U.S. Department
of Transportation

**Research and
Special Programs
Administration**

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

OCT 15 1992

DOT E-10908

1. Maxwell Laboratories, Inc., San Diego, CA, is hereby granted an emergency exemption from certain provisions of this Department's Hazardous Materials Regulations to offer the packages for transportation in commerce subject to the limitations and special requirements specified herein. This exemption authorizes the one-time domestic shipment of two packages of radioactive materials which are certified only for import and export shipment and provides no relief from any regulation other than as specifically stated.

2. BASIS. This emergency exemption is based on the Maxwell Laboratories, Inc., application dated September 25, 1992, submitted in accordance with 49 CFR 107.113 and a determination that it is necessary to preclude a series economic loss.

3. HAZARDOUS MATERIALS (Descriptor and class). Nordion International or AECL Gammacell-220 irradiators containing Cobalt-60, classed as radioactive material.

4. PROPER SHIPPING NAME (49 CFR 172.101). Radioactive material, n.o.s.

5. REGULATIONS AFFECTED. 49 CFR Part 107, Appendix B to Subpart B, Paragraph (1); 49 CFR 173.416(c).

6. MODE OF TRANSPORTATION AUTHORIZED. Motor vehicle.

7. SAFETY CONTROL MEASURES.

a. The authorized packaging is the Nordion International or AECL Gammacell-220 irradiator as described in U.S. Certificate of Competent Authority USA/6125/B(U), Revision 9 (See Appendix A). This exemption approves a one-time shipment of two Gammacell-220 irradiators, serial numbers 103 and 191, from 7696 Formula Place, San Diego, CA to 8888 Balboa Avenue, San Diego, CA.

b. The packaging shall be prepared in accordance with the procedures referenced in U.S. Certificate of Competent Authority USA/6125/B(U), Revision 9, and as described in the Maxwell Laboratories, Inc., letter dated September 25, 1992.

c. The person transporting the irradiators from origin to destination must have a "Satisfactory" or "Conditional" motor carrier safety rating as required by 49 CFR Part 385.

d. The State of California agency licensing the possession and use of the irradiators shall be notified in advance of the time of the planned movement. The Special Condition in paragraph 4 of certificate USA/6125/B(U) regarding preshipment notification to the Department of Transportation (DOT) is waived.

8. SPECIAL PROVISIONS.

a. This exemption authorizes a one-time domestic shipment of packages normally authorized only for import and export shipment per 49 CFR 173.416(c).

b. The marking of the exemption number on the package as required in Appendix B to Subpart B of 49 CFR Part 107, paragraph (1) is waived.

c. A copy of this exemption must be carried aboard the motor vehicle used to transport the packages covered by this exemption.

9. REPORTING REQUIREMENTS. Any incident involving loss of packaging contents or packaging failure must be reported to the Associate Administrator for Hazardous Materials Safety as soon as practicable. (49 CFR 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.)

10. EXPIRATION DATE. November 10, 1992

Issued at Washington, D.C.:

OCT 15 1992

Alan I. Roberts
Associate Administrator for
Hazardous Materials Safety

(DATE)

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, U.S. Department of Transportation, Washington, D.C. 20590 Attention: Exemptions Program.

Dist: FHWA

California Department of Health Services, Donald Bunn, Environmental Health Division, Radioactive Materials Control Section, 714/744 P Street, P.O. Box 942732, Sacramento, California 94234-7320

APPENDIX A

U.S. Department of Transportation

Research and Special Programs Administration

[illegible] Seventh Street, S.W.
Washington, D.C. [illegible]

COMPETENT AUTHORITY CERTIFICATION
FOR A TYPE B(U)
RADIOACTIVE MATERIALS PACKAGE DESIGN
CERTIFICATE USA/6125/B(U), REVISION 9

REVALIDATION OF CANADIAN COMPETENT AUTHORITY CERTIFICATE CDN/2013/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 Agency[1] and the United States of America.[2]

1. Package Identification - Nordion Gammacell 220 Irradiator.

2. Packaging Description and Authorized Radioactive Contents as described in Canadian Certificate of Competent Authority CDN/2013/B(U), (Rev. 8) (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.

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

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

d. This certificate is issued only to authorize transport from point of entry to final destination within the United States and from point of origin in the United States to point of exit.

4. Special Condition - At least 7 days prior to the commencement of each shipment transported under this Certificate, the user must notify the U.S. Competent Authority. The consignment notification shall include the Package Identification, including serial number, and information of the date of shipment, the expected date of arrival, and proposed routing.

5. Marking and Labeling - The package shall bear the marking USA/6125/B(U) in addition to other required markings and labeling.

6. Expiration Date - This certificate expires on October 31, 1995.

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 September 20,1991 petition by Nordion International Inc., Kanata, Ontario, Canada, and in consideration of other information on file in this Office.

Certified by:

for James K. O'Steen, Director
Office of Hazardous Materials Technology

FEB 20 1992
(DATE)

Revision 9 - Issued to add a special condition for notification of the U.S. Competent Authority prior to each shipment 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/2013/B(U), (REV. 8)

30-A2-93-0 September 13, 1991

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 provisions.

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

Nordion Gammacell 220 Irradiator.

PACKAGING DESCRIPTION

The Nordion International Inc. Gammacell 220 Irradiator, as shown on AECL Drawing No. A01885, (Revision U), consists of a 760 mm diameter cylindrical steel-encased lead radiation shield which is welded to a support frame and is partially covered with sheet metal covers. A cavity in the radiation shield contains a cylindrical source cage, a drawer and a plug. A steel shipping cover, 57.1 mm thick with a 11.1 mm recess, registers on the plug and retains it in place. The drawer is retained on the top by the shipping cover and on the bottom by a shipping bracket. The radiation shield is wrapped in thermal insulation which is held in place by wire mesh on the front, the top and the back and by chicken wire on the sides and the bottom. The chicken wire on the sides and bottom is further protected by sheet metal panels. A steel energy absorber (impact limiter) is mounted on top of the radiation shield and the assembly is placed inside a plywood shipping crate. The containment system consists of the capsule assemblies. The crate dimensions are 1700 mm high by 1090 mm wide by 1560 mm long and the gross weight of the package is 4400 kg.

The package shall bear the competent authority identification mark "CDN/2013/B(U)".

AUTHORIZED RADIOACTIVE CONTENTS

This package is authorized to contain not more than 963 TBq (26,000 Ci) of cobalt-60 in the form of metal pellets or slugs. Pellets and unsheathed slugs are doubly encapsulated in C198 stainless steel capsule assemblies. The aluminum-sheathed slugs are encapsulated in C185 stainless steel capsule assemblies. All capsules are mounted in a cylindrical source cage.

SHIPMENT

This package shall be prepared for shipment in accordance with Nordion Engineering Spec. DS-0766-J0300, (Rev. D) "Instructions for Modifications and Preparation for Shipment of the Gammacell 220", the Canadian Transport Packaging of Radioactive Materials Regulations and the IAEA Regulations*.

The average surface heat flux of this package with 963 TBq (26,000 Ci) of cobalt-60 is 32 W/m^2. The decay heat output for this material is not greater than 400 W. For heat fluxes exceeding 15 w/m^2 supplementary arrangements must be made with the carrier to ensure adequate heat dissipation.

EXPIRY DATE

This certificate expires 31 October, 1995.

W.R. Brown
Manager
Radioisotopes and Transportation Division

REFERENCE

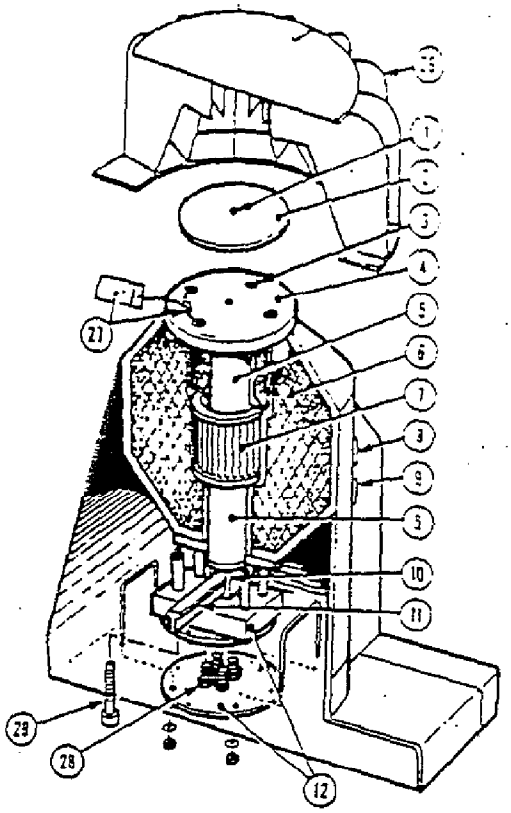
* International Atomic Energy Agency Safety Series No. 6, Regulations for the Safe Transport of Radioactive Materials, 1973 Revised Edition (as amended).

NOTES

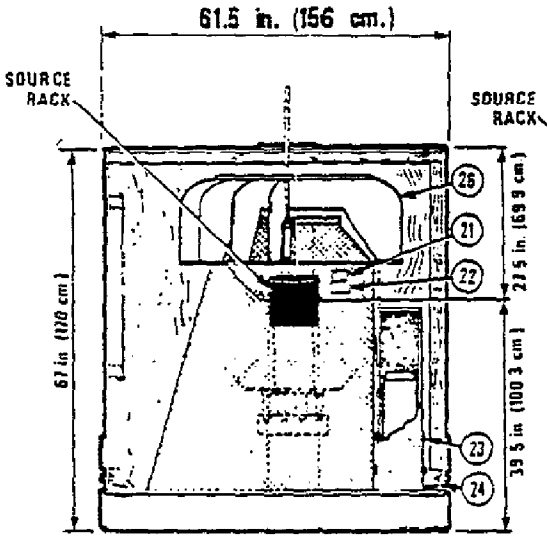
1. Drawing Nos. DS-0284, (Rev. H and L) attached.
2. Revision 0: February 3, 1976. Original certificate.
3. Revision 1: April 24, 1979. Certificate renewed.
4. Revision 2: May 27, 1980. Packaging Description and Shipment sections revised. Certificate renewed.
5. Revision 3: March 2, 1981. Packaging Description revised.
6. Revision 4: October 30, 1981. Certificate renewed.
7. Revision 5: September 23, 1982. Certificate renewed.
8. Revision 6: November 21, 1983. Certificate renewed.
9. Revision 7: October 10, 1986. Certificate renewed.
10. Revision 8: September 13, 1991. Certificate renewed.

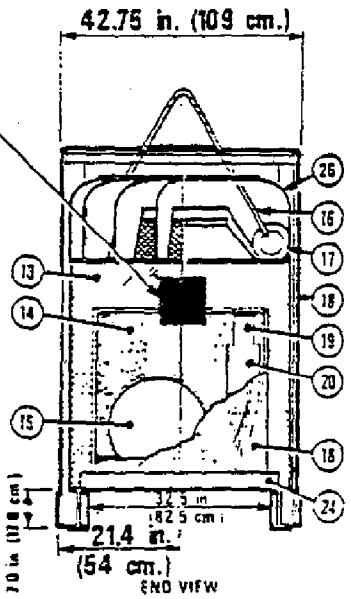
PAR ST

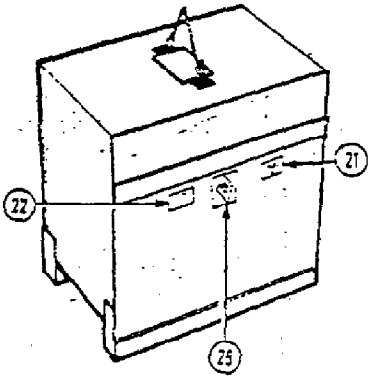
1. 3/8 in – 16 SCREW (1)
2. 0.5 in. (1.27 cm.) THICK LEAD SHIELDING PLATE
3. 3/4 in. -10 x 2-1/2 in. LG SOCKET HEAD SCREWS (4)
4. SHIPPING COVER — STEEL PLATE 1.75 in. (4.4 cm.) THICK
5. LOWER DRAWER
6. LEAD SHIELDING
7. STAINLESS STEEL SOURCE RACK 8.8 in. DIA (22.3 cm.) x 8.3 in. (21 cm.) WITH STAINLESS STEEL WELDED CAPSULES CONTAINING COBALT 60
8. RADIATION CAUTION PLATE WITH SPECIFIED CONTENT (1) AECL CP SPEC DG0095
9. AECB CERTIFICATION PLATE (1) — AECL CP SPEC DG0097
10. DRAWER BOTTOM BRACKET
11. T-ELEVATING BAR
12. SHIPPING BRACKET ASSEMBLY
13. KAOWOOL — 0.5 in. (1.27 cm.) THICK. POLYETHELENE (4 MIL) WIRE MESH 1 in. (2.54 cm.) STANDARD STEEL PACKING STRAPS 0.5 in. (1.27 cm.) WIDE. AECL CP SPEC P0121
14. PACKING MATERIAL
15. SHIELD COLLAR (END USE ONLY)
16. HOIST SLING
17. SHOULDER EYELET (2)
18. 0.5 in. (1.27 cm.) THICK PLYWOOD CRATE
19. SHIELDING PLUG (END USE ONLY)
20. UPPER DRAWER (END USE ONLY)
21. RADIATION CAUTION PLATE (2) — AECL CP SPEC DG0096
22. AECB CERTIFICATION PLATE (2) — AECL CP SPEC DG0097
23. 1/2 in. -13 x 9 in. LG SQ HD BOLTS (3)
24. SHIPPING BRACKET (2) WITH 5/8 in. - 11 x 1-1/4 in. LG HEX HD SCREWS (8)
25. RADIOACTIVE I or II or III LABEL (2)
26. CRUSH SHIELD ASSEMBLY
27. WIRE SEAL & TAG — 'DO NOT OPEN'
28. 3/4-10 x 2.0 in. LG. SOCKET HD. SCREWS (4)
29. 3/4 -10 x 5-1-2 in. LG. SOCKET HD. SCREWS (4)



NOTES
I.A.E.A. — TYPE B(u)
GROSS WEIGHT 9700 lb. (4400 kg.)
PROJECTED FLOOR LOADING 531 lb/sq ft. (0.26 kg/sq cm)
CAPACITY — 26.000 Ci 60 Co
AECB CERT CDN/2013/B (U) T







FOR UNIT NUMBERS 1 TO 194

ATOMIC ENERGY OF CANADA LIMITED
COMMERCIAL PRODUCTS
P.O. BOX 6300, Postal Station J, OTTAWA, CANADA. K2A 3W3

TITLE GAMMACELL 220 "LIVE" SOURCE HEAD CRATING FOR SHIPMENT

REF. DWG. A01885 | REVISED DEC 1983

DATE 31 JANUARY 1975

DRAWN	CHECKED	APPROVED

No. DS-0284 | REV. H

SHEET 1 OF 1

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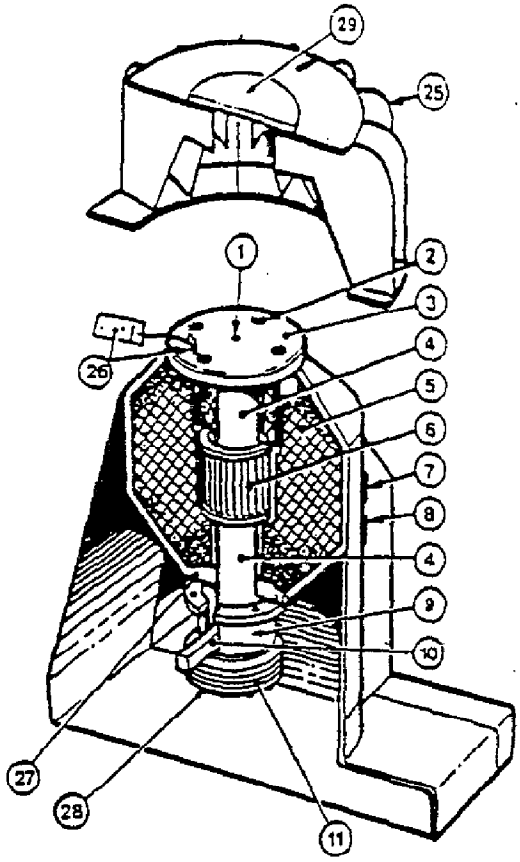
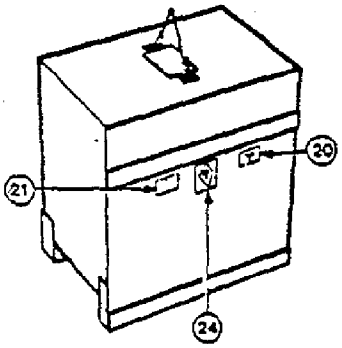
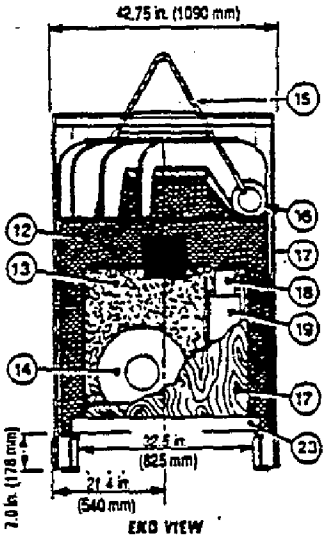
Parts list

1. ⅜ in. - 16 tapped hole
2. ¾ in. - 10 x 2½ in. large socket head screws (4)
3. Shipping cover: steel plate 1.75 in. (44 mm) thick
4. Drawer, bottom
5. Lead shielding
6. Stainless steel source rack 8.8 in. diameter (223 mm) x 8.3 in. (210 mm) with stainless steel welded capsules containing cobalt-60
7. Radiation caution plate with specified content (1) Nordion specification DG0095
8. Nordion identification plate (1) Nordion specification DG0097
9. Shipping bracket assembly
10. Drawer support bar
11. Shield plates if required
12. Koawool: 0.5 in. (127 mm) thick polyethylene (4 MIL) wire mesh 1 in. (254 mm) standard steel packing straps 0.5 in. (127 mm) wide, Nordion specification P0121
13. Packing material
14. Shield collar (end use only)
15. Hoist sling
16. Lifting eyelet (2)
17. 0.5 in. (127 mm) thick plywood crate
18. Shielding plug (end use only)
19. Drawer, top (end use only)
20. Radiation caution plate (3) Nordion specification DG0096
21. Nordion identification plate (2) Nordion specification DG0097
22. ½ in. - 13 x 9 in. large square head bolts (3)
23. Shipping bracket (2) with ⅝ in - 11 x 1¼ in. large hexagonal head screws (8)
24. Radioactive I or II or III label (2)
25. Crush shield assembly
26. Wire seal and tag - "DO NOT OPEN"
27. ¾ in. - 10 x 2 in. large socket head screws (4)
28. ¾ in. - 10 x 2 in. large socket head screws (4)
29. Top shield, if required

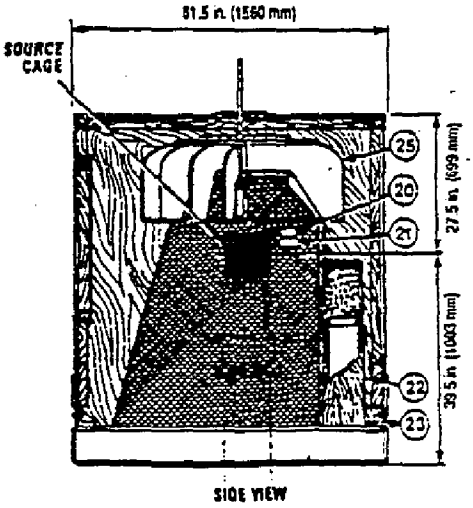




PLYWOOD CRATE



END VIEW



SIDE VIEW

Notes

- I.A.E.A. - Type B(U)
- Gross weight: 9700 lb. (4400 kg)
  Projected floor loading:
  531 lb./sq. ft. (2600 kg/sq. m)
- Capacity: 26,000 Ci ^{60}Co
- AECB CERT CDN/2013/B (U)
- US DOT CERT. USA/6125/B (U)

NORDION INTERNATIONAL INC.
447 March Road, P.O. Box 13500
Kanata, Ontario, Canada, K2K 1X8
Tel: (613) 592-2790 • Fax. (613) 592-6937 • Telex. 053-4162

TITLE

Gammacell 220
"Live" Source Head Crating for Shipment
for serial #195 and up

REF.DWG.	A01885	REVISED	AUGUST 1991
DATE	31 JANUARY 1975	No.	DS-0284
DRAWN	CHECKED	APPROVED	REV. L
		SHEET :	OF :

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