

MATERIALS LICENSE

Amendment No. 41

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 I, Parts 30, 31, 32, 33, 34, 35, 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). 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. Johnston-Willis Hospital	In accordance with letter dated July 5, 1985	
2. 1401 Johnston-Willis Drive Richmond, Virginia 23235-4789	3. License number 45-02888-01 is amended in its entirety to read as follows:	
	4. Expiration date August 31, 1990	
	5. Docket or Reference No. 030-03312	
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 listed in Groups I and II of Schedule A, Section 35.100 of 10 CFR 35	A. Any radio-pharmaceutical listed in Groups I and II of Schedule A, Section 35.100 of 10 CFR 35	A. As necessary for uses authorized in Subitem 9.A.
B. Any byproduct material listed in Group III of Schedule A, Section 35.100 of 10 CFR 35	B. Any form listed in Group III of Schedule A, Section 35.100 of 10 CFR 35	B. 2 curies of each byproduct material authorized in Subitem 6.B.
C. Any byproduct material listed in Group IV of Schedule A, Section 35.100 of 10 CFR 35	C. Any radio-pharmaceutical listed in Group IV of Schedule A, Section 35.100 of 10 CFR 35	C. As necessary for uses authorized in Subitem 9.C.
D. Any byproduct material listed in Group V of Schedule A, Section 35.100 of 10 CFR 35	D. Any radio-pharmaceutical listed in Group V of Schedule A, Section 35.100 of 10 CFR 35	D. As necessary for uses authorized in Subitem 9.D.

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| 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 |
| E. Any byproduct material listed in Group VI of Schedule A, Section 35.100 of 10 CFR 35 | E. Any sealed source listed in Group VI of Schedule A, Section 35.100 of 10 CFR 35 | E. 2 curie total for all sources authorized in Subitem 6.E. |
| F. Any byproduct material listed in Section 31.11(a) of 10 CFR 31 | F. Any | 3 millicuries of each byproduct material authorized in Subitem 6.F. |
| G. Xenon 133 | G. Gas or gas in solution that is the subject of an active (i.e., not withdrawn or terminated) "New Drug Application" (NDA) approved by FDA or an active (i.e., not withdrawn, terminated or on "clinical hold") "Notice of Claimed Investigational Exemption for a New Drug" (IND) that has been accepted by FDA. | G. 200 millicuries |
| H. Strontium 90 | H. Sealed source Radiochemical Centre Model SIC. 7) | H. 10 millicuries |
| I. Depleted Uranium | I. Metal | I. 400 Pounds (182 kilograms) |
9. Authorized use
- A. Any diagnostic procedure listed in Groups I and II of Schedule A, Section 35.100 of Title 10, Code of Federal Regulations.
- B. Preparation and use of radiopharmaceuticals for any diagnostic procedure listed in Group III of Schedule A, Section 35.100 of Title 10, Code of Federal Regulations.

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- C. Any therapeutic procedure listed in Group IV of Schedule A, Section 35.100 of Title 10, Code of Federal Regulations.
- D. Any therapeutic procedure listed in Group V of Schedule A, Section 35.100 of Title 10, Code of Federal Regulations.
- E. Any procedure listed in Group VI of Schedule A, Section 35.100 of Title 10, Code of Federal Regulations.
- F. In-vitro studies.
- G. Blood flow and pulmonary function studies.
- H. For use in a Nuclear Enterprises Model 2503 Thimble Calibrator for the calibration of instruments.
- I. For use as shielding in a linear accelerator.

CONDITIONS

- 10. Licensed material shall be used only at 1401 Johnston-Willis Drive, Richmond, Virginia
- 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 listed in Item 6 above is authorized for use by, or under the supervision of, the following individual(s) for the materials and uses indicated:

Russell O. Briere, M.D.

Groups I, II, III IV and V
In vitro studies
Xenon 133

John L. Thornton, M.D.

Groups I, II and III
In vitro studies
Xenon 133
Phosphorus 32 soluble phosphate
for treatment of polycythemia
vera, leukemia and bone
metastases

Hampton R. Bates, Jr., M.D.

Groups I, II and III
In vitro studies
Xenon 133
Iodine 131 for treatment of
hyperthyroidism, cardiac
dysfunction and thyroid
carcinoma

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Fabio Gutierrez, M.D.

Groups I, II and III
In vitro studies
Xenon 133

Vernon M. Sylvest, M.D.

Groups I and II
In vitro studies
Xenon 133

George W. Thomas, M.D.

Groups I and II
In vitro studies
Xenon 133

Richard Belgrad, M.D.

Groups IV and VI
Strontium 90 sealed source for
instrument calibration

Khadijeh S. Zarkoob, M.D.

Groups IV and VI

Alfred Strish, Ph.D.

Strontium 90 sealed source for
instrument calibration

13. A. (1) Each sealed source containing sealed 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. 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.
- (3) 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. 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 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.

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- C. If the test 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 five (5) days of the test with the U.S. Nuclear Regulatory Commission, Region II, Division of Radiation Safety and Safeguards, Nuclear Materials Safety Section, 101 Marietta Street, Suite 2900, Atlanta, Georgia 30323, 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.
14. Sealed sources containing licensed material shall not be opened.
15. Licensed material shall be used in accordance with the provisions of Section 35.14(b)(c)(e) and (f) of Title 10, Code of Federal Regulations.
16. Patients containing Iodine 131 for the treatment of thyroid carcinoma or patients containing therapeutic quantities of Gold 198 shall remain hospitalized until the residual activity is 30 millicuries or less.
17. 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.
- 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.
18. The licensee is authorized to hold radioactive material with a physical half-life of less than 65 days for decay-in-storage before disposal in ordinary trash provided:
- A. Radioactive waste to be disposed of in this manner shall be held for decay a minimum of ten (10) half-lives.
 - B. Prior to disposal as normal waste, radioactive waste shall be monitored to determine that its radioactivity cannot be distinguished from background with typical low-level laboratory survey instruments. All radiation labels will be removed or obliterated.

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- C. Generator columns shall be segregated so that they may be monitored separately to ensure decay to background levels prior to disposal.
19. 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 June 20, 1979; letter dated May 21, 1980; two letters dated May 28, 1980; letter dated January 6, 1981 with attached NARA program dated January 1, 1981; and letters dated October 7, 1981, November 17, 1981, March 27, 1985, May 4, 1985, and July 5, 1985. 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

PAUL R. GUINN

Date AUG 26 1985

By

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Region II, Nuclear Materials
Safety Section
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Atlanta, GA 30323