U.S. Department
of Transportation
**Pipeline and
Hazardous Materials
Safety Administration**

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

**COMPETENT AUTHORITY CERTIFICATION
FOR A TYPE B(U)
RADIOACTIVE MATERIALS PACKAGE DESIGN
CERTIFICATE USA/6355/B(U), REVISION 15**

**REVALIDATION OF CANDADIAN COMPETENT AUTHORITY
CERTIFICATE CDN/2009/B(U)**

This certifies that the radioactive materials package design described below is hereby approved for use within the United Sates for import and export shipments only. Shipments must be made in accordance with the applicable regulations of the International Atomic Energy Agency[1] and United States of America[2].

1. Package Identification - MDS Nordion F-147 Transfer Case, Serial Numbers 18, 24, 26, 27, 34-36, 39-48, 50, 52, 54, and 56-60.

2. Packaging Description - as described in Canadian Certificate of Competent Authority CDN/2009/B(U), Revision 13 (attached).

3. Authorized Contents - Not more than 555 TBq (15,000 Ci) of cobalt-60 metal, doubly encapsulated in C-146 or C-151 welded 316L stainless steel capsules, or in capsules of similar design that are special form; or not more than 296 TBq (8,000 Ci) of cesium-137 as cesium chloride doubly encapsulated in C-161 welded stainless steel capsules, Type 1 to 8. Maximum cobalt-60 and cesium-137 heat outputs are 231 W and 42 W, respectively.

4. 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 (PHH-23), Pipeline and Hazardous Materials 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.

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1 "Regulations for the Safe Transport of Radioactive Materials, 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.

5. Marking and Labeling - The package shall bear the marking USA/6355/B(U) in addition to other required markings and labeling.

6. Expiration Date - This certificate expires on November 30, 2014.

This certificate is issued in accordance with paragraph 816 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 November 10, 2010 submitted by Best Theratronics Ltd., Ottawa, Canada and in consideration of other information on file in this Office.

Certified by:

Dr. Magdy El-Sibaie
Associate Administrator for Hazardous Materials Safety

DEC 21 2010
(DATE)

Revision 15 - Issued to revalidate Canadian Package Design Approval Certificate No. CDN/2009/B(U), Revision 13.

Canadian Certificate No.	Issue Date	Expiry Date	CNSC File
CDN/2009/B(U) (Rev. 13)	**Nov-09-2010**	**Nov-30-2014**	**30-A2-89-0**

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 1973 Revised Edition (as amended) 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-147 Transfer Case, Serial Nos. 18, 24, 26, 27, 34-36, 39-48, 50, 52, 54, 56-60**
Mode of Transport:	**Air, Sea, Road, Rail**

IDENTIFICATION MARK

The package shall bear the competent authority identification mark **"CDN/2009/B(U)"**.

PACKAGE DESCRIPTION

The packaging consists of a type F-147 Transfer Case in conjunction with a fire shield as shown on Drawing Nos. TC3-17 (Rev. J) and D93-V-46 (Rev. E). The containment system consists of welded capsules and the 250 mm thick steel encased, lead shielded inner containment.

The Transfer Case is covered on the top and sides by a shield constructed to provide fire and impact limiting properties and on the bottom by a steel encased transite sheet attached to the shipping skid. The outer box of the shield is reinforced sheet metal and envelopes a 45 mm thick layer of cedar lined by a sheet of 12.7 mm plywood. A nominal 12.7 mm air gap separates the plywood from a blanket of 12.7 mm refractory material which is bonded to a sheet metal box that forms the inside surface of the fireshield.

An illustration of the package is shown on attached Drawing No. F-147 (Issue 21).

Canadian Certificate No.	Issue Date	Expiry Date	CNSC File
CDN/2009/B(U) (Rev. 13)	**Nov-09-2010**	**Nov-30-2014**	**30-A2-89-0**

The configuration of the package is as follows:

Shape: **Rectangular**
Mass: **1930 kg**
Length: **1010 mm**
Width: **873 mm**

Shielding: **Lead**
Outer Casing: **Steel**
Height: **1156 mm**
Diameter: **n/a**

AUTHORIZED RADIOACTIVE CONTENTS

This package is authorized to contain not more than:

a) 555 TBq (15,000 Ci) of cobalt-60 metal, doubly encapsulated in C-146 and C-151 welded type 316L stainless steel capsules or in capsules of a similar design that are Special Form Radioactive Material. The decay heat output from this material shall not be greater than 231 W; or

b) not more than 296 TBq (8000 Ci) of cesium-137 as cesium chloride doubly encapsulated within C-161 welded stainless steel capsules, Type 1 to 8. The decay heat output from this material shall not be greater than 42 W.

QUALITY ASSURANCE

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

- Best Theratronics Procedure No. IN/IM 2548 F000 (Rev. 3), "Transport Package Maintenance Overview Procedure"
- Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations

SHIPMENT

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

- Best Theratronics Procedure No. IN/PP 1522 F147 (3), "Preparation for Shipment for the F-147 Type

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CDN/2009/B(U) (Rev. 13)	**Nov-09-2010**	**Nov-30-2014**	**30-A2-89-0**

B(U) Radioactive Material Transport Package"

- Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations

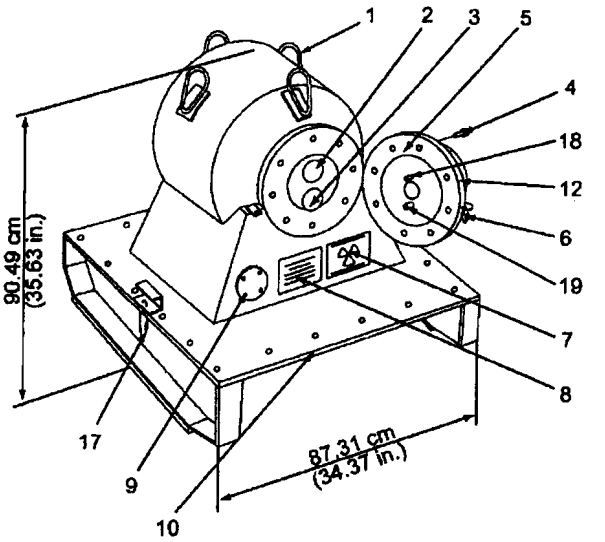
The average surface heat flux of this package with 555 TBq of cobalt-60 is 46 W/m2. For heat fluxes exceeding 15 W/m2 supplementary arrangements must be made with the carrier to ensure adequate heat dissipation.

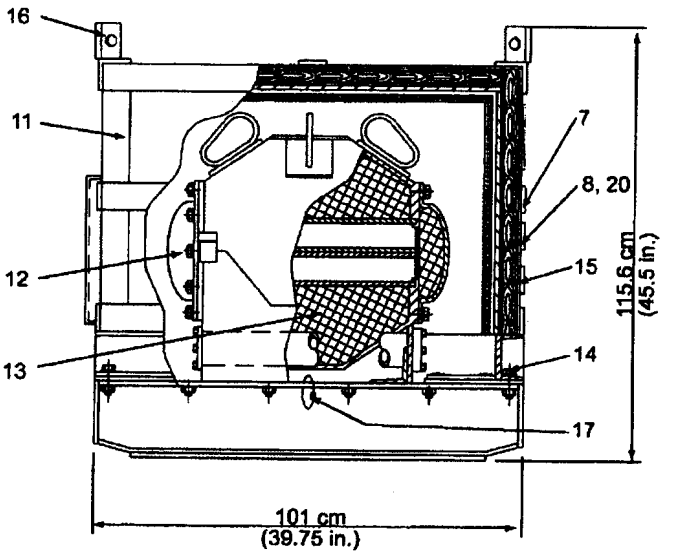
This certificate does not relieve the shipper from any requirement of the government of any country through or into which the package will be transported.

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

Parts List

1. Lifting handles
2. Source drawer
3. Dummy drawer
4. Door screws: 5/8-11 x 1 in. LG socket head (16)
5. Neoprene gasket (2)
6. Lead wire seal (2)
7. Radiation caution plate (3): on two opposite sides of overpack and one on base of transfer case
8. Shipping container identification label (3): on two opposite sides of overpack and one on base of transfer case
9. Spare dummy drawer
10. Transite: 1.27 cm (0.5 in.) steel encased
11. Fireshield: outer - steel frame and box
    inner - cedar, plywood, kaowool, steel box
12. Lead shielded door (2)
13. Lead shielding, steel encased
14. Fireshield bolt, washer, nut 1/2-13 x 2.5 in. LG hex hd (20)
15. Radioactive category label (2): on two opposite sides
16. Fireshield lifting handles with cover plates installed
17. Lead wire seal (1)
18. Drawer locator pin (2)
19. Drawer stop pin (2)
20. UN number label (2): on two opposite sides, next to radioactive category labels





Notes

1. CNSC certification CDN/2009/B(U)
2. Conforms to IAEA Type B(U)
3. Lead shielding 22.9 cm (9 in.)
4. Projected floor loading: 2181 kg/m² (449 lb/ft²)
5. Approved contents:
   15,000 curies cobalt-60
   8,000 curies cesium-137
6. Total weight - 1,930 kg (4,260 lb.)
7. WARNING
   Cover plates must be in place on the lifting handles on the fireshield to prevent their use for lifting or tie-down during transit. The package should be lifted by platform truck or fork lift truck.
8. Reference Drawings:
   Packaging serial numbers 1-60: TC-3-17/D93-V-46

JUL 2 8 2010

Best Theratronics

413 March Road
Ottawa, Ontario
Canada, K2K 0E4
Tel: (613) 591-2100

TITLE

Standard Round Drawer Transfer Case with Fireshield

REF. TC-3-17/D93-V-46 | REVISED Jul 10 | DC 30466

DATE July 1967 | No. F-147 | ISSUE 21

DRAWN BM | CHECKED BM | APPROVED BM

SHEET 1 OF 1

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Washington, D.C. 20590**

CERTIFICATE NUMBER: USA/6355/B(U)-85, Revision 15

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