



CENTER FOR ENERGY AND ENVIRONMENT RESEARCH  
UNIVERSITY OF PUERTO RICO

August 19, 1982

Dr. Claude Yarbro  
Research Division  
Oak Ridge Operations Office  
U.S. Dept. of Energy  
P.O. Box E  
Oak Ridge, TN 37830

Dear Dr. Yarbro:

SUBJECT: NUCLEAR REGULATORY COMMISSION LICENSES FOR THE  
FIRST FLOOR BIOMEDICAL BUILDING

As per your request, we are including copy of the licenses that the NRC have issued to the Medical Sciences Campus of the University of Puerto Rico for use in the first floor of the Biomedical Building as follows:

<u>License Number</u>	<u>Expiration Date</u>	<u>Remarks</u>
52-01946-07	December 31, 1982	Various sources Med. Therapy
52-01946-08	May 31, 1984	Cobalt 60 Teletherapy Sealed Source 12,200 curies
52-19434-01	June 30, 1985	Cobalt 60 Irradiator Source 4,000 curies.

Cordially,

*Juan A. Bonnet, Jr.*  
Juan A. Bonnet, Jr.  
Director

JABonnet:JCM:ecc

cc N. Irizarry, J.C. Muñiz

Enclosure

R 5148

**U. S. NUCLEAR REGULATORY COMMISSION  
MATERIALS LICENSE**

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Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter 1, Parts 30, 31, 32, 33, 34, 35, 36, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s); and to import such byproduct and source material. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee		
1. University of Puerto Rico Medical Sciences Campus		3. License number 52-01946-07
2. G.P.O. Box 5067 San Juan, Puerto Rico 00936		4. Expiration date December 31, 1982
		5. Docket or Reference No.
6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Any byproduct material with Atomic Nos. 3 through 83, inclusive	A. Any	A. 10 millicuries of each byproduct material with Atomic Nos. 3 through 83, inclusive
B. Molybdenum 99	B. Any	B. 1000 millicuries
C. Technetium 99m	C. Any	C. 1000 millicuries
D. Hydrogen 3	D. Any	D. 50 millicuries
E. Carbon 14	E. Any	E. 50 millicuries
F. Iodine 131	F. Any	F. 200 millicuries
G. Calcium 45	G. Any	G. 20 millicuries
H. Iodine 125	H. Any	H. 50 millicuries
		Total possession limit- 4 curies
9. Authorized use		
A. through H. Medical research, diagnosis and therapy. Tracer experiments and animal studies.		

U. NUCLEAR REGULATORY COMMISSION  
MATERIALS LICENSE  
Supplementary Sheet

License Number 52-01946-07

Docket or  
Reference No. \_\_\_\_\_

CONDITIONS

10. Licensed material shall be used only at Clinical Research Center, School of Medicine, University of Puerto Rico, San Juan, Puerto Rico; Center for Energy and Environment Research, Caparra Heights Station, San Juan, Puerto Rico; University District Hospital, Medical Center of Puerto Rico, San Juan, Puerto Rico; Medical Sciences Building, School of Medicine, University of Puerto Rico, San Juan, Puerto Rico; and Neurobiology Lab., Boulevard del Valle 201, San Juan, Puerto Rico.
11. The licensee shall comply with the provisions of Title 10, Chapter 1, Code of Federal Regulations, Part 19, "Notices, Instructions and Reports to Workers; Inspections" and Part 20, "Standards for Protection Against Radiation."
12. A. Licensed material shall be used by, or under the supervision of, individuals designated by the Medical Isotopes Committee.  
B. The use of licensed material in or on humans shall be by a physician.
13. Sealed sources containing licensed material shall not be opened.
14. A(1) Each sealed source acquired from another person and containing licensed material, other than Hydrogen 3, with a half-life greater than thirty days and in any form other than gas shall be tested for contamination and/or leakage prior to use. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, a sealed source received from another person shall not be put into use until tested.  
  
(2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak tests when the source contains 100 microcuries or less of beta and/or gamma emitting material or 10 microcuries or less of alpha emitting material.

MATERIALS LICENSE

Supplementary Sheet

License Number 52-01946-07

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14. continued

CONDITIONS

- A(3) Except for alpha sources, the periodic leak test required by this condition does not apply to sealed sources that are stored and not being used. The sources excepted from this test shall be tested for leakage prior to any use or transfer to another person unless they have been leak tested within six months prior to the date of use or transfer.
- B. Each sealed source fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to use or transfer as a sealed source. If the inspection or test reveals any construction defects or 0.005 microcurie or greater of contamination, the source shall not be used or transferred as a sealed source until it has been repaired, decontaminated and retested.
- C. Each sealed source containing licensed material, other than Hydrogen 3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months except that each source designed for the purpose of emitting alpha particles shall be tested at intervals not to exceed three months.
- D. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. The test sample shall be taken from the sealed source or from the surfaces of the device in which the sealed source is permanently or semipermanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission.
- E. If the test required by Subsection A. or C. of this condition reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the test with the U.S. Nuclear Regulatory Commission, Region II, Office of Inspection and Enforcement, Suite 818, 230 Peachtree Street, N.W., Atlanta, Georgia 30303, describing the equipment involved, the test results, and the corrective action taken.

MATERIALS LICENSE

Supplementary Sheet

License Number 52-01946-07

Docket or  
Reference No. \_\_\_\_\_

(continued)

CONDITIONS

15. The licensee shall not use licensed material in field applications where activity is released except as provided otherwise by specific condition of this license.
16. Experimental animals administered licensed materials or their products shall not be used for human consumption.
17. Needles or standard medical applicator cells containing Cobalt 60 as wire shall not be opened by the licensee unless specifically authorized by a condition in this license.
18. Patients containing Cobalt 60, Cesium 137 and/or Iridium 192 implants shall remain hospitalized until the implants are removed.
19. Radioactive gases as free gas or in solution, to be administered to humans, shall be procured from a supplier who distributes the product indicated for human use in accordance with the Federal Food, Drug, and Cosmetic Act.
20. The licensee may transport licensed material or deliver licensed material to a carrier for transport, in accordance with the provisions of Section 71.5, Title 10, Code of Federal Regulations, Part 71, "Packaging of Radioactive Material For Transport".
21. Pursuant to Sections 20.106(b) and 20.302, 10 CFR 20, the licensee is authorized to dispose of licensed material by incineration provided the gaseous effluent from incineration does not exceed the limits specified for air in Appendix B, Table II, 10 CFR 20. Ash residues may be disposed of as ordinary waste provided appropriate surveys pursuant to 20.201 are made to determine that concentrations of licensed material appearing in the ash residues do not exceed the concentrations (in terms of microcuries per gram) specified for water in Appendix B, Table II, 10 CFR 20.
22. Except as specifically provided otherwise by this license, the licensee shall possess and use licensed material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in application received November 28, 1977.

Date JAN 03 1978

For the U. S. Nuclear Regulatory Commission  
*John B. Sawyer*  
by Radioisotopes Licensing Branch  
Division of Materials and Fuel Cycle  
Facility Licensing  
Washington, D. C. 20555

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter 1, Parts 30, 31, 32, 33, 34, 35, 36, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s); and to import such byproduct and source material. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee		
1. University of Puerto Rico Medical Sciences Campus		3. License number 52-19434-01
2. C.F.C. Box 5067 San Juan, Puerto Rico 00936		4. Expiration date June 30, 1985
		5. Reference No.
6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Cobalt 60	A. Sealed source (SSSI)	B. 4,000 curies
9. Authorized use		

A. For use in a Gamma Irradiator for irradiation of materials, as described in application dated May 30, 1980.

CONDITIONS

10. Licensed material shall be used only at the Center for Energy and Environment Research, Bio-Medical Building, Room 178, Medical Center, Rio Piedras, Puerto Rico.
11. The licensee shall comply with the provisions of Title 10, Chapter 1, Code of Federal Regulations, Part 19, "Rules, Instructions and Reports to Workers; Inspections" and Part 20, "Standards for Protection Against Radiation."
12. Licensed material shall be used by, or under the supervision of, individuals designated by the Medical Isotopes Committee.
13. Sealed sources containing licensed material shall not be opened or removed from the irradiator by the licensee.

Supplementary Sheet

License Number   77-1442-12  

CERTIFICATE

Docket or  
Reference No.                     

(continued)

14. A. Each sealed source containing licensed material shall be tested for leakage and/or contamination at intervals not to exceed six months. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, a sealed source received from another person shall not be put into use until tested.
- B. The test shall be capable of detecting the presence of 0.05 microcurie of contamination on the test sample. The test samples shall be taken from appropriate accessible surfaces of the device in which the sealed source is permanently or semi-permanently mounted or stored. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission.
- C. If the test reveals the presence of 0.05 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the test with the U. S. Nuclear Regulatory Commission, Region II, Office of Inspection and Enforcement, 161 Marietta Street, Suite 3100, Atlanta, Georgia 30303, describing the equipment involved, the test results, and the corrective action taken.
- D. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically authorized by the Commission or an Agreement State to perform such services.
15. After installation of the irradiator and Cesium 137 or Cobalt 60 source and prior to initiation of the irradiation program, a radiation survey shall be conducted to determine radiation levels around, above, and below the irradiator with the source in the irradiate position and with the source in the shielded position. A detailed report of the results of the surveys shall be sent to Material Licensing Management Branch, Division of Fuel Cycle and Material Safety, U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, not later than thirty (30) days following installation of the source. A copy of such report shall also be sent to the U. S. Nuclear Regulatory Commission, Region II, Office of Inspection and Enforcement, 161 Marietta Street, Suite 3100, Atlanta, Georgia 30303.
16. A set of written emergency instructions shall be posted at the irradiator machine control. These instructions shall inform the machine operator of the procedure to be followed should he be unable to turn the machine off.

MATERIALS LICENSE

Supplementary Sheet

License Number 50-15434-01

Docket or  
Reference No. \_\_\_\_\_

(continued)

- 17. Except as specifically provided otherwise by this license, the licensee shall possess and use licensed material described in Items 5, 7, and 8 of this license in accordance with statements, representations, and procedures contained in application dated May 30, 1980. The Nuclear Regulatory Commission's regulations shall govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations.

JUN 30 1980

Date \_\_\_\_\_

For the U. S. Nuclear Regulatory Commission  
 Original Signed by  
**MICHAEL A. LALLSINA**  
 by Material Licensing Branch

Division of Fuel Cycle and  
 Material Safety  
 Washington, D.C. 20555

**U. S. NUCLEAR REGULATORY COMMISSION  
MATERIALS LICENSE**

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Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations; Chapter 1, Parts 30, 31, 32, 33, 34, 35, 36, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s); and to import such byproduct and source material. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee		
<p>1. University of Puerto Rico</p> <p>2. Medical Sciences Campus G.P.O. Box 5067 San Juan, Puerto Rico 00935</p>	<p>3. License number 52-01946-08</p>	
	<p>4. Expiration date May 31, 1984</p>	
	<p>5. Docket or Reference No.</p>	
<p>6. Byproduct, source, and/or special nuclear material</p> <p>A. Cobalt 60</p>	<p>7. Chemical and/or physical form</p> <p>A. Teletherapy sealed sources (AECL Model C-146 or C-151 or ORNL source fabricated in accordance with AECL Dwg. Nos. AO3038 dated May 22, 1969 and 125-110-86 dated September 1, 1956)</p>	<p>8. Maximum amount that licensee may possess at any one time under this license</p> <p>A. 12,200 curies (2 sources of not more than 6,100 curies each)</p>
<p>9. Authorized use</p> <p>A. One source to be used in an AECL Eldorado A teletherapy unit for the treatment of humans. One source in its shipping container to be in possession of the licensee as necessary to the replacement of the source in the teletherapy unit.</p>		

**CONDITIONS**

10. Licensed material shall be used only at the University of Puerto Rico, Medical Sciences Campus, Center for Energy and Environmental Research, Puerto Rico Medical Center, Rio Piedras, Puerto Rico.

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Supplementary Sheet

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License Number 52-01946-08

13. The teletherapy facility shall be provided with a system permitting continuous observation of the patient from outside the treatment room, during patient irradiation.
14. A. Teletherapy sources shall be tested for leakage at intervals not to exceed six months. Records of test results shall be kept in units of microcuries and maintained for inspection by the Commission. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, the source shall not be used until tested for leakage.  
  
B. The test shall be sufficiently sensitive to detect 0.05 microcurie of contamination on the test sample.  
  
C. The test sample shall be taken from selected accessible surfaces of the teletherapy head. The selected accessible surfaces should be those surfaces on which one might expect contamination (if there were to be leakage) to accumulate and shall include the inner surface of the most frequently used treatment cones or beam collimating device. The test sample shall be taken with the source in the "off" position.  
  
D. If the test reveals the presence of 0.05 microcurie or more of removable contamination, the licensee shall promptly take action to prevent spread of contamination and shall file a report within five days of the test with the Materials Branch, Division of Materials and Fuel Cycle Facility Licensing, U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, describing the test results and the corrective action taken. A copy of such report shall also be sent to the Director of the appropriate Nuclear Regulatory Commission Regional Office of Inspection and Enforcement listed in Appendix D of 10 CFR 20.
15. Prior to initiation of a treatment program, each teletherapy unit shall be equipped with electrical or mechanical stops limiting use of the primary beam of radiation so as to assure compliance with § 20.105(b) of 10 CFR 20, "Standards for Protection Against Radiation," as evidenced by a radiation survey. Necessary use restrictions shall be fully described in radiation survey reports submitted in accordance with Condition No. 18.
16. A set of written emergency instructions shall be posted at the teletherapy machine control. These instructions shall inform the machine operator of the procedure to be followed should he be unable to turn the machine's primary beam of radiation "off" with the controls outside the treatment room.

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17. A. Access to the teletherapy room shall be controlled by a door at each entrance. Such doors shall be normally closed.
- B. Each entrance to the teletherapy room shall be equipped with an electrical interlock system that will turn the teletherapy machine's primary beam of radiation off immediately upon opening of any entrance door. The interlock system shall be connected in such a manner that the teletherapy machine's primary beam of radiation cannot be turned on until all treatment room entrance doors are closed and the beam "on-off" control is reset at the control panel.
- C. Electrical interlocks on entrance doors to the teletherapy room shall be tested for proper operation at least once every six months. Records of test results shall be maintained for inspection by the Commission.
- D. In the event of malfunction of any door interlock, the teletherapy machine control shall be locked in the "off" condition and not used, except as may be necessary to the repair or replacement of the interlock system, until the interlock system is shown to be functioning properly.
18. Prior to initiation of a treatment program, and subsequent to each installation of a teletherapy source, radiation surveys and tests shall be performed in accordance with the following:
- A. A radiation survey shall be made of:
- (i) The teletherapy source housing, with the teletherapy source in the "off" position. The maximum and average radiation levels at one meter from the teletherapy source in the "off" position shall not exceed 10 milliroentgens per hour and 2 milliroentgens per hour, respectively.
- (ii) All areas adjacent to the treatment room, with the teletherapy source in the "on" position. The survey, except Item (c), shall be performed with a phantom in the primary beam of radiation and shall clearly establish:
- (a) The radiation levels in restricted areas are not likely to cause personnel exposure in excess of the limits specified in Section 20.101, Title 10, Part 20, Code of Federal Regulations, Chapter 1, "Standards for Protection Against Radiation" (10 CFR 20).
- (b) That quantities of radiation in unrestricted areas do not exceed the limits specified in § 20.105(b), 10 CFR 20.
- (c) The intensity of the primary beam of radiation at a specified distance from the teletherapy source.

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18. B. Tests shall be made to determine proper operation of:

- (i) Electrical interlocks on entrance doors to the teletherapy treatment room.
- (ii) The teletherapy source "on-off" indicators, both at the source housing and on the teletherapy machine control panel.
- (iii) Electrical or mechanical stops installed for the purpose of limiting use of the primary beam of radiation (restriction of source housing angulation or elevation, carriage or stand travel and operation of the beam "on-off" mechanism).
- (iv) The teletherapy treatment timing device.

C. A report of the results of the above surveys and tests shall be sent to the Materials Branch, Division of Materials and Fuel Cycle Facility Licensing, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, not later than thirty (30) days following each installation of a teletherapy source. A copy of such report shall be sent to the Director of the appropriate Nuclear Regulatory Commission Regional Office of Inspection and Enforcement listed in Appendix D of 10 CFR 20.

19. A. Any changes made in the treatment room shielding, location of the unit within the treatment room, or use of the teletherapy unit that could result in increased radiation levels in areas outside the teletherapy treatment room shall be evaluated by a radiation survey made in accordance with Condition 18., and reported to the Commission within thirty (30) days following completion of the change(s).
- B. Relocation of the teletherapy unit to a new facility is not permitted without prior approval of the plans and details by the Commission. Following such approval and relocation, a radiation survey shall be made in accordance with Condition 18., and reported to the Commission within thirty (30) days after completion of the move.
20. Each teletherapy machine shall be fully inspected and serviced during source replacement or at intervals not to exceed five (5) years, whichever comes first, to assure proper functioning of the source exposure mechanism. This inspection and servicing must be performed by persons specifically authorized to do so by the U.S. Nuclear Regulatory Commission or an Agreement State and a report of the inspection and servicing must be kept on file for review by the Commission's Office of Inspection and Enforcement.

MATERIALS LICENSE

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CONDITIONS

(continued from page 1)

11. The licensee shall comply with the provisions of Title 10, Chapter 1, Code of Federal Regulations, Part 19, "Notices, Instructions and Reports to Workers; Inspections" and Part 20, "Standards for Protection Against Radiation."
12. Licensed material shall be used by, or under the supervision of, Victor A. Marcial, M.D., Jose M. Tome, M.D., Jeanne Ubinas, M.D., or Hernando G. Ortiz, M.D.

(continued from page 4)

21. The following shall be performed only by persons specifically authorized by the Commission or an Agreement State to perform such services:
  - A. Installation, relocation, or removal of teletherapy units containing sources.
  - B. Source exchange.
  - C. Any maintenance or repair operations on a teletherapy unit involving work on the source drawer, the shutter, or other mechanism that could expose the source, reduce the shielding around the source, or compromise the safety of the unit and result in increased radiation levels.
22. Pursuant to Title 10, Chapter 1, Code of Federal Regulations, Part 40, "Licensing of Source Material," the licensee is authorized to possess, use, transfer, and import the uranium contained as shielding material in the teletherapy units authorized by this license.
23. For a period not to exceed sixty (60) days in any calendar year, a visiting physician is authorized to use licensed material for human use under the terms of this license, provided the visiting physician:
  - (a) Has the prior written permission of the hospital's Administrator and its Medical Isotopes Committee, and
  - (b) Is specifically named as a user on a Nuclear Regulatory Commission license authorizing human use, and
  - (c) Performs only those procedures for which he is specifically authorized by a Nuclear Regulatory Commission license.

MATERIALS LICENSE

Supplementary Sheet

License Number 52-01946-08

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23. continued

The licensee shall maintain for inspection by the Commission, copies of the written permission specified in subitem (a) above and of the license(s) specified in subitems (b) and (c) above. These records shall be maintained for five (5) years from the time the licensee grants its permission under subitem (a) above.

24. Except as specifically provided otherwise by this license, the licensee shall possess and use licensed material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in application dated September 15, 1978 and letter with enclosures dated March 19, 1979, both signed by Norman Maldonado, M.D., Chancellor. The Nuclear Regulatory Commission's regulations shall govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations.

For the U. S. Nuclear Regulatory Commission

by Patricia Casca  
Material Licensing Branch

Division of Fuel Cycle and  
Material Safety  
Washington, D.C. 20555

JAN 29 1980

Date \_\_\_\_\_