

EXPORT LICENSE

NRC FORM 250



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

NRC LICENSE NO.: PXB6.30

Page 1 of 9

NRC DOCKET NO.: 11006027

LICENSE EXPIRES: January 31, 2028

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 of 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.
9156 Rose Street
Bellflower, CA 90706

Attn: Carl Tunnell

ULTIMATE CONSIGNEE(S) IN FOREIGN COUNTRY(IES)

See following page(s)

INTERMEDIATE CONSIGNEE(S) IN FOREIGN COUNTRY(IES)

None

OTHER U.S. PARTY(IES) TO EXPORT

See following page(s)

APPLICANT'S REFERENCE: AMD 30

ULTIMATE DESTINATIONS: Canada and Japan

DESCRIPTIONS OF 10 CFR PART 110, APPENDIX P, BYPRODUCT MATERIALS TO BE EXPORTED, INCLUDING CONDITIONS AND NOTES (NOTE: SEE PAGE 9 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 final disposition, is authorized. For Category 1 exports, see conditions on page 2.

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 pertinent documentation required by 10 CFR § 110.32(g) at least 24 hours prior to shipment. See page 9 for Mandatory Advanced Notifications.

This license replaces PXB6.29 amending its authority by revising three addresses listed in the "Other U.S. Party(ies) to Export", and adding one additional "Other U.S. 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 the other provisions of said Acts, now or hereafter in effect and to all valid rules and regulations of the Nuclear Regulatory Commission.

THIS LICENSE IS INVALID UNLESS SIGNED BELOW BY AUTHORIZED NRC REPRESENTATIVE

Mohamed K. Shams

Digitally signed by Mohamed K. Shams
Date: 2020.01.03 10:10:49 -05'00'

NAME AND TITLE:

Mohamed K. Shams, Acting Deputy Director
Office of International Programs

DATE OF ISSUANCE:

January 03, 2020

EXPORT LICENSE

CONDITIONS FOR CATEGORY 1 EXPORTS

Licensee is prohibited from shipping 10 CFR Part 110 Appendix P Category 1 quantities of Co-60 to Canada for which government-to-government consent has not yet been requested, received and processed until the following actions are taken:

1. The licensee submits a consent request to the NRC with pertinent details for a specific shipment or series of shipments on the NRC Form 7, which notifies the NRC to request and obtain consent for the specified transaction(s) from the importing country's regulatory authority;
2. The NRC receives and considers the consent from the importing country's regulatory authority pursuant to 10 CFR §110.42(e)(3); and
3. The NRC has informed the licensee in writing, that the consent request has been granted and it is authorized to ship the materials to the ultimate consignee(s) specified on the NRC Form 7 consent request.

ULTIMATE CONSIGNEE(S) IN FOREIGN COUNTRY(IES) Continued:

1. **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

2. **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

OTHER U.S.PARTY(IES) TO EXPORT Continued:

1. Adventist Health Systems/Sunbelt Inc.
Florida Hospital Plaza
2501 N. Orange Avenue
Orlando, FL 32803

2. Akron General Medical Center
762 South Cleveland Massillon Road
Montrose, OH 44333

3. Alexian Brothers Medical Center
800 West Biesterfield Road
Elk Grove Village, IL 60007

4. Alpha-Omega Services, Inc.
1282 Big Woods-Starks Road
Vinton, LA 70668

5. Anchorage Radiation Oncology Management, Inc.
d/b/a Anchorage Radiation Therapy Center
2841 Debarr Road, Suite 100
Anchorage, AK 99508

6. Augusta University Medical Center
1120 15th Street
Augusta, GA 30912

7. 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. Baptist Hospital of Miami, Inc.
Department of Radiation Oncology
8900 North Kendall Drive
Miami, FL 33176

9. Baylor All Saints Medical Center Fort Worth
1400 Eight Avenue
Fort Worth, TX 76104

10. Billings Clinic
2800 Tenth Avenue North
Billings, MT 59101

OTHER U.S.PARTY(IES) TO EXPORT Continued:

11. BRFHH Shreveport, LLC
DBA University Health Shreveport
1541 Kings Highway
Shreveport, LA 71130
12. Bryan Medical Center
2300 South 16th Street
Lincoln, NE 68502
13. Center for Advanced Medicine
Long Island Jewish Medical Center
450 Lakeville Road
Lake Success, NY 11042
14. Central DuPage Hospital Association
Northwestern Medicine Cancer Center
Central DuPage Hospital
4405 Weaver Parkway
Warrenville, IL 60555
15. Central Mississippi Medical Center
Radiation Oncology Department
1850 Chadwick Drive
Jackson, MS 39204
16. Chesapeake Regional Riverside &
University of Virginia Radiosurgery Center
500 J Clyde Morris Boulevard
Newport News, VA 23601
17. Chippenham and Johnston-Willis Hospitals,
Inc.
d/b/a CJW Medical Center, Johnston-Willis
Campus
1401 Johnston-Willis Drive
Richmond, VA 23235
18. Chippenham and Johnston-Willis Hospitals,
Inc., d/b/a CJW Medical Center
Johnston-Willis Campus, Chippenham
Campus
7101 Jahnke Road
Richmond, VA 23235
19. 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
20. Cooper Health System
Robert Wood Johnson Medical School at
Camden
3 Cooper Plaza
Camden, NJ 08103
21. Covenant Health System
Covenant Gamma Southwest
3603 21st Street
Lubbock, TX 79410
22. Covenant Health System
DBA Joe Arrington Cancer Research &
Treatment Center
4101 22nd Place
Lubbock, TX 79410
23. Deaconess Medical Center
Gamma Knife Suite
Basement Floor Room 117
910 West Fifth Avenue
Spokane, WA 99204
24. Doctors Hospital, Inc.
d/b/a Doctors Hospital
5000 University Drive
Coral Gables, FL 33146
25. Fort Sanders Regional Gamma Knife Center
1915 White Avenue
Knoxville, TN 37916
26. Gamma Knife Center of the Pacific
2226 Liliha Street, Level B2
Honolulu, HI 96817
27. GE-Hitachi Nuclear Energy Americas, LLC
Vallecitos Nuclear Center
6705 Vallecitos Road
Pleasanton, CA 94586
28. Good Samaritan Hospital
1225 Wilshire Boulevard
Los Angeles, CA 90017
29. Hackensack University Medical Center John
Theurer Cancer Center
92 2nd St.
Hackensack, NJ 07601
30. Harborview Medical Center
325 9th Avenue
Gamma Knife Suite
Seattle, WA 98133

OTHER U.S.PARTY(IES) TO EXPORT Continued:

31. HCA Health Services of Oklahoma, Inc. d/b/a
OU Medical Center
Presbyterian Hospital
700 N.E. 13th Street
Oklahoma City, OK 73104
32. Hoag Memorial Hospital Presbyterian
One Hoag Drive
Newport Beach, CA 92658
33. Holy Spirit Cancer Center
Gamma Knife Center
880 Century Drive
Mechanicsburg, PA 17055
34. Indiana University Health Methodist Hospital
1701 N. Senate Blvd
Indianapolis, IN 46202
35. Intermountain Medical Center
Jon and Karen Huntsman Cancer Center
Gamma Knife Room, 5121 South
Cottonwood Street
Murray, UT 84157
36. Jewish Hospital, LLC.
4777 East Galbraith Road
Cincinnati, OH 45236
37. John F. Kennedy Medical Center
65 James Street
Edison, NJ 08818
38. Karmanos Cancer Center
Gershenson Radiation Oncology Center,
Room 379
4100 John R. Street
Detroit, MI 48201
39. Kettering Medical Center
3535 Southern Boulevard
Kettering, OH 45429
40. Larkin Community Hospital, Inc.
6129 Southwest 70th Street
South Miami, FL 33143
41. Legacy Health System
1130 North West 22nd Avenue, Suite LL50
Portland, OR 97210
42. Lehigh Valley Health Network
1240 South Cedar Crest Boulevard
Allentown, PA 18103
43. Lewis Hall Singletary Oncology Center
at John D. Archbold Memorial Center
919 S. Broad Street
Thomasville, GA 31792
44. Los Robles Reginal Medical Center
2200 Lynn Road
Thousand Oaks, CA 91360
45. Lovelace Medical Center
601 Dr. Martin Luther King, Jr. NE
Albuquerque, NM 87102
46. Marshfield Medical Center
611 St. Joseph Avenue
Marshfield, WI 54449
47. Mayo Clinic Hospital-Rochester
St. Mary's Campus
1216 2nd St. NW
Rochester, MN 55905
48. Mayo Clinic Jacksonville
4500 San Pablo Road
Jacksonville, FL 32224
49. Medical College of Wisconsin
Froedtert Memorial Lutheran Hospital
9200 West Wisconsin Avenue
Milwaukee, WI 53226
50. Medical University of South Carolina
171 Ashley Avenue (MUSC)
Charleston, SC 29425
51. Memorial Hermann Health System
DBA Memorial Hermann Texas Medical
Center
6411 Fannin Street
Houston, TX 77030
52. Mercy Health Center
4300 West Memorial Road
Oklahoma City, OK 73120

OTHER U.S.PARTY(IES) TO EXPORT Continued:

- | | |
|---|---|
| 53. Methodist Healthcare System of San Antonio
LTD
Methodist Hospital
7700 Floyd Curl Drive
San Antonio, TX 78229 | 54. MidMichigan Gamma Knife Facility
4000 Wellness Drive
Room H-1405
Midland, MI 48670 |
| 55. Nebraska Methodist Hospital
8303 Dodge Street
Omaha, NE 68114 | 56. Neurologic & Orthopedic Institute of Chicago
4501 N. Winchester
Chicago, IL 60640 |
| 57. New York University Hospitals Center
Arnold and Marie Schwartz Health Care
Center Gamma Knife Suite, 550 First Avenue
New York, NY 10016 | 58. Northern Westchester Hospital Center
400 East Main Street
Mount Kisco, NY 10549 |
| 59. Northwest Hospital Gamma Knife Center
Building 310, Ground Floor, Suite G-5
1560 North 115th Street
Seattle, WA 98133 | 60. Northwestern Memorial Hospital
Galter Pavilion
201 E. Huron Street
Chicago, IL 60611 |
| 61. Penn State Milton S. Hershey Medical Center
500 University Drive
Hershey, PA 17033 | 62. Piedmont Hospital
Radiation Oncology Services
1968 Peachtree Road N.W.
Atlanta, GA 30309 |
| 63. Pitt County Memorial Hospital
d/b/a Vidant Medical Center
2100 Stantonsburg Road
Greenville, NC 27835 | 64. Prisma Health Richland Hospital
7 Medical Park
Columbia, SC 29203 |
| 65. Providence Portland Medical Center
North Pavilion
4805 NE Glisan Street
Portland, OR 97213 | 66. 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 00935 |
| 67. Puget Sound Radiosurgery
Gamma Knife Suite, Room 103, St. Joseph's
Medical Center
1802 South Yakima
Tacoma, WA 98405 | 68. Research Medical Center
Midwest Gamma Knife Center
2316 E. Meyer Blvd.
Kansas City, MO 64132 |
| 69. Rhode Island Hospital
593 Eddy Street
Providence, RI 02903 | 70. Robert Wood Johnson University Center
Gamma Knife Suite
10 Plum Street
New Brunswick City, NJ 08901 |
| 71. Rocky Mountain Gamma Knife Center, LLC
1635 Aurora Court
Aurora, CO 80045 | 72. Roswell Park Cancer Institute
Elm & Carlton Street
Buffalo, NY 14263 |
| 73. Sacred Heart Health System, Inc.
d/b/a Sacred Heart Hospital of Pensacola
5151 North 9th Avenue
Pensacola, FL 32504 | 74. Sacred Heart Medical Center
1255 Hilyard Street
Eugene, OR 97401 |

OTHER U.S.PARTY(IES) TO EXPORT Continued:

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|--|---|
| 75. Saint Francis Medical Center
530 NE Glen Oak Avenue
Peoria, IL 61637 | 76. San Antonio Community Hospital
999 San Bernardino Road
Upland, CA 91786 |
| 77. San Diego Gamma Knife Center
9834 Genesee Avenue, Suite 110
La Jolla, CA 92037 | 78. South Nassau Communities Hospital
One Healthy Way
Oceanside, NY 11572 |
| 79. St. Joseph's Hospital
5665 Peachtree Dunwoody Road
Atlanta, GA 30342 | 80. St. Joseph's Hospital and Medical Center
350 West Thomas Road
Phoenix, AZ 85013 |
| 81. St. Lukes The Woodlands Hospital
17200 St. Luke's Way
The Woodlands, TX 77384 | 82. St. Vincent Medical Center
2 Shircliff Way
Jacksonville, FL 32204 |
| 83. Sunrise Diagnostic Center
3006 South Maryland Parkway
Las Vegas, NV 89109 | 84. SUNY Upstate Medical University
750 East Adams Street
Syracuse, NY 13210 |
| 85. Sutter Gamma Knife Center
2801 K St., Suite 110
Sacramento, CA 95816 | 86. Sutter Medical Center Sacramento
Sutter Gamma Knife Center
2801 K Street, Suite 110
Sacramento, CA 95816 |
| 87. Swedish Medical Center
799 East Hampden Ave. Suite 100
Englewood, CO 80113 | 88. Temple University Hospital
3401 N. Broad Street
Philadelphia, PA 19140 |
| 89. Tenet Good Samaritan, Inc.
1309 North Flagler Drive
West Palm Beach, FL 33401 | 90. Texas Health Presbyterian Hospital Dallas
8200 Walnut Hill Lane
Dallas, TX 75231 |
| 91. The Cleveland Clinic Foundation
9500 Euclid Avenue
Cleveland, OH 44195 | 92. The Methodist Hospital
DBA Houston Methodist
6551 Bertner Avenue
Houston, TX 77030 |
| 93. 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 | 94. The Regents of the University of California
San Francisco Medical Center
505 Parnassus Ave, Room L56
San Francisco, CA 94143 |
| 95. The Regents of the University of California
U.C. Davis Medical Center
2315 Stockton Blvd.
Sacramento, CA 95817 | 96. The Swedish Radiosurgery Center
Suite A10 James Tower
550 17th Avenue
Seattle, WA 98122 |
| 97. The University of Texas
MD Anderson Cancer Center
1515 Holcombe Boulevard
Houston, TX 77030 | 98. The Valley Hospital Luckow Pavilion
1 Valley Health Plaza
Paramus, NJ 07652 |

OTHER U.S.PARTY(IES) TO EXPORT Continued:

- | | |
|---|--|
| 99. Thomas Jefferson University and Hospitals
900 Walnut Street
Philadelphia, PA 19107 | 100. Tufts – New England Medical Center
800 Washington Street
Boston, MA 02111 |
| 101. UAB Highlands Hospital
1201 11th Avenue South
Birmingham, AL 35205 | 102. University Hospitals of Cleveland
11100 Euclid Avenue
Cleveland, OH 44106 |
| 103. University of Arkansas for Medical Science
4301 West Markham Street
Little Rock, AR 72205 | 104. University of Iowa Medical Center
200 Hawkins Drive
Iowa City, IA 52242 |
| 105. University of Kentucky
Markey Cancer Center, Roach Bldg.,
Room CC049
800 Rose Street
Lexington, KY 40536 | 106. University of Maryland Medical System
Gamma Knife Suite, South Hospital B Wing
22 South Greene Street
Baltimore, MD 21201 |
| 107. University of Minnesota Medical Center
Room 1-285
500 SE Harvard Street
Minneapolis, MN 55455 | 108. University of Mississippi Medical Center
350 West Woodrow Wilson Avenue
Jackson, MS 39216 |
| 109. University of Pennsylvania
Pennsylvania Hospital Campus
800 Spruce Street
Philadelphia, PA 19107 | 110. University of Pittsburgh
Presbyterian University Hospital
230 Lothrop Street, Room F-185
Pittsburgh, PA 15213 |
| 111. University of Pittsburgh
Presbyterian University Hospital
230 Lothrop Street, Room G-102
Pittsburgh, PA 15213 | 112. University of Pittsburgh
Presbyterian University Hospital
230 Lothrop Street, Room F-179
Pittsburgh, PA 15213 |
| 113. University of Texas Southwestern
Medical Center at Dallas
5151 Harry Hines Blvd. Suite G49
Dallas, TX 75390 | 114. University of Virginia Health Services
Foundation
Lars Leksell Center for Gamma Surgery
Building 1143; Room G411
1215 Lee Street
Charlottesville, VA 22908 |
| 115. USC University Hospital
1540 Alcazar Street
Los Angeles, CA 90033 | 116. Wake Forest Baptist Health
Radiation Oncology Department,
Comprehensive Cancer Center
Medical Center Boulevard
Winston-Salem, NC 27157 |
| 117. Washington Hospital Center
110 Irving Street, NW
Washington, DC 20010 | 118. Washington Hospital Healthcare System
2500 Mowry Ave.
Fremont, CA 94538 |
| 119. Washington University in St. Louis
4921 Parkview Place
St. Louis, MO 63108 | 120. West Virginia University Hospital, Inc.,
Ruby Memorial Hospital, Mary Babb,
Randolph Cancer Center,
and Health Sciences Center South Building,
Medical Center Drive
Morgantown, WV 26506 |

OTHER U.S.PARTY(IES) TO EXPORT Continued:

121. William Beaumont Hospital
Department of Radiation Oncology
3601 W. Thirteen Mile Road
Royal Oak, MI 48073

122. Yale-New Haven Hospital
20 York Street
New Haven, CT 06519

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:

Mandatory 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 301-287-9056.

Mandatory 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 Advanced 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 301-287-9056.

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
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

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

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.