#### **EXPORT LICENSE**

NRC FORM 250



# **United States of America**

Nuclear Regulatory Commission Washington, D.C. 20555

NRC LICENSE NO.: PXB6.38

Page 1 of 9

**NRC DOCKET NO.:** 11006027

LICENSE EXPIRES: March 31, 2032

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. 1282 Bigwoods-Starks Road Vinton, LA 70668  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: Amendment 38	ULTIMATE DESTINATIONS: See following page.

# CONDITIONS, NOTES, AND DESCRIPTIONS OF 10CFR 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 and Sweden, 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 PXB6.37 amending its authority by updating the list of "Other U.S. Part(ies) to Export", and extending the date of expiration from January 31, 2028 to March 31, 2032.

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

David L. Skeen

Skeen
Date: 2022.03.11 09:42:52

NAME AND TITLE:

David L. Skeen, Deputy Director Office of International Programs

DATE OF ISSUANCE: March 11, 2022

#### CONDITIONS

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

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

Studsvik Nuclear AB Atomvagen 1 611 82 Nykoping Sweden 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

- Adventist Health Systems/Sunbelt Inc. Florida Hospital Plaza 2501 N. Orange Avenue Orlando, FL 32803
- Alexian Brothers Medical Center 800 West Biesterfield Road Elk Grove Village, IL 60007
- Anchorage Radiation Oncology Management, Inc. d/b/a Anchorage Radiation Therapy Center 2841 Debarr Road, Suite 100 Anchorage, AK 99508
- 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

- Akron General Medical Center 762 South Cleveland Massillon Road Montrose, OH 44333
- Alpha-Omega Services, Inc. 1282 Big Woods-Starks Road Vinton, LA 70668
- Augusta University Medical Center 1120 15th Street Augusta, GA 30912
- Avera McKennan Avera Radiation Oncology Avera Cancer Institute Prairie Center 1000 East 23rd St. Suite 100, Room 2 Sioux Falls, SD 57105

- Baptist Hospital of Miami, Inc. Department of Radiation Oncology 8900 North Kendall Drive Miami, FL 33176
- 11. Billings Clinic 2800 Tenth Avenue North Billings, MT 59101
- Center for Advanced Medicine Long Island Jewish Medical Center 450 Lakeville Road Lake Success, NY 11042
- Chesapeake Regional Riverside & University of Virginia Radiosurgery Center 500 J Clyde Morris Boulevard Newport News, VA 23601
- Chippenham and Johnston-Willis Hospitals, Inc., d/b/a CJW Medical Center Johnston-Willis Campus, Chippenham Campus 7101 Jahnke Road Richmond, VA 23235
- 19. Covenant Health System Covenant Gamma Southwest 3603 21st Street Lubbock, TX 79410
- 21. Doctors Hospital, Inc. d/b/a Doctors Hospital 5000 University Drive Coral Gables, FL 33146
- 23. Fort Sanders Regional Gamma Knife Center 1915 White Avenue Knoxville, TN 37916
- GE-Hitachi Nuclear Energy Americas, LLC Vallecitos Nuclear Center 6705 Vallecitos Road Pleasanton, CA 94586
- 27. Good Samaritan Hospital 1225 Wilshire Boulevard Los Angeles, CA 90017

- Baylor All Saints Medical Center Fort Worth 1400 Eight Avenue Fort Worth, TX 76104
- 12. Bryan Medical Center 2300 South 16th Street Lincoln, NE 68502
- Central DuPage Hospital Association Northwestern Medicine Cancer Center Central DuPage Hospital 4405 Weaver Parkway Warrenville, IL 60555
- 16. Chippenham and Johnston-Willis Hospitals, Inc.
  d/b/a CJW Medical Center, Johnston-Willis Campus
  1401 Johnston-Willis Drive
  Richmond, VA 23235
- Cooper Health System
   Robert Wood Johnson Medical School at
   Camden
   Cooper Plaza
   Camden, NJ 08103
- 20. Dignity Health d/b/a St. Joseph's Hospital and Medical Center 350 West Thomas Road Phoenix, AZ 85013
- 22. Emory Saint Joseph's Hospital 5665 Peachtree Dunwoody Road, NE Atlanta, GA 30342
- 24. Gamma Knife Center of the Pacific 2226 Liliha Street, Level B2 Honolulu, HI 96817
- 26. GKMD, Inc.
  Deaconess Medical Center
  Gamma Knife Suite
  Basement Floor, Room 117
  910 West 5th Ave.
  Spokane, WA 99204
- Hackensack University Medical Center John Theurer Cancer Center
   2 2nd St.
   Hackensack, NJ 07601

- 29. Harborview Medical Center 325 9th Avenue Gamma Knife Suite Seattle, WA 98133
- Holy Spirit Cancer Center Gamma Knife Center 880 Century Drive Mechanicsburg, PA 17055
- Intermountain Medical Center
   Jon and Karen Huntsman Cancer Center
   Gamma Knife Room, 5121 South
   Cottonwood Street
   Murray, UT 84157
- 35. John F. Kennedy Medical Center 65 James Street Edison, NJ 08818
- 37. Kettering Medical Center 3535 Southern Boulevard Kettering, OH 45429
- Legacy Health System
   1130 North West 22nd Avenue, Suite LL50
   Portland, OR 97210
- 41. Lewis Hall Singletary Oncology Center at John D. Archbold Memorial Hospital 919 South Broad Street Thomasville, GA 31792
- 43. Lovelace Medical Center 601 Dr. Martin Luther King, Jr. NE Albuquerque, NM 87102
- 45. Mayo Clinic Hospital-Rochester SMC Mary Brigh Building 1216 2nd St. SW Rochester, MN 55902
- 47. Medical College of Wisconsin Froedtert Memorial Lutheran Hospital 9200 West Wisconsin Avenue Milwaukee, WI 53226
- 49. Memorial Hermann Healthcare System d/b/a Hermann Hospital 6411 Fannin Avenue Houston, TX 77030

- 30. Hoag Memorial Hospital Presbyterian One Hoag Drive Newport Beach, CA 92658
- 32. Indiana University Health Methodist Hospital 1701 N. Senate Blvd Indianapolis, IN 46202
- 34. Jewish Hospital, LLC. 4777 East Galbraith Road Cincinnati, OH 45236
- Karmanos Cancer Center
   Gershenson Radiation Oncology Center,
   Room 379
   4100 John R. Street
   Detroit, MI 48201
- 38. Larkin Community Hospital, Inc. 6129 Southwest 70th Street South Miami, FL 33143
- 40. Lehigh Valley Health Network 1240 South Cedar Crest Boulevard Allentown, PA 18103
- Los Robles Regional Medical Center
   2200 Lynn Road
   Thousand Oaks, CA 91360
- 44. Marshfield Medical Center 611 St. Joseph Avenue Marshfield, WI 54449
- 46. Mayo Clinic Jacksonville 4500 San Pablo Road Jacksonville, FL 32224
- 48. Medical University of South Carolina 171 Ashley Avenue (MUSC) Charleston, SC 29425
- Mercy Health St. Vincent Medical Center, LLC
   Perrysburg Cancer Center
   12623 Eckel Junction Road
   Perrysburg, OH 43552

- Mercy Health Center
   4300 West Memorial Road
   Oklahoma City, OK 73120
- Methodist Childrens Hospital DBA Joe Arrington Cancer Center 4101 22nd Place Lubbock, TX 79410
- 55. Mid-Michigan Gamma Knife Facility 4000 Wellness Drive Room H-1405 Midland, MI 48670
- 57. Neurologic & Orthopedic Institute of Chicago 4501 N. Winchester Chicago, IL 60640
- Northern Westchester Hospital Center
   400 East Main Street
   Mount Kisco, NY 10549
- 61. Northwest Hospital Gamma Knife Center Building 310, Ground Floor, Suite G-5 1560 North 115th Street Seattle, WA 98133
- 63. NYU Langone Hospitals Tisch Hospital 550 First Ave. New York, NY 10016
- 65. OU Medical Center Presbyterian Tower 700 N.E. 13th Street Oklahoma City, OK 73104
- 67. Penn State Milton S. Hershey Medical Center 500 University Drive Hershey, PA 17033
- 69. Pitt County Memorial Hospital d/b/a Vidant Medical Center 2100 Stantonsburg Road Greenville, NC 27835
- Providence Portland Medical Center North Pavilion 4805 NE Glisan Street Portland, OR 97213

- 52. Merit Health Central, Central Mississippi Medical Center Radiation Oncology Department 1850 Chadwick Drive Jackson, MS 39204
- 54. Methodist Healthcare System of San Antonio LTD Methodist Hospital 7700 Floyd Curl Drive San Antonio, TX 78229
- 56. Nebraska Methodist Hospital 8303 Dodge Street Omaha, NE 68114
- 58. New York Presbyterian Hospital, Columbia University Medical Center Gamma Knife Suite, Columbia-Presbyterian Medical Center 630 West 168th Street New York, NY 10032
- 60. Northside Hospital Forsyth 1200 Northside Forsyth Drive Cumming, GA 30041
- 62. Northwestern Memorial Hospital Galter Pavilion 201 E. Huron Street Chicago, IL 60611
- 64. OSF Healthcare System St. Francis Medical Center 530 NE Glen Oak Avenue Peoria, IL 61637
- 66. Peace Health Sacred Heart Medical Center 3333 RiverBend Drive Springfield, OR 97477
- 68. Piedmont Hospital Atlanta 1968 Peachtree Road N.W. Atlanta, GA 30309
- 70. Prisma Health Richland Hospital 7 Medical Park Columbia, SC 29203

- 72. 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
- Research Medical Center Midwest Gamma Knife Center 2316 E. Meyer Blvd. Kansas City, MO 64132
- 76. Robert Wood Johnson University Hospital Gamma Knife Suite 10 Plum Street New Brunswick City, NJ 08901
- 78. Roswell Park Cancer Institute Elm & Carlton Street Buffalo, NY 14263
- 80. San Antonio Community Hospital 999 San Bernardino Road Upland, CA 91786
- 82. South Nassau Communities Hospital One Healthy Way Oceanside, NY 11572
- 84. St. Vincent Medical Center 2 Shircliff Way Jacksonville, FL 32204
- SUNY Upstate Medical University
   750 East Adams Street
   Syracuse, NY 13210
- 88. Swedish Medical Center 799 East Hampden Ave. Suite 100 Englewood, CO 80113
- Tenet Good Samaritan, Inc.
   1309 North Flagler Drive
   West Palm Beach, FL 33401
- 92. Texas Health Presbyterian Hospital Dallas 8200 Walnut Hill Lane Dallas, TX 75231

- 73. Puget Sound Radiosurgery
  Gamma Knife Suite, Room 103, St. Joseph's
  Medical Center
  1802 South Yakima
  Tacoma, WA 98405
- 75. Rhode Island Hospital 593 Eddy Street Providence, RI 02903
- 77. Rocky Mountain Gamma Knife Center, LLC 1635 Aurora Court Aurora, CO 80045
- 79. Sacred Heart Health System, Inc. d/b/a Sacred Heart Hospital of Pensacola 5151 North 9th Avenue Pensacola, FL 32504
- 81. San Diego Gamma Knife Center 9834 Genesee Avenue, Suite 110 La Jolla, CA 92037
- 83. St. Lukes The Woodlands Hospital 17200 St. Luke's Way The Woodlands, TX 77384
- 85. Sunrise Hospital Medical Center 3006 South Maryland Parkway Las Vegas, NV 89109
- 87. Sutter Gamma Knife Center 2801 K St., Suite 110 Sacramento, CA 95816
- 89. Temple University
  The Health Science Center Campus
  Broad and Ontario Streets
  Philadelphia, PA 19140
- 91. Tenet Hospitals Limited
  DBA The Hospitals of Providence Sierra
  Campus
  Gamma Knife Suite, 1625 Medical Center
  Drive
  El Paso, TX 79902
- 93. The Cleveland Clinic Foundation 10201 Carnegie Avenue Cleveland, OH 44195

- 94. The Methodist Hospital DBA Houston Methodist 6551 Bertner Avenue Houston, TX 77030
- 96. The Regents of the University of California San Francisco Medical Center 505 Parnassus Ave, Room L56 San Francisco, CA 94143
- 98. The Swedish Radiosurgery Center Suite A10 James Tower 550 17th Avenue Seattle, WA 98122
- 100. The Valley Hospital Luckow Pavilion1 Valley Health PlazaParamus, NJ 07652
- 102. Tufts Medical Center 800 Washington Street Boston, MA 02111
- 104. University Health Shreveport, LLC. d/b/a Ochsner LSU Health Shreveport 1541 Kings Highway Shreveport, LA 71103
- University of Arkansas for Medical Science
   4301 West Markham Street
   Little Rock, AR 72205
- 108. University of Kentucky
  Markey Cancer Center, Roach Bldg.,
  Room CC049
  800 Rose Street
  Lexington, KY 40536
- 110. University of MiamiSylvester Cancer Center West1400 NW 12th AvenueMiami, FL 33136
- 112. University of Mississippi Medical Center 350 West Woodrow Wilson Avenue Jackson, MS 39216
- 114. University of PittsburghPresbyterian University Hospital230 Lothrop Street, Room F-185Pittsburgh, PA 15213

- 95. 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
- 97. The Regents of the University of California U.C. Davis Medical Center 2315 Stockton Blvd.
  Sacramento, CA 95817
- 99. The University of Texas MD Anderson Cancer Center 1515 Holcombe Boulevard Houston, TX 77030
- 101. Thomas Jefferson University and Hospitals900 Walnut StreetPhiladelphia, PA 19107
- 103. UAB Highlands Hospital 1201 11th Avenue South Birmingham, AL 35205
- 105. University Hospitals of Cleveland11100 Euclid AvenueCleveland, OH 44106
- University of Iowa Medical Center
   Hawkins Drive
   Iowa City, IA 52242
- 109. University of Maryland Medical System
   Gamma Knife Suite, South Hospital B Wing
   22 South Greene Street
   Baltimore, MD 21201
- 111. University of Minnesota Medical Center Room 1-285500 SE Harvard Street Minneapolis, MN 55455
- 113. University of Pennsylvania Pennsylvania Hospital Campus 800 Spruce Street Philadelphia, PA 19107
- 115. University of PittsburghPresbyterian University Hospital230 Lothrop Street, Room F-179Pittsburgh, PA 15213

- 116. University of Pittsburgh Presbyterian University Hospital 230 Lothrop Street, Room G-102 Pittsburgh, PA 15213
- 118. University of Virginia Physicians Group University of Virginia Lars Leksell Center of Gamma Surgery, Primary Care Center Building 1143; Room G411, 1215 Lee Street Charlottesville, VA 22908
- 120. Wake Forest Baptist Health
  Radiation Oncology Department,
  Comprehensive Cancer Center
  Medical Center Boulevard
  Winston-Salem, NC 27157
- 122. Washington Hospital Healthcare System 2500 Mowry Ave. Fremont, CA 94538
- 124. 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
- 126. Yale-New Haven Hospital 20 York Street New Haven, CT 06510

- 117. University of Texas Southwestern Medical Center at Dallas 6201 Harry Hines Blvd. Dallas, TX 75390
- 119. USC University Hospital 1540 Alcazar Street Los Angeles, CA 90033
- 121. Washington Hospital Center110 Irving Street, NWWashington, DC 20010
- 123. Washington University in St. Louis4921 Parkview PlaceSt. Louis, MO 63108
- 125. William Beaumont Hospital Department of Radiation Oncology 3601 W. Thirteen Mile Road Royal Oak, MI 48073

#### 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) <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 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 TBg (i.e., metric) values of Table 1.

R1 = activity for radionuclides or source number 1

R2 = activity for radionuclides or source number 2

AR1 = activity limit for radionuclides or source number 1

AR2 = activity limit for radionuclides or source number 2

R2 = activity for radionuclides or source number 2   
RN = activity for radionuclides or source number n 
$$\sum_{1}^{n} \left[ \begin{array}{c} R_{1} \\ AR_{1} \end{array} + \begin{array}{c} AR2 = \text{activity limit for radionuclides or source number 2} \\ ARN = \text{activity limit for radionuclides or source number n} \\ \sum_{1}^{n} \left[ \begin{array}{c} R_{1} \\ AR_{1} \end{array} + \begin{array}{c} R_{2} \\ AR_{2} \end{array} + \begin{array}{c} R_{n} \\ AR_{n} \end{array} \right] \geq 1$$

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

<sup>&</sup>lt;sup>3</sup> Discrete sources of Radium-226.