



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-4005

June 26, 2007

University of Hawaii  
Office of the President  
ATTN: Irene K. Sakimoto  
Radiation Safety Officer  
2444 Dole Street  
Honolulu, Hawaii 96822

SUBJECT: LICENSE AMENDMENT

Please find enclosed Amendment No. 45 to NRC License No. 53-00017-23, **authorizing the use of two additional models of sealed sources as requested.** An environmental assessment for this action is not required, since this action is categorically excluded under 10 CFR 51.22(c)(14)(v). You should review this license carefully and be sure that you understand all conditions. If you have any questions, please contact me at 817-860-8189.

NRC expects licensees to conduct their programs with meticulous attention to detail and a high standard of compliance. Because of the serious consequences to employees and the public that can result from failure to comply with NRC requirements, you must conduct your radiation safety program according to the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:

1. Operate by NRC regulations 10 CFR Part 19, "Notices, Instructions and Reports to Workers: Inspection and Investigations," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.
2. Notify NRC in writing of any change in mailing address.
3. By 10 CFR 30.36(d) and/or license condition, notify NRC, promptly, in writing, and request termination of the license:
  - a. When you decide to terminate all activities involving materials authorized under the license whether at the entire site or any separate building or outdoor area;
  - b. If you decide not to acquire or possess and use authorized material; or
  - c. When no principal activities under the license have been conducted for a period of 24 months.
4. Request and obtain a license amendment before you:
  - a. Change Radiation Safety Officers;

- b. Order byproduct material in excess of the amount, radionuclide or form authorized on the license;
  - c. Add or change the address(es) of use identified on the license; or
  - d. Change the name or ownership of your organization.
5. Submit a complete renewal application or termination request at least 30 days before the expiration date on your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of radioactive material after your license expires is a violation of NRC regulations.

NRC will periodically inspect your radiation safety program. Failure to conduct your program according to NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC may result in enforcement action against you. This could include issuance of a notice of violation; imposition of a civil penalty; or an order suspending, modifying, or revoking your license as specified in the Enforcement Policy. The NRC Enforcement Policy is available on the following internet address: <http://www.nrc.gov/what-we-do/regulatory/enforcement/enforc-pol.pdf>.

The NRC no longer publishes the NRC Rules and Regulations loose leaf supplements. However, an electronic version of the NRC's regulations is available on the NRC Web site at [www.nrc.gov](http://www.nrc.gov). To view these regulations, highlight "Electronic Reading Room" and choose "Regulations" on the drop down menu. An electronic version of the NUREG-1556 Series publications is also available on the NRC Web site. To view these guidance documents, highlight "Electronic Reading Room"; choose "All Collections" on the drop down menu; choose "NUREGS (NRC Reports)"; and select "Publications Prepared by the NRC Staff". Then, choose "NUREG-1556" from the table and select the appropriate volume(s) for your license type.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Thank you for your cooperation.

Sincerely,

**/RA/**

Roberto J. Torres, Senior Health Physicist  
Nuclear Materials Licensing Branch

Docket: 030-07517  
License: 53-00017-23  
Control: 471403

Enclosure: As stated

**MATERIALS LICENSE**

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, 36, 39, 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.

<p style="text-align: center;">Licensee</p> <p>1. University of Hawaii Office of the President</p> <p>2. 2444 Dole Street Honolulu, Hawaii 96822</p>	<p>In accordance with letter dated June 12, 2007</p> <p>3. License number 53-00017-23 is amended in in its entirety to read as follows:</p> <hr/> <p>4. Expiration date August 31, 2015</p> <hr/> <p>5. Docket No. 030-07517 Reference No.</p>
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<p>6. Byproduct, source, and/or special nuclear material</p> <p>A. Any byproduct material between Atomic Nos. 3 and 83, inclusive</p> <p>B. Carbon-14</p> <p>C. Cesium-137</p> <p>D. Phosphorus-32</p> <p>E. Phosphorus-33</p> <p>F. Nickel-63</p> <p>G. Hydrogen-3</p> <p>H. Iodine-125</p> <p>I. Sulfur-35</p> <p>J. Calcium-45</p> <p>K. Chromium-51</p> <p>L. Americium-241</p> <p>M. Thorium-230</p> <p>N. Thorium-229</p> <p>O. Uranium-233</p> <p>P. Uranium-236</p>	<p>7. Chemical and/or physical form</p> <p>A. Any</p> <p>B. Any</p> <p>C. Sealed sources</p> <p>D. Any</p> <p>E. Any</p> <p>F. Foils in detector cells</p> <p>G. Any</p> <p>H. Any</p> <p>I. Any</p> <p>J. Any</p> <p>K. Any</p> <p>L. Sealed source (Amersham Model No. AMC 2084)</p> <p>M. Any</p> <p>N. Any</p> <p>O. Any</p> <p>P. Any</p>	<p>8. Maximum amount that licensee may possess at any one time under this license</p> <p>A. 90 millicuries of each radionuclide within this category except as indicated below</p> <p>B. 900 millicuries</p> <p>C. 500 millicuries</p> <p>D. 1 curie</p> <p>E. 200 millicuries</p> <p>F. 60 sources, no source to exceed 20 millicuries</p> <p>G. 8 curies</p> <p>H. 300 millicuries</p> <p>I. 500 millicuries</p> <p>J. 200 millicuries</p> <p>K. 200 millicuries</p> <p>L. Not to exceed 10 millicuries per source and 20 millicuries total</p> <p>M. 100 microcuries</p> <p>N. 500 microcuries</p> <p>O. 20 microcuries</p> <p>P. 1 microcurie</p>
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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
Q. Neptunium-237	Q. Any	Q. 25 microcuries
R. Protactinium-233	R. Any	R. 25 microcuries
S. Polonium-209	S. Any	S. 0.1 microcurie
T. Americium-241	T. Sealed neutron sources (CPN Model CPN-131)	T. Not to exceed 50 millicuries per source and 350 millicuries total
U. Americium-241	U. Sealed neutron sources (Troxler Dwg. A-102700)	U. Not to exceed 10 millicuries per source and 20 millicuries total
V. Americium-241	V. Sealed neutron sources (Troxler Dwg. A-102451)	V. Not to exceed 50 millicuries per source and 600 millicuries total
W. Cesium-137	W. Sealed sources (Troxler Dwg. A-102112)	W. Not to exceed 10 millicuries per source and 150 millicuries total
X. Cesium-137	X. Sealed sources (CPN Model CPN-131)	X. 10 millicuries
Y. Americium-241	Y. Sealed neutron sources (CPN Model CPN-131)	Y. 50 millicuries
Z. Americium-241	Z. Foil source (Nuclear Radiation Development, LLC, Model A-001)	Z. 1 millicurie
AA. Polonium-210	AA. Sealed source (Nuclear Radiation Development, LLC, Model P-2031)	AA. 20 millicuries

9. Authorized Use

- A. through S. To be used in research and development as defined in 10 CFR 30.4; calibration of instruments; and instructional purposes.
- T. For use in CPN Model MC-M portable gauging devices for sub-surface measurements of the moisture content of soils or construction materials.
- U. For use in Troxler Model 3320/3330 Series portable gauges for depth and moisture determinations.
- V. and W. To be used in Troxler Model 3411B and 3451 portable gauging devices for moisture and surface density measurements on construction materials.

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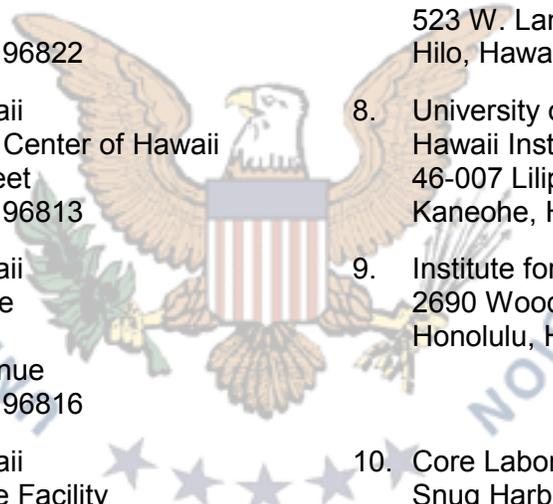
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- X. and Y. To be used in CPN Model MC Series Portaprobe portable gauging device for moisture and surface density measurements on construction materials.
- Z. To be used in research and development as defined in 10 CFR 30.4.
- AA. To be used in research and development as defined in 10 CFR 30.4.

**CONDITIONS**

10. A. Licensed material may be used only at the licensee's facilities located at:

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- |                                                                                                                                                        |                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. University of Hawaii at Manoa<br>Manoa Campus<br>2444 Dole Street<br>Honolulu, Hawaii 96822                                                         | 7. University of Hawaii at Hilo<br>Natural Sciences Division<br>523 W. Lanikaula Street<br>Hilo, Hawaii 96720                                                                           |
| 2. University of Hawaii<br>Cancer Research Center of Hawaii<br>1236 Lauhala Street<br>Honolulu, Hawaii 96813                                           | 8. University of Hawaii<br>Hawaii Institute of Marine Biology<br>46-007 Lilipuna Road<br>Kaneohe, Hawaii 96744                                                                          |
| 3. University of Hawaii<br>School of Medicine<br>Leahi Hospital<br>3675 Kilauea Avenue<br>Honolulu, Hawaii 96816                                       | 9. Institute for Astronomy<br>2690 Woodlawn Drive<br>Honolulu, Hawaii 96822                                                                                                             |
| 4. University of Hawaii<br>Small Animal Care Facility<br>2721 Woodlawn Drive<br>Honolulu, Hawaii 96822                                                 | 10. Core Laboratory Building<br>Snug Harbor<br>1 Sand Island Access Road<br>Honolulu, Hawaii 96818                                                                                      |
| 5. Kewalo Marine Laboratory<br>41 Ahui Street<br>Honolulu, Hawaii 96813                                                                                | 11. Environmental Health and Safety Office<br>2040 East-West Road<br>Honolulu, Hawaii 96822                                                                                             |
| 6. University of Hawaii at Hilo<br>Hawaii Agriculture Experiment Station<br>Dept. of Plant Physiology<br>461 W. Lanikaula Street<br>Hilo, Hawaii 96720 | 12. University of Hawaii, Kaka'ako Campus<br>Wellness Center<br>John A. Burns School of Medicine<br>(JABSOM)<br>Biosciences Building<br>651 Ilalo Street<br>Honolulu, Hawaii 96813-5534 |

B. Licensed material may also be used on any University of Hawaii research ship or other ships under contract between the University of Hawaii and the ship owner for in vitro tracer studies at temporary job sites at sea.

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- C. Portable gauging devices may be used at temporary job sites of the licensee anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material, including areas of exclusive Federal jurisdiction within Agreement States.

If the jurisdiction status of a Federal facility within an Agreement State is unknown, the licensee should contact the federal agency controlling the job site in question to determine whether the proposed job site is an area of exclusive Federal jurisdiction. Authorization for use of radioactive materials at job sites in Agreement States or under exclusive Federal jurisdiction shall be obtained from the appropriate state regulatory agency.

11. A. Licensed material shall only be used by, or under the supervision of, individuals designated by the Radiation Safety Committee, Dr. Kenton J. Kramer, Chairman.
- B. The Radiation Safety Officer for this license is Irene K. Sakimoto.
12. A. Sealed sources shall be tested for leakage and/or contamination at intervals not to exceed the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or under equivalent regulations of an Agreement State.
- B. Notwithstanding Paragraph A of this Condition, sealed sources designed to primarily emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed 3 months.
- C. In the absence of a certificate from a transferor indicating that a leak test has been made within the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or under equivalent regulations of an Agreement State, prior to the transfer, a sealed source received from another person shall not be put into use until tested and the test results received.
- D. Sealed sources need not be tested if they contain only hydrogen-3; or they contain only a radioactive gas; or the half-life of the isotope is 30 days or less; or they contain not more than 100 microcuries of beta and/or gamma emitting material or not more than 10 microcuries of alpha emitting material.
- E. Sealed sources need not be tested if they are in storage and are not being used. However, when they are removed from storage for use or transferred to another person, and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.
- F. The leak test shall be capable of detecting the presence of 0.005 microcurie (185 becquerels) of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie (185 becquerels) or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 30.50(c)(2), and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. The report shall be filed within 5 days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011, ATTN: Director, Division of Nuclear Materials Safety. The report shall specify the source involved, the test results, and corrective action taken.

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- G. Tests for leakage and/or contamination, including leak test sample collection and analysis, shall be performed by the licensee or by other persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.
- H. Records of leak test results shall be kept in units of microcuries and shall be maintained for 3 years.
13. A. Detector cells containing a titanium tritide foil or a scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents the foil temperature from exceeding that specified in the certificate of registration referred to in 10 CFR 32.210.
- B. When in use, detector cells containing a titanium tritide foil or a scandium tritide foil shall be vented to the outside.
14. Maintenance, repair, cleaning, replacement and disposal of foils contained in detector cells shall be performed only by the device manufacturer or other persons specifically authorized by the Nuclear Regulatory Commission or an Agreement State to perform such services.
15. A. Licensed material shall not be used in or on human beings.
- B. 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, or the products from experimental animals, that have been administered licensed materials shall not be used for human consumption.
17. This license does not authorize commercial distribution of licensed material.
18. The licensee is authorized to transport licensed material only in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."
19. The licensee is authorized to hold byproduct material with a physical half-life of less than or equal to 120 days for decay-in-storage before disposal without regard to its radioactivity if the licensee:
- A. Monitors byproduct material at the surface before disposal and determines that its radioactivity cannot be distinguished from the background radiation level with an appropriate radiation detection survey meter set on its most sensitive scale and with no interposed shielding; and
- B. Removes or obliterates all radiation labels, except for radiation labels on materials that are within containers and that will be managed as biomedical waste after they have been released from the licensee; and
- C. Maintains records of the disposal of licensed materials for 3 years. The record must include the date of the disposal, the survey instrument used, the background radiation level, the radiation level measured at the surface of each waste container, and the name of the individual who performed the disposal.

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20. This license does not authorize disposal of licensed material at sea.
21. Radioactive waste generated shall be stored in accordance with the statements, representations and procedures included with the waste storage plan described in the licensee's application dated April 27, 2005.
22. Each portable nuclear gauge shall have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. The gauge or its container must be locked when in transport, storage, or when not under the direct surveillance of an authorized user.
23. Any cleaning, maintenance, or repair of the gauge(s) that requires removal of the source rod shall be performed only by the manufacturer or by other persons specifically licensed by the Commission or an Agreement State to perform such services.
24. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee, except as specifically authorized.
25. The licensee shall conduct a physical inventory every 6 months to account for all sources and/or devices received and possessed under the license.
26. Except for maintaining labeling as required by 10 CFR Part 20 or 71, the licensee shall obtain authorization from NRC before making any changes in the sealed source, device, or source-device combination that would alter the description or specifications as indicated in the respective Certificates of Registration issued either by the Commission pursuant to 10 CFR 32.210 or an Agreement State.
27. The licensee shall not acquire licensed material in a sealed source or device unless the source or device has been registered with the U.S. Nuclear Regulatory Commission pursuant to 10 CFR 32.210 or equivalent regulations of an Agreement State.
28. A. If the licensee uses unshielded sealed sources extended more than 3 feet below the surface, the licensee shall use surface casing that extends from the lowest depth to 12 inches above the surface and other appropriate procedures to reduce the probability of the source or probe becoming lodged below the surface. If it is not feasible to extend the casing 12 inches above the surface, the licensee shall implement procedures to ensure that the cased hole is free of obstruction before making measurements.
- B. If a sealed source or a probe containing sealed sources becomes lodged below the surface and it becomes apparent that efforts to recover the sealed source or probe may not be successful, the licensee shall notify the U.S. Nuclear Regulatory Commission and submit the report required by 10 CFR 30.50 (b)(2) and (c). The licensee shall not abandon the sealed source or probe without obtaining the Commission's prior written consent.

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29. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations.
- A. Application dated April 27, 2005 (ML051380179)
  - B. Letter dated September 7, 2005 (ML052730077)



FOR THE U.S. NUCLEAR REGULATORY COMMISSION

*/RA/*Date: June 26, 2007

By: \_\_\_\_\_

Roberto J. Torres, Senior Health Physicist  
Nuclear Materials Licensing Branch  
Region IV  
Arlington, Texas 76011