

## EXPORT LICENSE

NRC FORM 250P  
(12/10)

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

NRC LICENSE NO.: **PXB6.13**

Page 1 of 6

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).

## LICENSEE

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

APPLICANT'S REFERENCE: **Amd. 13 Request**

## ULTIMATE FOREIGN CONSIGNEE(S)

Listed on Page 3

(Receipt of Sealed Sources)

## INTERMEDIATE CONSIGNEE(S) IN FOREIGN COUNTRY(IES)

NONE

## OTHER PARTY(IES) TO EXPORT

Listed on Pages 3 through 6

(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 PXB6.12 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*  
Mark R. Shaffer, Deputy Director  
Office of International Programs

DATE OF ISSUANCE:

July 16, 2012

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](mailto: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) <sup>1</sup>	Terabequerels (TBq)	Curies (Ci) <sup>1</sup>
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 <sup>2</sup> (Pu-238)	60	1,600	0.6	16
Plutonium-239/Beryllium <sup>2</sup> (Pu-239/Be)	60	1,600	0.6	16
Promethium-147 (Pm-147)	40,000	1,100,000	400	11,000
Radium-226 <sup>3</sup> (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  
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

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

<sup>1</sup> 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.

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

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



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 168<sup>th</sup> 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. 13<sup>th</sup> 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 115<sup>th</sup> 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 16<sup>th</sup> 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 11<sup>th</sup> 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

/END/