

EXPORT LICENSE

NRC FORM 250P
(12/10)



United States of America
Nuclear Regulatory Commission
Washington, D.C. 20555

NRC LICENSE NO.: PXB6.13

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NRC DOCKET NO.: 11006027

LICENSE EXPIRES: July 31, 2022

Pursuant to the Atomic Energy Act of 1954, as amended, and the regulations issued by the Nuclear Regulatory Commission (NRC) pursuant thereto, and in reliance on statements and representations heretofore made by the applicant/licensee, this license is hereby issued authorizing the licensee to export the byproduct materials listed below, subject to the terms and conditions herein. This license is only valid if the licensee or 'Other Party(ies) to Export' maintain the requisite NRC or Agreement State domestic license(s).

<p align="center">LICENSEE</p> <p>Alpha-Omega Services, Inc. Attn: Troy Hedger 9156 Rose Street Bellflower, CA 90706</p> <p>APPLICANT'S REFERENCE: Amd. 13 Request</p>	<p align="center">ULTIMATE FOREIGN CONSIGNEE(S)</p> <p align="center">Listed on Page 3</p> <p align="center">(Receipt of Sealed Sources)</p>
<p align="center">INTERMEDIATE CONSIGNEE(S) IN FOREIGN COUNTRY(IES)</p> <p align="center">NONE</p>	<p align="center">OTHER PARTY(IES) TO EXPORT</p> <p align="center">Listed on Pages 3 through 6</p> <p align="center">(Suppliers)</p>

COUNTRY(IES) OF ULTIMATE DESTINATION: Canada, Japan

**CONDITIONS, NOTES, AND DESCRIPTIONS OF 10 CFR PART 110, APPENDIX P,
BYPRODUCT AND SOURCE MATERIALS TO BE EXPORTED**
(NOTE: SEE PAGE 2 FOR DEFINITIONS OF CATEGORY 1 AND CATEGORY 2)

Export to Canada, of Category 1 quantities of Co-60 (not to exceed 244.2 TBq per shipment), contained in sealed sources for use in medical teletherapy devices, is authorized. **For Category 1 exports, see conditions on Page 3.**

Export to Japan, of Category 2 quantities of Ir-192, contained in sealed sources for use in medical brachytherapy devices, is authorized.

Licensee is responsible for compliance with all applicable export, and other domestic regulatory requirements, including all terms and conditions of domestic material possession licenses. Licensee, if not already submitted with your application, must submit information required by 10 CFR §110.32(d) and pertinent documentation required by 10 CFR §110.32(g) at least **24 hours prior to shipment**. See Page 2 for Mandatory Pre-shipment Notifications.

This license replaces PXB6.12 amending its authority by: 1) revising the list of 'Other Party(ies) to Export; and 2) extending the expiration date from October 31, 2021 until July 31, 2022.

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954, as amended.

This license is subject to the right of recapture or control by Section 108 of the Atomic Energy Act of 1954, as amended, and to all of the other provisions of said Acts, now or hereafter in effect and to all valid rules and regulations of the NRC.

THIS LICENSE IS INVALID UNLESS SIGNED BELOW
BY AUTHORIZED NRC REPRESENTATIVE

NAME AND TITLE:


Mark R. Shaffer, Deputy Director
Office of International Programs

DATE OF ISSUANCE:

July 16, 2012

MANDATORY PRE-SHIPMENT NOTIFICATIONS PER 10 CFR PART 110.50(c)

The following Prior Shipment Notifications must be made to both the NRC and, in case of exports, the government of the importing country in advance of each shipment:

Prior Shipment Notifications to the NRC are to be emailed to hoo.hoc@nrc.gov (preferred method) or faxed to the NRC at 301-816-5151. In the subject line of the email or on the fax cover page include: "10 CFR 110.50(c) Notification." For technical assistance, use the same e-mail address or call 301-816-5100.

Prior Shipment Notifications to the government of the importing country must be emailed or faxed to the appropriate foreign government authorities. To locate the point-of-contact for international Prior Shipment Notifications see: <http://www-ns.iaea.org/downloads/rw/imp-export/import-export-contact-points.pdf>. In the subject line of the email or on the fax cover page include: "NOTIFICATION TO THE IMPORTING STATE PRIOR TO SHIPMENT OF CATEGORY 1 OR 2 RADIOACTIVE SOURCES." For technical assistance or for countries not listed, contact the Office of International Programs' export/import staff at 301-415-2344.

Table 1: Appendix P to Part 110—Category 1 and Category 2 Radioactive Material Threshold Limits

Radioactive Material	Category 1		Category 2	
	Terabequerels (TBq)	Curies (Ci) ¹	Terabequerels (TBq)	Curies(Ci) ¹
Americium-241 (Am-241)	60	1,600	0.6	16
Americium-241/Beryllium (Am-241/Be)	60	1,600	0.6	16
Californium-252 (Cf-252)	20	540	0.2	5.4
Curium-244 (Cm-244)	50	1,400	0.5	14
Cobalt-60 (Co-60)	30	810	0.3	8.1
Cesium-137 (Cs-137)	100	2,700	1.0	27
Gadolinium-153 (Gd-153)	1,000	27,000	10.0	270
Iridium-192 (Ir-192)	80	2,200	0.8	22
Plutonium-238 ² (Pu-238)	60	1,600	0.6	16
Plutonium-239/Beryllium ² (Pu-239/Be)	60	1,600	0.6	16
Promethium-147 (Pm-147)	40,000	1,100,000	400	11,000
Radium-226 ³ (Ra-226)	40	1,100	0.4	11
Selenium-75 (Se-75)	200	5,400	2.0	54
Strontium-90 (Y-90)	1,000	27,000	10.0	270
Thulium-170 (Tm-170)	20,000	540,000	200	5,400
Ytterbium-169 (Yb-169)	300	8,100	3.0	81

Calculation of Shipments Containing Multiple Sources or Radionuclides:

The "sum of fractions" methodology for evaluating combinations of radionuclides being transported is to be used when import or export shipments contain multiple sources or multiple radionuclides. The threshold limit values used in a sum of the fractions calculation must be the metric values (i.e., TBq).

I. If multiple sources and/or multiple radionuclides are present in an import or export shipment, the sum of the fractions of the activity of each radionuclides must be determined to verify the shipment is less than the Category 1 or 2 limits of Table 1, as appropriate. If the calculated sum of the fractions ratio, using the following equation, is greater than or equal to 1.0, then the import or export shipment exceeds the threshold limits of Table 1 and the applicable security provisions of this part apply.

II. Use the equation below to calculate the sum of the fractions ratio by inserting the actual activity of the applicable radionuclides or of the individual sources (of the same radionuclides) in the numerator of the equation and the corresponding threshold activity limit from the Table 1 in the denominator of the equation. Ensure the numerator and denominator values are in the same units and all calculations must be performed using the TBq (i.e., metric) values of Table 1.

R1 = activity for radionuclides or source number 1 AR1 = activity limit for radionuclides or source number 1
R2 = activity for radionuclides or source number 2 AR2 = activity limit for radionuclides or source number 2
RN = activity for radionuclides or source number n ARN = activity limit for radionuclides or source number n

$$\sum_1^n \left[\frac{R_1}{AR_1} + \frac{R_2}{AR_2} + \frac{R_n}{AR_n} \right] \geq 1$$

¹ The values to be used to determine whether a license is required are given in TBq. Curie (Ci) values are provided for practical usefulness only and are rounded after conversion.

² The limits for exports of Pu-238 and Pu-239/Be can be found in § 110.21.

³ Discrete sources of Radium-226.

ULTIMATE FOREIGN CONSIGNEE(S)

For export of 10 CFR Part 110 Appendix P, Category 1 quantities of Co-60

Nordion (Canada) Inc.
447 March Road
Ottawa, Ontario
K2K 1X8
Canada

For export of 10 CFR Part 110 Appendix P, Category 2 quantities of Ir-192

Japan Radioisotope Association (JRIA)
28-45 Honkomagome 2-Chome
Bunkyo-Ku
Tokyo 113-8941
Japan

**CONDITIONS, NOTES, AND DESCRIPTIONS OF 10 CFR PART 110, APPENDIX P,
BYPRODUCT MATERIALS TO BE EXPORTED**

Alpha-Omega Services, Inc. is prohibited from shipping 10 CFR Part 110 Appendix P Category 1 quantities of Co-60 to Nordion (Canada) Inc. until:

- [1] Alpha-Omega Services, Inc. has requested in writing from the U.S. Nuclear Regulatory Commission (NRC) to obtain specific consent from Canada's regulatory authority, on a case-by-case basis;
- [2] NRC has received and considered government-to-government consent pursuant to 10 CFR §110.42(e)(3); and,
- [3] NRC has informed Alpha-Omega Services, Inc. in writing, that it is authorized to ship the materials to Nordion (Canada) Inc.

OTHER PARTY(IES) TO EXPORT (SUPPLIERS)

1. Alpha-Omega Services, Inc.
1282 Big Woods-Starks Road
Vinton, LA 70668
2. Aurora Health Care Metro, Inc.
d/b/a Aurora St. Luke's Medical Center
Room 115, Gamma Knife Department
2900 West Oklahoma Avenue
Milwaukee, WI 53215
3. Baylor All Saints Medical Center Fort Worth
1400 Eighth Avenue
Fort Worth, TX 76104
4. Chippenham and Johnston-Willis
Hospitals, Inc.
d/b/a CJW Medical Center
Johnston-Willis Campus
Chippenham Campus
7101 Jahnke Road
Richmond, VA 23225
5. Chippenham and Johnston-Willis
Hospitals, Inc.
d/b/a CJW Medical Center
Johnston-Willis Campus
1401 Johnston-Willis Drive
Richmond, VA 23235

OTHER PARTY(IES) TO EXPORT (SUPPLIERS) (Continued)

6. Columbia-Presbyterian Medical Center
Gamma Knife Suite
Basement Level, Room GK2
Children's Hospital of New York Presbyterian
Hospital
630 West 168th Street
New York, NY 10032
7. Cooper Health System
Robert Wood Johnson Medical School
at Camden
3 Cooper Plaza
Camden, NJ 08103
8. Deaconess Medical Center Gamma Knife
Gamma Knife Suite, Basement Floor
Room 117
910 West Fifth Avenue
Spokane, WA 99204
9. Doctors Hospital, Inc.
d/b/a Doctors Hospital
5000 University Drive
Coral Gables, FL 33146
10. Gamma Knife Center of the Pacific
2226 Liliha Street, Level B2
Honolulu, HI 96817
11. Good Samaritan Hospital
1225 Wilshire Boulevard
Los Angeles, CA 90017
12. HCA Health Services of Oklahoma, Inc.
d/b/a OU Medical Center
Presbyterian Hospital
700 N.E. 13th Street
Oklahoma City, OK 73104
13. Indiana University Medical Center
535 N. Barnhill Drive, Room 098
Indianapolis, IN 46202
14. John F. Kennedy Medical Center
65 James Street
Edison, NJ 08818
15. Karmanos Cancer Center
Gershenson Radiation Oncology Center
Room 379
4100 John R Street
Detroit, MI 48201
16. Kettering Medical Center
3535 Southern Boulevard
Kettering, OH 45429
17. Lewis Hall Singletary Oncology Center
at John D. Archbold Memorial Hospital
919 S. Broad Street
Thomasville, GA 31792
18. Marshfield Clinic
St. Joseph's Hospital
611 St. Joseph Avenue
Marshfield, WI 54449
20. Medical College of Wisconsin
Froedtert Memorial Lutheran Hospital
9200 West Wisconsin Avenue
Milwaukee, WI 53226
21. Medical University of South Carolina
Medical University Hospital
169 Ashley Avenue
Department of Radiation Oncology
Room 165C (Treatment Room 1)
Charleston, SC 29425
22. Memorial Hermann Healthcare System
dba Hermann Hospital
6411 Fannin Avenue
Houston, TX 77030
23. Nebraska Methodist Hospital
8303 Dodge Street
Omaha, NE 68114
24. Neurologic & Orthopedic Institute of Chicago
4501 N. Winchester
Chicago, IL 60640
25. New York University Hospitals Center
Arnold and Marie Schwartz Health Care
Center
Gamma Knife Suite
550 First Avenue
New York, NY 10016
26. North Carolina Baptist Hospital
Comprehensive Cancer Center
Medical Center Boulevard
Winston-Salem, NC 27157

OTHER PARTY(IES) TO EXPORT (SUPPLIERS) (Continued)

27. Northwest Hospital Gamma Knife Center
Building 310
Ground Floor, Suite G-5
1560 North 115th Street
Seattle, WA 98133
28. Northwestern Memorial Hospital
Feinberg Pavilion
251 E. Huron Street
Chicago, IL 60611
29. Palmetto Richland Memorial Hospital
7 Medical Park
Columbia, SC 29203
30. Providence Portland Medical Center
North Pavilion
4805 NE Glisan Street
Portland, OR 97213
31. Puerto Rico Medical Services
Administration
Puerto Rico Medical Center
Centro Medico de Rio Piedras
First Floor, Central Building
Carr 22 Barrio Monacillos
San Juan, PR 00921
32. Rhode Island Hospital
593 Eddy Street
Providence, RI 02902
33. Rocky Mountain Gamma Knife Center LLC
4231 West 16th Street
Denver, CO 80204
34. Roswell Park Cancer Institute
Elm & Carlton Street
Buffalo, NY 14263
35. Sacred Heart Medical Center
1255 Hilyard Street
Eugene, OR 97401
36. Saint Francis Medical Center
530 NE Glen Oak Avenue
Peoria, IL 61637
37. San Antonio Community Hospital
999 San Bernardino Road
Upland, CA 91786
38. South Nassau Communities Hospital
One Healthy Way
Oceanside, NY 11572
39. St. Joseph's Hospital
5665 Peachtree Dunwoody Road
Atlanta, GA 30342
40. St. Joseph's Hospital and Medical Center
350 West Thomas Road
Phoenix, AZ 85013
41. SUNY Upstate Medical University
750 East Adams Street
Syracuse, NY 13210
42. Sutter Medical Center Sacramento
Sutter Gamma Knife Center
2800 L Street
Sacramento, CA 95816
43. Tenet Good Samaritan, Inc.
1309 North Flagler Drive
West Palm Beach, FL 33401
44. Tenet Hospitals Limited
dba Sierra Medical Center
1625 Medical Center Drive
El Paso, TX 79902
45. Texas Health Presbyterian Hospital Dallas
8200 Walnut Hill Lane
Dallas, TX 75231
46. The Cleveland Clinic Foundation
9500 Euclid Avenue
Cleveland, OH 44195
47. The Regents of the University of California
San Francisco Medical Center
505 Parnassus Ave, Room L56
San Francisco, CA 94143
48. The Regents of the University of California
UC Davis Medical Center
4501 X Street, G126
Sacramento, CA 95817

OTHER PARTY(IES) TO EXPORT (SUPPLIERS) (Continued)

- 49. The University of Texas
MD Anderson Cancer Center
1515 Holcombe Boulevard
Houston, TX 77030
- 50. UAB Highlands Hospital
1201 11th Avenue South
Birmingham, AL 35205
- 51. University Hospitals of Cleveland
11100 Euclid Avenue
Cleveland, OH 44106
- 52. University of Arkansas for Medical Science
4301 West Markham Street
Little Rock, AR 72205
- 53. University of Kentucky
Markey Cancer Center
Roach Bldg., Room CC049
800 Rose Street
Lexington, KY 40536
- 54. University of Minnesota
University Campus of Fairview University
Medical Center, Room 1-285
420 Delaware Street
Minneapolis, MN 55455
- 55. University of Pittsburgh
Presbyterian University Hospital
230 Lothrop Street, Room G-102
Pittsburgh, PA 15213
- 56. University of Pittsburgh
Presbyterian University Hospital
230 Lothrop Street, Room F-179
Pittsburgh, PA 15213
- 57. University of Pittsburgh
Presbyterian University Hospital
230 Lothrop Street, Room F-185
Pittsburgh, PA 15213
- 58. USC University Hospital
1540 Alcazar Street
Los Angeles, CA 90033
- 59. Washington Hospital Center
110 Irving Street, NW
Washington, DC 20010
- 60. Washington University in St. Louis
4921 Parkview Place
St. Louis, MO 63108
- 61. West Virginia University Hospital, Inc.
Room B816, Robert C. Byrd Health
Sciences Center-South
One Medical Center Drive
Morgantown, WV 26506
- 62. Yale-New Haven Hospital
20 York Street
New Haven, CT 06519

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