



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/0714/B(U)-96, REVISION 1**

**REVALIDATION OF CANADIAN COMPETENT AUTHORITY
CERTIFICATE CDN/2084/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 - Best Theratronics F-423 transport package containing a Gammacell 220 irradiator.
2. Package Description and Authorized Radioactive Contents - as described in Canada Certificate of Competent Authority CDN/2084/B(U)-96, Revision 1 (attached). The package is authorized to contain a maximum of 963 TBq (26,000 Ci) of Cobalt-60 in a maximum of forty eight sealed sources. Each sealed source is authorized to contain a maximum of 185 TBq (5,000 Ci). Authorized sealed sources are identified in paragraph 4 of this certificate.
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. Special Condition - The sealed sources authorized are:
- a. any sealed source which meets the requirements of special form radioactive material, or
- b. MDS Nordion C-166, MDS Nordion C-167, MDS Nordion C-185 or J.L Shepherd 7810-220 sealed sources. These sources must have been leak tested within six months of transport and must not have been damaged during their service life.
5. Marking and Labeling - The package shall bear the marking USA/0714/B(U)-96 in addition to other required markings and labeling.
6. Expiration Date - This certificate expires on June 30, 2015.

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 June 15, 2010 petition by Best Theratronics Ltd., Ottawa, Ontario, and in consideration of other information on file in this Office.

Certified By:



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

Jul 02 2010
(DATE)

Revision 1 - Issued to revalidate Canadian Certificate of Competent Authority No. CDN/2084/B(U)-96, Revision 1, subject to special conditions listed in paragraph 4 of this certificate.



Canadian Certificate No. CDN/2084/B(U)-96 (Rev. 1)	Issue Date Jun-14-2010	Expiry Date Jun-30-2015	CNSC File 30-10-2-182
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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: **Best Theratronics**
Make/Model: **F-423 Transport Package**
Mode of Transport: **Air, Sea, Road, Rail**

IDENTIFICATION MARK

The package shall bear the competent authority identification mark "**CDN/2084/B(U) - 96**".

PACKAGE DESCRIPTION

The F-423/GC220 consists of a stainless steel overpack construction filled with 203 mm thick polyurethane foam on the sides and 306 mm thick polyurethane foam on the ends and 102 mm of polyurethane foam in the bottom. The overpack is closed by a lid which consists of a 12.7 mm thick stainless steel top, a 6.4 mm thick steel sheet on the bottom and a 102 mm thick polyurethane foam in between. The lid is closed by forty 25.4 mm diameter bolts and includes a neoprene gasket.

The F-423 cavity contains a Gammacell 220 irradiator which is further retained in a stainless steel inner frame filled with polyurethane foam and a polyurethane foam bonnet and lower crush pad. The shielding is provided by the GC220 shielding head, which consist of a minimum 254 mm of lead, encased in a steel shell. The shielding material may also contain depleted uranium or tungsten.

Illustrations of the package are shown on attached Best Theratronics Drawing No. F-423 (Issue 5), Sheets 1 to 3.



Canadian Certificate No. CDN/2084/B(U)-96 (Rev. 1)	Issue Date Jun-14-2010	Expiry Date Jun-30-2015	CNSC File 30-10-2-182
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The various configurations of the package are as follows:

Shape: **Rectangular**
Mass: **9530 kg**
Length: **2197 mm**
Width: **1677 mm**

Shielding: **Lead**
Outer Casing: **n/a**
Height: **2042 mm**
Diameter: **n/a**

AUTHORIZED RADIOACTIVE CONTENTS

The F-423/GC220 package is authorized to contain a maximum of 963 TBq of Co-60 in a maximum of 48 sealed sources having a maximum of 185 TBq per source.

The source models authorized are:

- a) the MDS Nordion C-198 which meets the requirements for special form radioactive material;
- b) the MDS Nordion C-166, C-167 and C-185 or the J.L. Shepherd source model 7810-220, or
- c) any sealed sources with a valid special form radioactive material certificate.

QUALITY ASSURANCE

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

- Best Theratronics Procedure No. IN/DS 2190 F423(4) "Design, Manufacturing and Operating Specifications for the F-423 Package"
- 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/DS 2190 F423 (4) "Design, Manufacturing and Operating



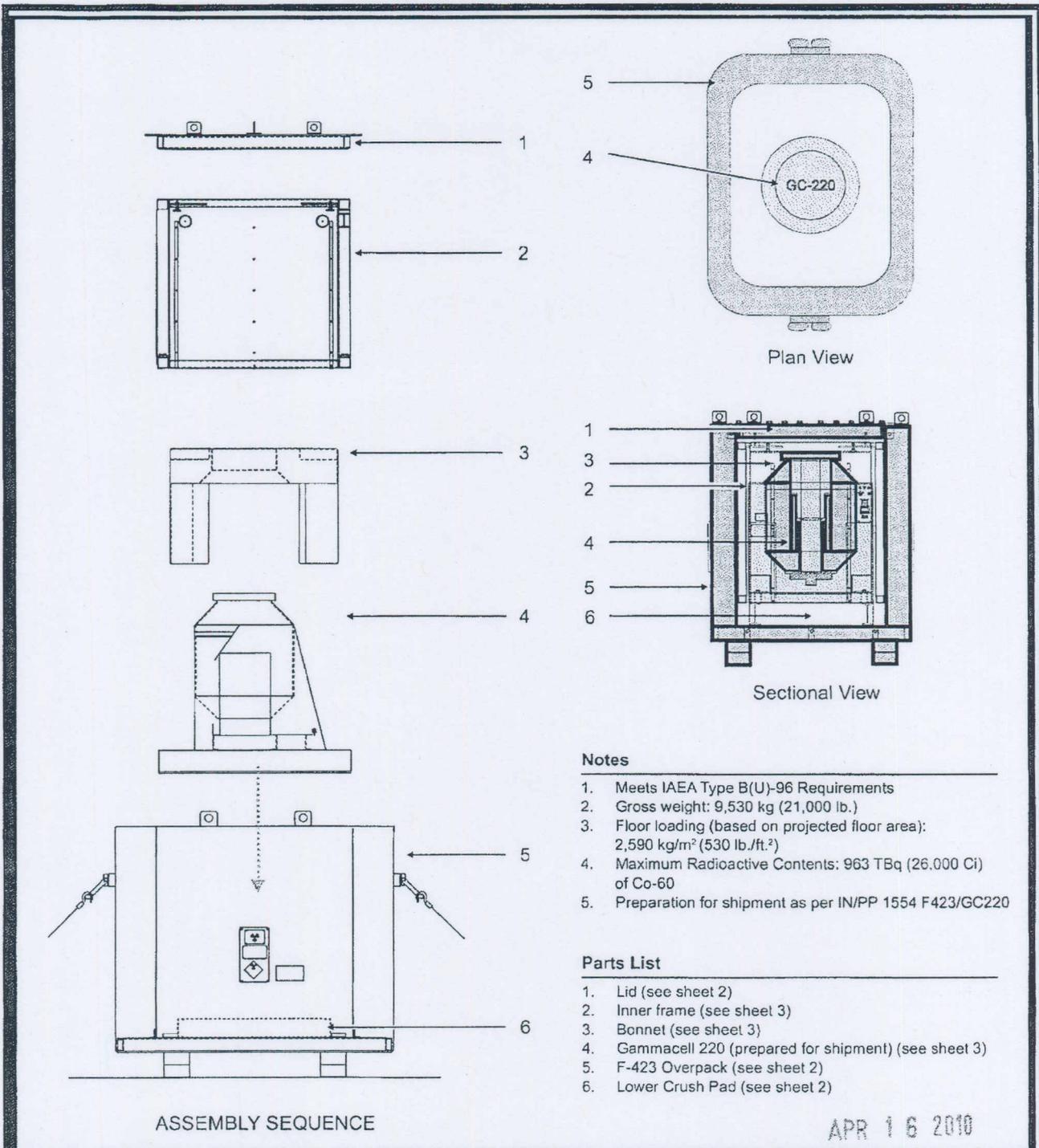
Canadian Certificate No. CDN/2084/B(U)-96 (Rev. 1)	Issue Date Jun-14-2010	Expiry Date Jun-30-2015	CNSC File 30-10-2-182
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Specifications for the F-423 Package"

- Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations

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.

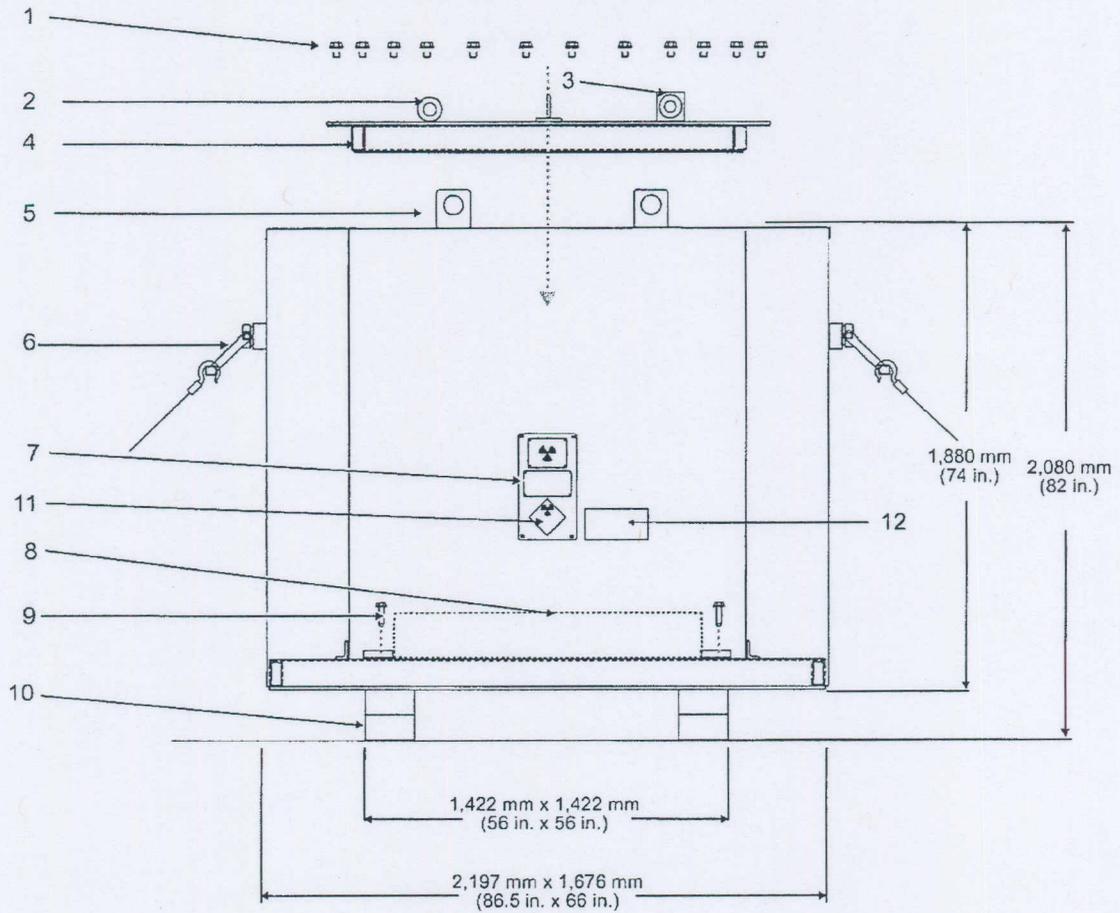
S. Faille
Designated Officer pursuant to paragraph 37(2)(a)
of the Nuclear Safety and Control Act



APR 16 2010

<p>413 March Road Ottawa, Ontario Canada, K2K 0E4 Tel: (613) 591-2100</p>	TITLE			F-423 Transport Package	
	REF.	IN/SS 1574 F423	REVISED	Apr 10	DC 30466
DATE		May 2000	No.	F-423	ISSUE
DRAWN		CHECKED	APPROVED	SHEET 1 OF 3	5
SW		BM	BM		
<p>THIS DRAWING IS THE PROPERTY OF BEST THERATRONICS LTD. 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 BEST THERATRONICS LTD.</p>					

F-423 OUTER ASSEMBLY



Parts List

1. Screws (40 1.00-8 UNC x 2.5 LG alloy steel)
2. Lift Lug Guard (1 shown) (4)
3. Lift Lug (1 shown) (4)
4. Lid
5. Lift Lugs (4)
6. Tie-Down Rings (4)
7. Radiation warning and Identification plates (displayed on all 4 sides)
8. Lower Crush Pad
9. Screw (8 hex socket head, 0.63 -11 UNC-3A, 1.5 in long)
10. Foot Pad
11. Radioactive Category Labels (4)
12. UN Number Labels (4): one next to each of the radioactive category labels

Notes

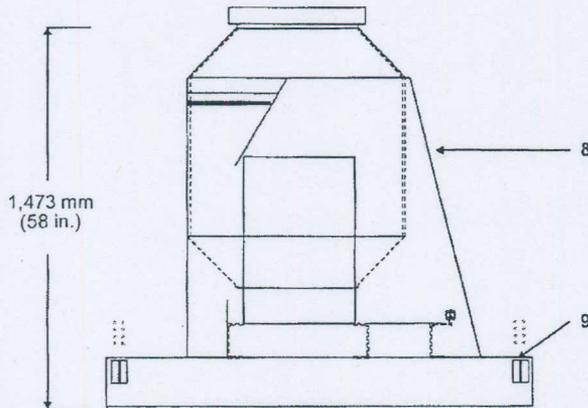
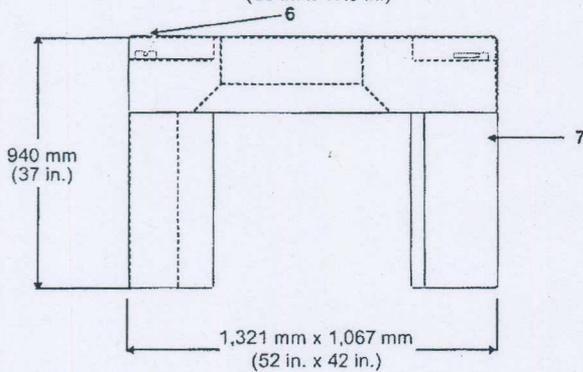
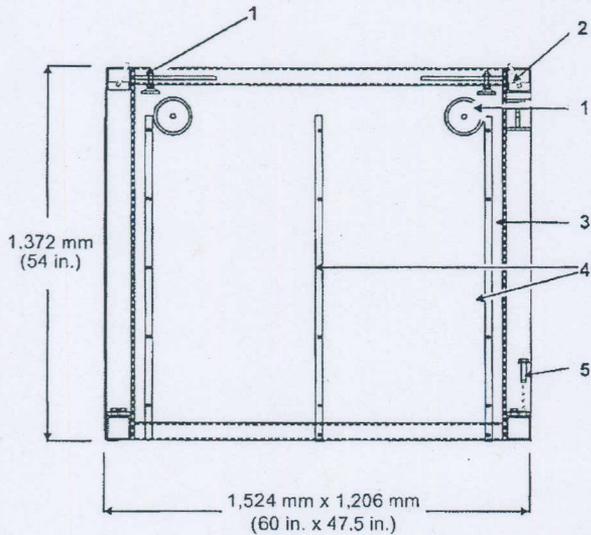
1. Lid Weight: 470 kg (1,040 lb.)
2. Overpack Weight: 3,950 kg (8,710 lb.)
3. Lower Crush Pad Weight: 175 kg (390 lb.)
4. Lid: 1,715 mm x 1,400 mm (67.5 in. x 55.0 in.)
Opening: 1,550 mm x 1,232 mm (61 in. x 48.5 in.)

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DATE May 2000	No. F-423		ISSUE
DRAWN <i>BW</i>	CHECKED <i>BM</i>	APPROVED <i>BM</i>	5
SHEET 2 OF 3			

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F-423 INNER ASSEMBLY



Parts List

1. Clamping Pad (12)
2. Inner Assembly Hoist Ring (max. 5,000 lb.) 4x
3. Inner Frame
4. Rub Bars (10)
5. 0.62-11 UNC x 5.25 LG Cap Screw (8x used to fasten inner frame to GC-220)
6. Bonnet Hoist Ring (max. 5,000 lb.) 4x
7. Bonnet
8. GC-220 Prepared for Shipment
9. Threaded holes for screws (see 5)

Notes

1. Inner Frame Weight: 570 kg (1,260 lb.)
2. Bonnet Weight: 395 kg (870 lb.)
3. For a detailed depiction of the GC-220, see specification IN/SS 1576 GC220

APR 16 2010

Best
Theratronics

413 March Road
Ottawa, Ontario
Canada, K2K 0E4
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TITLE

F-423 Transport Package

REF. IN/SS 1574 F423

REVISED Apr 10

DC 30466

DATE May 2000

No.

F-423

ISSUE

5

DRAWN

CHECKED

APPROVED

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BM

SHEET 3 OF 3

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Hazardous Materials
Safety Administration**

CERTIFICATE NUMBER: USA/0714/B(U)-96, Revision 1

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