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

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/0459/B(U)-96, REVISION 11**

**REVALIDATION OF CANADIAN COMPETENT AUTHORITY CERTIFICATE CDN/2062/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 Agency[1] and the United States of America[2] 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 - F147(96) Transfer Case, Serial Nos. 61 and higher.

2. Package Description and Authorized Radioactive Contents - as described in Canadian Certificate of Competent Authority CDN/2062/B(U)-96, 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. 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.

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[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.

**CERTIFICATE USA/0459/B(U)-96, REVISION 11**

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 regulations[1] 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/0459/B(U)-96 in addition to other required markings and labeling.

5. Expiration Date - This certificate expires on February 28, 2028. Previous editions which have not reached their expiration date may continue to be used.

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 February 14, 2023 petition by Best Theratronics Ltd., Ottawa, Ontario, and in consideration of other information on file in this Office.

Certified By:

March 02, 2023

William Schoonover
Associate Administrator for Hazardous Materials Safety

(DATE)

Revision 11 - Issued to revalidate Canadian Certificate of Approval CDN/2062/B(U)-96, Revision 10.

Canadian Certificate No.: **CDN/2062/B(U)-96 (Rev. 10)**

Issue Date: **Feb-13-2023**

Expiry Date: **Feb-28-2028**

CNSC File: **30-A2-89-0**

# Certificate

## CDN/2062/B(U)-96 (Rev. 10)

## 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: | **Best Theratronics** |
| Make/Model: | **F147(96) Transfer Case, Serial Nos. 61 and higher** |
| Mode of Transport: | **Air, Sea, Road, Rail** |

## IDENTIFICATION MARK

The package shall bear the competent authority identification mark **"CDN/2062/B(U)-96".**

## PACKAGE DESCRIPTION

The packaging consists of a type F147 Transfer Case in conjunction with a fireshield with two additional lead shield ends installed as shown on Drawing No. F614701-001(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. Additional steel covered lead shield ends may be welded to the forward and rear sides of the outer fireshield casing to increase shielding.

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

An illustration of the package with the added lead shield ends is shown on attached Drawing No. F147(96), (Issue 3).

The configuration of the package, with the additional steel covered lead shield ends, is as follows:

| | | | |
|---|---|---|---|
| Shape: | **Rectangular** | Shielding: | **Lead** |
| Mass: | **2050 kg** | Outer Casing: | **Steel** |
| Length: | **1010 mm** | Height: | **1156 mm** |
| Width: | **873 mm** | Diameter: | **n/a** |

## AUTHORIZED RADIOACTIVE CONTENTS

This package is authorized to contain:

a) not more than 555 TBq (15,000 Ci) of Cobalt-60 metal, doubly encapsulated within C-146 and C-151 welded type 316L stainless steel capsules or in other similar capsules with a valid special form radioactive material certificate. 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.

## MANAGEMENT SYSTEM

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

- Best Theratronics Document Nos. 5.05-QA-01(D)*, "Radioactive Material Transport Package Quality Plan" and 5.05-QA-02(2)*, "Sealed Source Quality Plan"
- Best Theratronics Document No. IN/DS 1889 F147(3) Design, Manufacturing and Operating Specification for the F-147 Transport Packages
- 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:

- Best Theratronics Document No. IN/DS 1889 F147 (3) "Design, Manufacturing and Operating Specification for the F-147 Transport Packages"

- Packaging and Transport of Nuclear Substances Regulations, 2015

The average surface heat flux of the package with 555 TBq of Co 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 consignor from compliance with any requirement of the government of any country through or into which the package will be transported.

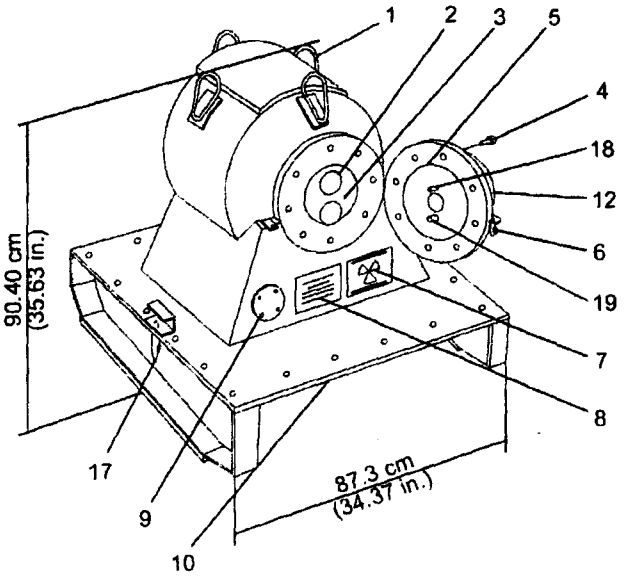
R. Garg
Designated Officer pursuant to paragraph 37(2)(a)
of the Nuclear Safety and Control Act

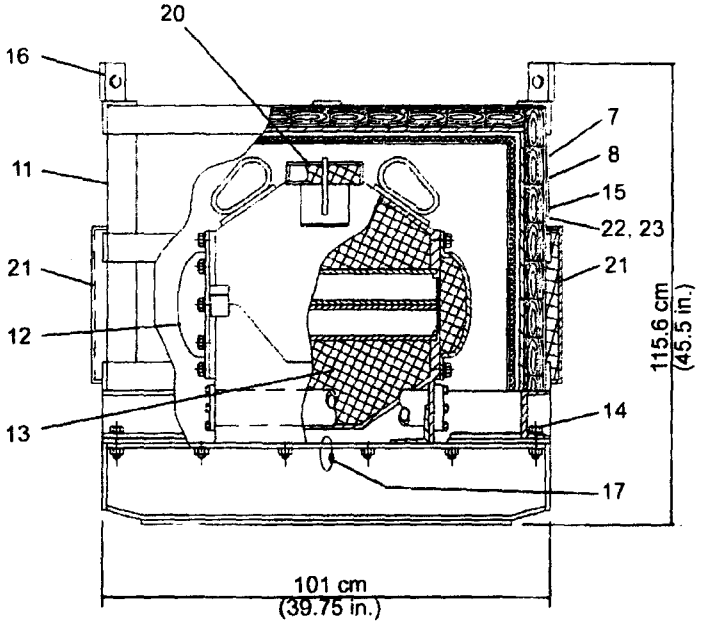
**NOTES**

Revision 8: February 23, 2015. Certificate renewed.
Revision 9: January 28, 2019. Amended to include new source drawer option and update quality assurance document.
Revision 10: February13, 2023. Certificate renewed.

## Parts List

1. Lifting handles
2. Source drawer
3. Dummy drawer
4. Door screws: 5/8-11 x 1" 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 (optional)
10. Transite: 1.27 cm (0.5 in.) steel encased
11. Fireshield: outer - steel frame and box
    inner - 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" LG hex head (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. Lead shield, top
21. Lead shield, ends
22. UN Number label (2): on two opposite sides, next to Radioactive Category labels
23. Air Eligibility Plate (2): on two opposite sides, next to UN Number label




## Notes

1. CNSC certification CDN/2062/B(U)-96
2. Conforms to IAEA type B(U)-96 requirements
3. Lead shielding 22.9 cm (9 in.)
4. Projected floor loading: 2,325 kg/m² (476 lb/ft²)
5. Approved contents:
   15,000 curies cobalt-60
   8,000 curies cesium-137
6. Total weight - 2,050 kg (4,520 lbs)
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. Packaging serial numbers 61 & up.


Best® Theratronics

413 March Road
Ottawa, Ontario
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TITLE

# F-147 (1996) Standard Round Drawer Transfer Case with Fireshield

| REF. IN/SS 1911 F147-96 | REVISED Dec. 10 | DC 30640 | |
|---|---|---|---|
| DATE February 2003 | No. F-147 (96) | | ISSUE 3 |
| DRAWN | CHECKED BM | APPROVED BM | SHEET 1 OF 1 |

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U.S. Department of Transportation

**Pipeline and Hazardous Materials Safety Administration**

**CERTIFICATE NUMBER:** USA/0459/B(U)-96

**ORIGINAL REGISTRANT(S):**

International Isotopes Inc.
4137 Commerce Circle
Idaho Falls, ID, 83401
USA

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