

EXPORT LICENSE

NRC FORM 250P
(12/10)

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

NRC LICENSE NO.: **PXB6.16**

Page 1 of 7

NRC DOCKET NO.: **11006027**LICENSE EXPIRES: **March 31, 2023**

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).

LICENSEE

Alpha-Omega Services, Inc.
 Attn: Troy Hedger
 9156 Rose Street
 Bellflower, CA 90706

ULTIMATE FOREIGN CONSIGNEE(S)

Listed on Page 3

APPLICANT'S REFERENCE: **Amendment 16 Request**

(Receipt of Sealed Sources)

INTERMEDIATE CONSIGNEE(S) IN FOREIGN
COUNTRY(IES)

NONE

OTHER PARTY(IES) TO EXPORT

Listed on Pages 3 through 7

(Suppliers)

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 PXB6.15 amending its authority by 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:

Janice E. Owens
 Janice E. Owens, Acting Deputy Director
 Office of International Programs

DATE OF ISSUANCE:

January 29, 2014

EXPORT LICENSE

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 110B 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
R2 = activity for radionuclides or source number 2
RN = activity for radionuclides or source number n

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

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

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 | 5. Baylor All Saints Medical Center Fort Worth
1400 Eighth Avenue
Fort Worth, TX 76104 |
| 2. Alexian Brothers Medical Center
800 West Biesterfield Road
Elk Grove Village, IL 60007 | 6. BRFHH Shreveport, LLC
DBA University Health Shreveport
1541 Kings Highway
Shreveport, LA 71130 |
| 3. Alpha-Omega Services, Inc.
1282 Big Woods-Starks Road
Vinton, LA 70668 | 7. Cedars-Sinai Medical Center Campus
8700 Beverly Blvd.
Los Angeles, CA 90048 |
| 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 | 8. Central Mississippi Medical Center
Radiation Oncology Department
1850 Chadwick Drive
Jackson, MS 39204 |

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

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|--|--|
| <p>9. CHCA West Houston LP
DBA West Houston Medical Center
12141 Richmond Avenue
Houston, TX 77082</p> | <p>18. Good Samaritan Hospital
1225 Wilshire Boulevard
Los Angeles, CA 90017</p> |
| <p>10. Chippenham and Johnston-Willis
Hospitals, Inc.
d/b/a CJW Medical Center
Johnston-Willis Campus
Chippenham Campus
7101 Jahnke Road
Richmond, VA 23225</p> | <p>19. HCA Health Services of Oklahoma, Inc.
d/b/a OU Medical Center
Presbyterian Hospital
700 N.E. 13th Street
Oklahoma City, OK 73104</p> |
| <p>11. Chippenham and Johnston-Willis
Hospitals, Inc.
d/b/a CJW Medical Center
Johnston-Wills Campus
1401 Johnston-Willis Drive
Richmond, VA 23235</p> | <p>20. Hoag Memorial Hospital
One Hoag Drive
Newport Beach, CA 92663</p> |
| <p>12. 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</p> | <p>21. Indiana University Medical Center
535 N. Barnhill Drive, Room 098
Indianapolis, IN 46202</p> |
| <p>13. Columbia/St. Davids Healthcare System LP
DBA St. Davids Medical Center
919 East 32nd Street
Austin, TX 78705</p> | <p>22. Intermountain Medical Center
Jon and Karen Huntsman Cancer Center
Gamma Knife Room
5121 South Cottonwood Street
Murray, UT 84157</p> |
| <p>14. Cooper Health System
Robert Wood Johnson Medical School
at Camden
3 Cooper Plaza
Camden, NJ 08103</p> | <p>23. John F. Kennedy Medical Center
65 James Street
Edison, NJ 08818</p> |
| <p>15. Deaconess Medical Center Gamma Knife
Gamma Knife Suite, Basement Floor
Room 117
910 West Fifth Avenue
Spokane, WA 99204</p> | <p>24. Karmanos Cancer Center
Gershenson Radiation Oncology Center
Room 379
4100 John R Street
Detroit, MI 48201</p> |
| <p>16. Doctors Hospital, Inc.
d/b/a Doctors Hospital
5000 University Drive
Coral Gables, FL 33146</p> | <p>25. Kettering Medical Center
3535 Southern Boulevard
Kettering, OH 45429</p> |
| <p>17. Gamma Knife Center of the Pacific
2226 Liliha Street, Level B2
Honolulu, HI 96817</p> | <p>26. Lewis Hall Singletary Oncology Center
at John D. Archbold Memorial Hospital
919 S. Broad Street
Thomasville, GA 31792</p> |
| | <p>27. Los Robles Regional Medical Center
2200 Lynn Road
Thousand Oaks, CA 91360</p> |
| | <p>28. Marshall Clinic
St. Joseph's Hospital
611 St. Joseph Avenue
Marshfield, WI 54449</p> |

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

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|--|---|
| <p>29. Medical College of Wisconsin
Froedtert Memorial Lutheran Hospital
9200 West Wisconsin Avenue
Milwaukee, WI 53226</p> | <p>39. Northwest Hospital Gamma Knife Center
Building 310
Ground Floor, Suite G-5
1560 North 115th Street
Seattle, WA 98133</p> |
| <p>30. Medical University of South Carolina
Medical University Hospital
169 Ashley Avenue
Department of Radiation Oncology
Room 165C (Treatment Room 1)
Charleston, SC 29425</p> | <p>40. Northwestern Memorial Hospital
Feinberg Pavilion
251 E. Huron Street
Chicago, IL 60611</p> |
| <p>31. Memorial Hermann Healthcare System
dba Hermann Hospital
6411 Fannin Avenue
Houston, TX 77030</p> | <p>41. Palmetto Richland Memorial Hospital
7 Medical Park
Columbia, SC 29203</p> |
| <p>32. Methodist Healthcare System of
San Antonio LTD
Methodist Hospital
7700 Floyd Curl Drive
San Antonio, TX 78229</p> | <p>42. Piedmont Hospital
Radiation Oncology Services
1968 Peachtree Road N.W.
Atlanta, GA 30309</p> |
| <p>33. MidMichigan Gamma Knife Facility
4005 Orchard Drive
Room 160
Midlands, MI 48640</p> | <p>43. Pitt County Memorial Hospital
d/b/a Vidant Medical Center
2100 Stantonsburg Road
Greenville, NC 27835</p> |
| <p>34. Nebraska Methodist Hospital
8303 Dodge Street
Omaha, NE 68114</p> | <p>44. Providence Portland Medical Center
North Pavilion
4805 NE Glisan Street
Portland, OR 97213</p> |
| <p>35. Neurologic & Orthopedic Institute of
Chicago
4501 N. Winchester
Chicago, IL 60640</p> | <p>45. 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</p> |
| <p>36. New York University Hospitals Center
Arnold and Marie Schwartz Health Care
Center
Gamma Knife Suite
560 First Avenue
New York, NY 10016</p> | <p>46. Rhode Island Hospital
593 Eddy Street
Providence, RI 02903</p> |
| <p>37. North Carolina Baptist Hospital
Comprehensive Cancer Center
Medical Center Boulevard
Winston-Salem, NC 27157</p> | <p>47. Rocky Mountain Gamma Knife Center LLC
4231 West 16th Street
Denver, CO 80204</p> |
| <p>38. Northern Westchester Hospital Center
400 East Main Street
Mount Kisco, NY 10549</p> | <p>48. Roswell Park Cancer Institute
Elm & Carlton Street
Buffalo, NY 14263</p> |
| | <p>49. Sacred Heart Medical Center
1255 Hilyard Street
Eugene, OR 97401</p> |

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

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|--|--|
| <p>50. Saint Francis Medical Center
530 NE Glen Oak Avenue
Peoria, IL 61637</p> | <p>63. 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</p> |
| <p>51. San Antonio Community Hospital
999 San Bernardino Road
Upland, CA 91786</p> | <p>64. The Regents of the University of California
San Francisco Medical Center
505 Parnassus Ave, Room L56
San Francisco, CA 94143</p> |
| <p>52. South Nassau Communities Hospital
One Healthy Way
Oceanside, NY 11572</p> | <p>65. The Regents of the University of California
UC Davis Medical Center
4501 X Street, G126
Sacramento, CA 95817</p> |
| <p>53. St. Joseph's Hospital
5665 Peachtree Dunwoody Road
Atlanta, GA 30342</p> | <p>66. The University of Texas
MD Anderson Cancer Center
1515 Holcombe Boulevard
Houston, TX 77030</p> |
| <p>54. St. Joseph's Hospital and Medical Center
350 West Thomas Road
Phoenix, AZ 85013</p> | <p>67. Tufts – New England Medical Center
800 Washington Street
Boston, MA 02111</p> |
| <p>55. Sunrise Diagnostic Center
3006 South Maryland Parkway
Las Vegas, NV 89109</p> | <p>68. UAB Highlands Hospital
1201 11th Avenue South
Birmingham, AL 35205</p> |
| <p>56. SUNY Upstate Medical University
750 East Adams Street
Syracuse, NY 13210</p> | <p>69. University Hospitals of Cleveland
11100 Euclid Avenue
Cleveland, OH 44106</p> |
| <p>57. Sutter Medical Center Sacramento
Sutter Gamma Knife Center
2800 L Street
Sacramento, CA 95816</p> | <p>70. University of Arkansas for Medical Science
4301 West Markham Street
Little Rock, AR 72205</p> |
| <p>58. Temple University Hospital
3401 N. Broad Street
Philadelphia, PA 19140</p> | <p>71. University of Kentucky
Markey Cancer Center
Roach Bldg., Room CC049
800 Rose Street
Lexington, KY 40536</p> |
| <p>59. Tenet Good Samaritan, Inc.
1309 North Flagler Drive
West Palm Beach, FL 33401</p> | <p>72. University of Minnesota
University Campus of Fairview University
Medical Center, Room 1-285
420 Delaware Street
Minneapolis, MN 55455</p> |
| <p>60. Tenet Hospitals Limited
dba Sierra Medical Center
1625 Medical Center Drive
El Paso, TX 79902</p> | |
| <p>61. Texas Health Presbyterian Hospital Dallas
8200 Walnut Hill Lane
Dallas, TX 75231</p> | |
| <p>62. The Cleveland Clinic Foundation
9500 Euclid Avenue
Cleveland, OH 44195</p> | |

77. Washington Hospital Center
110 Irving Street, NW
Washington, DC 20010