

EXPORT LICENSE

NRC FORM 250P
(12/10)



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

NRC LICENSE NO.: PXB6.21

Page 1 of 8

NRC DOCKET NO.: 11006027

LICENSE EXPIRES: September 30, 2026

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 21</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 8</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 Advanced Notifications.

This license replaces PXB6.20 amending its authority by: 1) extending the expiration date from February 28, 2026 to September 30, 2026; and 2) revising the list of "Other Party(ies) to Export."

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:

David L. Skeen
David L. Skeen, Deputy Director
Office of International Programs
September 22, 2016

DATE OF ISSUANCE: _____

MANDATORY ADVANCED NOTIFICATIONS PER 10 CFR PART 110.50(c)

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

Advanced 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.

Advanced 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 radionuclide 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. Adventist Health Systems/Sunbelt Inc.
Florida Hospital Plaza
2501 N. Orange Avenue
Orlando, FL 32803
2. Alexian Brothers Medical Center
800 West Biesterfield Road
Elk Grove Village, IL 60007
3. Alpha-Omega Services, Inc.
1282 Big Woods-Starks Road
Vinton, LA 70668
4. 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
5. Baylor All Saints Medical Center Fort Worth
1400 Eighth Avenue
Fort Worth, TX 76104
6. BRFHH Shreveport, LLC
DBA University Health Shreveport
1541 Kings Highway
Shreveport, LA 71130
7. Central Mississippi Medical Center
Radiation Oncology Department
1850 Chadwick Drive
Jackson, MS 39204
8. Chippenham and Johnston-Willis
Hospitals, Inc.
d/b/a CJW Medical Center
Johnston-Willis Campus
Chippenham Campus
7101 Jahnke Road
Richmond, VA 23225

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

9. Chippenham and Johnston-Willis Hospitals, Inc.
d/b/a CJW Medical Center
Johnston-Wills Campus
1401 Johnston-Willis Drive
Richmond, VA 23235
10. 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
11. Cooper Health System
Robert Wood Johnson Medical School at Camden
3 Cooper Plaza
Camden, NJ 08103
12. Covenant Health System
Covenant Gamma Southwest
3603 21st Street
Lubbock, TX 79410
13. Covenant Health System
DBA Joe Arrington Cancer Research & Treatment Center
4101 22nd Place
Lubbock, TX 79410
14. GE-Hitachi Nuclear Energy Americas, LLC
Vallecitos Nuclear Center
6705 Vallecitos Road
Pleasanton, CA 94586
15. Deaconess Medical Center Gamma Knife
Gamma Knife Suite, Basement Floor
Room 117
910 West Fifth Avenue
Spokane, WA 99204
16. Doctors Hospital, Inc.
d/b/a Doctors Hospital
5000 University Drive
Coral Gables, FL 33146
17. Fort Sanders Regional Gamma Knife Center
1915 White Avenue
Knoxville, TN 37916
18. Gamma Knife Center of the Pacific
2226 Liliha Street, Level B2
Honolulu, HI 96817
19. Good Samaritan Hospital
1225 Wilshire Boulevard
Los Angeles, CA 90017
20. Hackensack University Medical Center
John Theurer Cancer Center
92 2nd St.
Hackensack, NJ 07601
21. Harborview Medical Center
325 9th Avenue
Gamma Knife Suite
Seattle, WA 98133
22. HCA Health Services of Oklahoma, Inc.
d/b/a OU Medical Center
Presbyterian Hospital
700 N.E. 13th Street
Oklahoma City, OK 73104
23. Hoag Memorial Hospital Presbyterian
One Hoag Drive
Newport Beach, CA 92658
24. Holy Spirit Cancer Center
Gamma Knife Center
880 Century Drive
Mechanicsburg, PA 17055
25. Indiana University Medical Center
535 Barnhill Drive
Indianapolis, IN 46202
26. Intermountain Medical Center
Jon and Karen Huntsman Cancer Center
Gamma Knife Room
5121 South Cottonwood Street
Murray, UT 84157
27. John F. Kennedy Medical Center
65 James Street
Edison, NJ 08818

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

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| 28. | Karmanos Cancer Center
Gershenson Radiation Oncology Center
Room 379
4100 John R Street
Detroit, MI 48201 | 38. | Methodist Healthcare System of
San Antonio LTD
Methodist Hospital
7700 Floyd Curl Drive
San Antonio, TX 78229 |
| 29. | Kettering Medical Center
3535 Southern Boulevard
Kettering, OH 45429 | 39. | MidMichigan Gamma Knife Facility
4000 Wellness Drive,
Room 160
Midland, MI 48670 |
| 30. | Lehigh Valley Health Network
1240 South Cedar Crest Blvd.
Allentown, PA 18103 | 40. | Nebraska Methodist Hospital
8303 Dodge Street
Omaha, NE 68114 |
| 31. | Lewis Hall Singletary Oncology Center
at John D. Archbold Memorial Hospital
919 S. Broad Street
Thomasville, GA 31792 | 41. | Neurologic & Orthopedic Institute of
Chicago
4501 N. Winchester
Chicago, IL 60640 |
| 32. | Los Robles Regional Medical Center
2200 Lynn Road
Thousand Oaks, CA 91360 | 42. | New York University Hospitals Center
Arnold and Marie Schwartz Health Care
Center Gamma Knife Suite
560 First Avenue
New York, NY 10016 |
| 33. | Marshall Clinic
St. Joseph's Hospital
611 St. Joseph Avenue
Marshfield, WI 54449 | 43. | Wake Forest Baptist Health
Radiation Oncology Department
Comprehensive Cancer Center
Medical Center Boulevard
Winston-Salem, NC 27157 |
| 34. | Mayo Clinic Hospital-Rochester
St. Mary's Campus
1216 2 nd St SW
Rochester MN 55905 | 44. | Northern Westchester Hospital Center
400 East Main Street
Mount Kisco, NY 10549 |
| 35. | Medical College of Wisconsin
Froedtert Memorial Lutheran Hospital
9200 West Wisconsin Avenue
Milwaukee, WI 53226 | 45. | Northwest Hospital Gamma Knife Center
Building 310
Ground Floor, Suite G-5
1560 North 115 th Street
Seattle, WA 98133 |
| 36. | Medical University of South Carolina
Medical University Hospital
169 Ashley Avenue
Department of Radiation Oncology
Room 165C (Treatment Room 1)
Charleston, SC 29425 | 46. | Northwestern Memorial Hospital
Feinberg Pavilion
251 E. Huron Street
Chicago, IL 60611 |
| 37. | Memorial Hermann Healthcare System
dba Hermann Hospital
6411 Fannin Avenue
Houston, TX 77030 | 47. | Palmetto Health Richland
7 Medical Park
Columbia, SC 29203 |

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

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| 48. | Penn State Milton S. Hershey Medical Center
500 University Drive
Hershey, PA 17033 | 59. | Saint Francis Medical Center
530 NE Glen Oak Avenue
Peoria, IL 61637 |
| 49. | Piedmont Hospital
Radiation Oncology Services
1968 Peachtree Road N.W.
Atlanta, GA 30309 | 60. | San Antonio Community Hospital
999 San Bernardino Road
Upland, CA 91786 |
| 50. | Pitt County Memorial Hospital
d/b/a Vidant Medical Center
2100 Stantonsburg Road
Greenville, NC 27835 | 61. | South Nassau Communities Hospital
One Healthy Way
Oceanside, NY 11572 |
| 51. | Providence Portland Medical Center
North Pavilion
4805 NE Glisan Street
Portland, OR 97213 | 62. | St. Joseph's Hospital
5665 Peachtree Dunwoody Road
Atlanta, GA 30342 |
| 52. | 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 | 63. | St. Joseph's Hospital and Medical Center
350 West Thomas Road
Phoenix, AZ 85013 |
| 53. | Robert Wood Johnson University Center
Gamma Knife Suite
10 Plum Street
New Brunswick City, NJ 08901 | 64. | Sunrise Diagnostic Center
3006 South Maryland Parkway
Las Vegas, NV 89109 |
| 54. | Research Medical Center
Midwest Gamma Knife Center
2316 E. Meyer Blvd.
Kansas City, MO 64132 | 65. | SUNY Upstate Medical University
750 East Adams Street
Syracuse, NY 13210 |
| 55. | Rhode Island Hospital
593 Eddy Street
Providence, RI 02903 | 66. | Sutter Gamma Knife Center
2800 L Street
Sacramento, CA 95816 |
| 56. | Rocky Mountain Gamma Knife Center, LLC
1635 Aurora Court
Aurora, CO 80045. | 67. | Sutter Medical Center Sacramento
Sutter Gamma Knife Center
2801 K Street, Suite 110
Sacramento, CA 95816 |
| 57. | Roswell Park Cancer Institute
Elm & Carlton Street
Buffalo, NY 14263 | 68. | Temple University Hospital
3401 N. Broad Street
Philadelphia, PA 19140 |
| 58. | Sacred Heart Medical Center
1255 Hilyard Street
Eugene, OR 97401 | 69. | Tenet Good Samaritan, Inc.
1309 North Flagler Drive
West Palm Beach, FL 33401 |
| | | 70. | Tenet Hospitals Limited
dba Sierra Medical Center
1625 Medical Center Drive
El Paso, TX 79902 |
| | | 71. | Texas Health Presbyterian Hospital Dallas
8200 Walnut Hill Lane
Dallas, TX 75231 |

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

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| 72. | The Cleveland Clinic Foundation
9500 Euclid Avenue
Cleveland, OH 44195 | 83. | University of Arkansas for Medical Science
4301 West Markham Street
Little Rock, AR 72205 |
| 73. | The Ohio State University
Radiation Medicine Department
Arthur G. James Cancer Hospital and
Richard J. Solove Research Institute
300 West 10th Avenue.
Columbus, OH 43210 | 84. | University of Kentucky
Markey Cancer Center
Roach Bldg., Room CC049
800 Rose Street
Lexington, KY 40536 |
| 74. | The Regents of the University of California
San Francisco Medical Center
505 Parnassus Ave, Room L56
San Francisco, CA 94143 | 85. | University of Minnesota
University Campus of Fairview University
Medical Center, Room 1-285
420 Delaware Street
Minneapolis, MN 55455 |
| 75. | The Regents of the University of California
UC Davis Medical Center
4501 X Street, G126
Sacramento, CA 95817 | 86. | University of Pennsylvania
Pennsylvania Hospital Campus
800 Spruce Street
Philadelphia, PA 19107 |
| 76. | The University of Texas
MD Anderson Cancer Center
1515 Holcombe Boulevard
Houston, TX 77030 | 87. | University of Pittsburgh
Presbyterian University Hospital
230 Lothrop Street, Room G-102
Pittsburgh, PA 15213 |
| 77. | The Valley Hospital Luckow Pavilion
1 Valley Health Plaza
Paramus, NJ 07652 | 88. | University of Pittsburgh
Presbyterian University Hospital
230 Lothrop Street, Room F-179
Pittsburgh, PA 15213 |
| 78. | The Swedish Radiosurgery Center
Suite A10 James Tower
550 17 th Avenue
Seattle, WA 98122 | 89. | University of Pittsburgh
Presbyterian University Hospital
230 Lothrop Street, Room F-185
Pittsburgh, PA 15213 |
| 79. | Thomas Jefferson University and Hospitals
900 Walnut Street
Philadelphia, PA 19107 | 90. | University of Texas Southwestern
Medical Center at Dallas
5151 Harry Hines Blvd. Suite G49
Dallas, TX 75390 |
| 80. | Tufts – New England Medical Center
800 Washington Street
Boston, MA 02111 | 91. | University of Virginia Health Services
Foundation
Lars Leksell Center for Gamma Surgery
Building 1143; Room G411
1215 Lee Street
Charlottesville, VA 22908 |
| 81. | UAB Highlands Hospital
1201 11 th Avenue South
Birmingham, AL 35205 | 92. | USC University Hospital
1540 Alcazar Street
Los Angeles, CA 90033 |
| 82. | University Hospitals of Cleveland
11100 Euclid Avenue
Cleveland, OH 44106 | | |

