atomic Energy
Control Board

Commission de contrôle
de l'énergie atomique

RADIOACTIVE MATERIAL TYPE B(U) PACKAGE DESIGN APPROVAL CERTIFICATE NO. CDN/2037/B(U), (REV. 10)

30-A2-207-0

December 10, 1999

The Atomic Energy Control Board hereby certifies that the package, as described below, has been demonstrated to meet the regulatory requirements prescribed for Type B(U) packages as described in the Canadian *Transport Packaging of Radioactive Materials Regulations* and in the IAEA Regulations*, subject to the following limitations, terms and conditions.

All users of this authorization shall register their identity in writing with the Atomic Energy Control Board prior to the first use of this authorization and shall certify that they possess the necessary instructions for preparation of the package for shipment.

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.

PACKAGE IDENTIFICATION

MDS Nordion Inc. Model No. F-327/F-247 Serial Nos. 1 to 10 inclusive, 12 to 41 inclusive.

PACKAGING DESCRIPTION

The packaging, as shown on MDS Nordion Drawing Number F132701-001 (Rev. B) and F124701-001 (Rev. K), consists of an F-327 removable head type steel drum with an F-247 depleted uranium shielded, steel encased gasketed vessel centered and supported within the drum by a wood lining. The dimensions of the drum are 489 mm diameter by 521 mm high. The containment system consists of a Nordion F-242 brass or stainless steel leakproof insert in combination with an inner receptacle, C-179 aluminum capsule, or other Special Form capsule. The gross weight of the package assembly is approximately 102 kg.

An illustration of the package is shown on attached Drawing Number F-327/F-247 (Issue K).

The package shall bear the competent authority identification mark "CDN/2037/B(U)".

AUTHORIZED RADIOACTIVE CONTENTS

This package is authorized to contain not more than:

- (a) 37 TBq (1,000 Ci) of molybdenum-99 and decay products in the form of:
- (i) up to 57 g of molybdenum trioxide powder within a brass or stainless steel F-242 leakproof insert, or
 - (ii) up to 55 ml of liquid sodium molybdate in 0.2 N sodium hydroxide within a brass F-242 leakproof insert, or
 - (iii) up to 55 ml of liquid ammonium molybdate in 0.2 N ammonium hydroxide within a stainless steel F-242 leakproof insert;

or

- (b) 37 TBq (1,000 Ci) of Iodine-131 in the form of liquid, in 0.02 N sodium hydroxide within a brass F-242 leakproof insert, or
- (c) 37 TBq (1,000 Ci) of Iridium-192 pellets, with maximum 3% Iridium-194 impurity, in C-179 capsules within a F-242 brass or stainless steel leakproof insert, or
- (d) 110 TBq (2,970 Ci) of Iridium-192 pellets in C-164, C-181, C-204, TC-346, C-349, C-352 or C-357 special form capsules within a F-242 brass or stainless steel leakproof insert, or
- (e) 110 TBq (2,790 Ci) of Iridium-192 within any combination of Nordion Europe Type G1, G2, G5, G6, G6A, G6B, G10, G11 or G21 Special Form capsules contained within a F-242 brass or stainless steel leakproof insert. Each capsule may contain no more than 7.4 TBq (200 Ci) of Iridium-192 in metallic form, or
- (f) 110 TBq (2,790 Ci) of Iridium-192 within any combination of Nordion Europe Type G3, or G4 Special Form capsules contained within a F-242 brass or stainless steel leakproof insert. Each capsule may contain no more than 18.5 TBq (500 Ci) of Iridium-192 in metallic form.

QUALITY ASSURANCE

The package shall be inspected and maintained to MDS Nordion Document No. IS/IM 0014 F000 (6)** "Inspection and Maintenance Procedure for The F-327 Family of Transport Packagings" and IS/IM 0015 F000 (6)** "Inspection and Maintenance Procedure for Leakproof Inserts".

SHIPMENT

This package shall be prepared for shipment in accordance with MDS Nordion Preparation Procedure No. IS/PP 0016 F000 (6), "Preparation for Shipment Procedure for The F-327 Family of Transport Packagings" and the Canadian *Transport Packaging of Radioactive Materials Regulations*, and the IAEA Regulations*.

EXPIRY DATE

This certificate expires October 31, 2001.



R. Thomas
Director
Materials Regulation Division

REFERENCE

* International Atomic Energy Agency Safety Series No. 6, Regulations for the Safe Transport of Radioactive Materials, 1973 Revised Edition (as amended).

** Or latest current revision.

NOTES

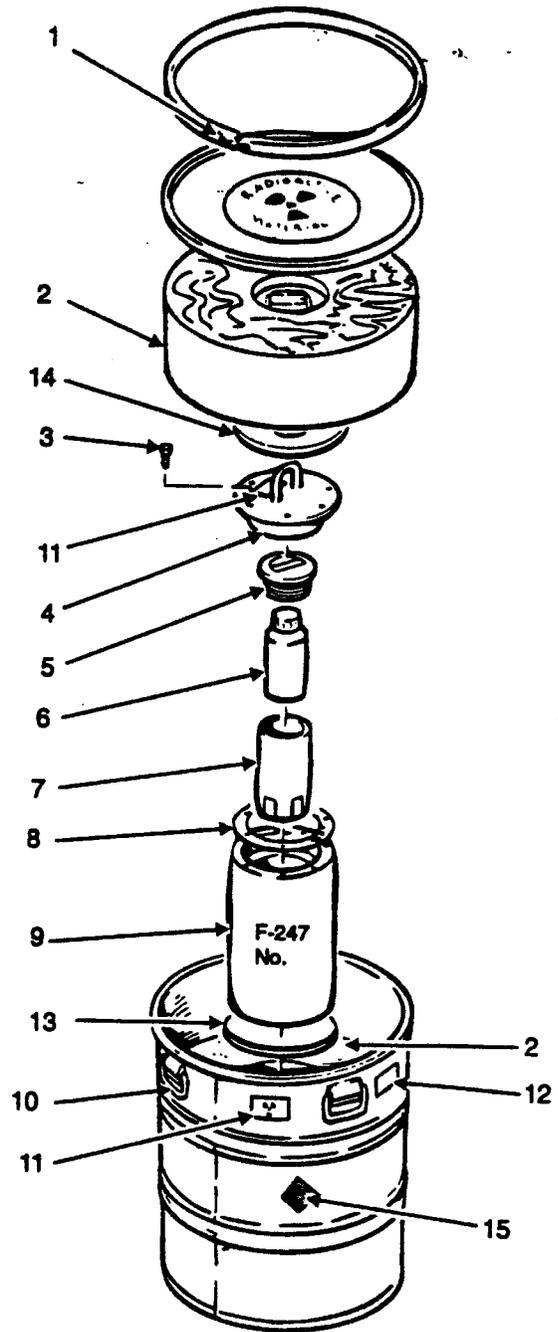
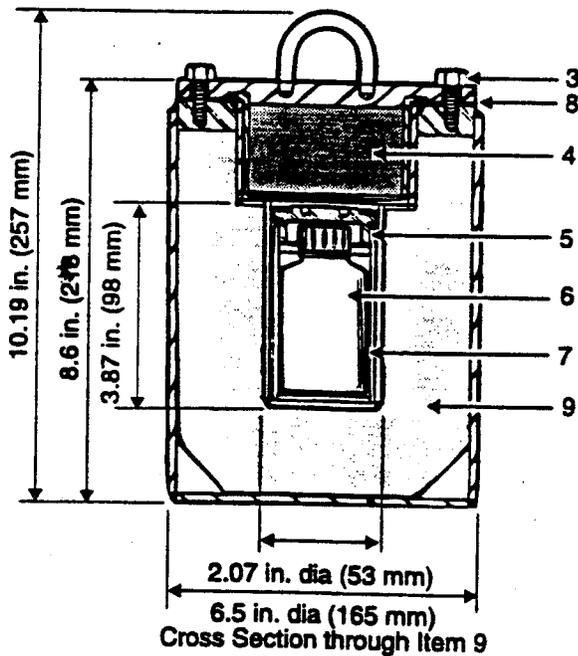
1. Revision 1: May 31, 1977. Addition of I-131 to Authorized Radioactive Contents.
2. Revision 2: August 30, 1979. Revision to Shipment Section. Certificate renewed.
3. Revision 3: September 24, 1982. Certificate renewed.
4. Revision 4: October 31, 1985. Certificate renewed.
5. Revision 5: October 30, 1989. Preparation for shipment revised. Certificate renewed.
6. Revision 6: July 3, 1990. Addition of Ir-192 to authorized contents.
7. Revision 7: October 14, 1993. Certificate renewed.
8. Revision 8: September 20, 1995. Certificate renewed.
9. Revision 9: July 11, 1997. Addition of Nordion Europe Special Form Capsules. Certificate renewed.
10. Revision 10: December 10, 1999. Revision to Package Description and Shipment section. Certificate renewed.

Parts List

1. Wire seal in locking bolt/ring
2. Wooden impact/firesield liner
3. 3/8 -16 x 7/8 in. long hex head stainless steel screws (6)
4. Uranium shielded plug
5. F-242 leakproof insert cap with 'O'-ring seal
6. 2 oz (60 mL) polyethylene bottle with radioactive material
7. F-242 leakproof insert body
8. Neoprene gasket
9. Uranium shielded container
10. Steel drum 19.25 in. dia x 20.5 in. high (489 mm x 521 mm)
11. Radiation caution plate (3): two on opposite sides of overpack, and one on top of shielded plug
12. Shipping container identification label (2): on two opposite sides
13. Lead plate 6 1/4 in. (159 mm) dia x 1/4 in. (6 mm) thick
14. Lead ring 6 1/4 in. O.D. x 2 3/8 I.D. x 1/4 in. thick (159 x 60 x 6 mm)
15. Radioactive Category Labels (2)

Notes

1. Approximate total weight: 225 lb (102 kg)
2. Projected floor load: 114 lb/ft² (560 kg/m²)
3. Weight of uranium shielded pot: 145 lb (66 kg)
4. Depleted uranium shielding: 1.75 in (44 mm) thick encapsulated in stainless steel
5. Meets IAEA Type B(U) requirements
6. AECB certificate CDN/2037/B(U)
7. Items 13 and 14 are fixed to the lower and upper wooden liners respectively



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TITLE

F-327/F-247 Transport Packaging

REF. DWG. F124701001/
 F124705001

REVISED: AUG 95

DCN: 90579

DATE: APRIL 69

No.

F-327/F-247

ISSUE

DRAWN

CHECKED

APPROVED

SHEET 1 OF 2

K

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Certification



Canadian Nuclear Safety Commission
Commission canadienne de sûreté nucléaire

**RADIOACTIVE MATERIAL TYPE B(U) PACKAGE DESIGN APPROVAL CERTIFICATE
NO. CDN/2037/B(U)-85, (REV. 10)**

30-A2-207-0

August 9, 2001

AMENDMENT TO CERTIFICATION No. 1 (To be attached to the certificate)

This amendment to Package Design Approval Certificate No. CDN/2037/B(U)-85, (Rev. 10) extends the expiry date to January 31, 2002.

All other aspects are as recorded in the certificate.

ISSUED BY

A. Aly
Designated Officer pursuant to
subsection 37.(2)(a) of the
Nuclear Safety and Control Act

Canada