



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

April 12, 2005

Docket No. 03030945
Control No. 136770

License No. 08-05938-13

Rachel L. Gregory
Associate Director
Smithsonian Institution
Office of Safety & Environmental Management
Victor Building, Suite 9100, MRC 932
P.O. Box 37012
Washington, DC 20013-7012

SUBJECT: SMITHSONIAN INSTITUTION, ISSUANCE OF LICENSE AMENDMENT,
CONTROL NO. 136770

Dear Ms. Gregory:

This refers to your license amendment request. Enclosed with this letter is the amended license.

Please review the enclosed document carefully and be sure that you understand and fully implement all the conditions incorporated into the amended license. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region I Office, Licensing Assistance Team, (610) 337-5239, so that we can provide appropriate corrections and answers.

An environmental assessment for this action is not required, since this action is categorically excluded under 10 CFR 51.22(c)(14).

Current NRC regulations and guidance are available at the NRC Web sites listed below or by contacting the Government Printing Office (GPO) toll-free at 1-888-293-6498. The GPO is open from 7:00 a.m. to 9:00 p.m. EST, Monday through Friday (except Federal holidays).

Thank you for your cooperation.

Sincerely,

Original signed by Thomas K. Thompson

Thomas K. Thompson
Senior Health Physicist
Commercial and R&D Branch
Division of Nuclear Materials Safety

Enclosure:
Amendment No. 17

NRC Web site addresses

R. Gregory
Smithsonian Institution

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NRC regulations

<http://www.nrc.gov/reading-rm/doc-collections/cfr/>

Licensing guidance

<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/>

General Policy and Procedure for NRC Enforcement Actions

<http://www.nrc.gov/what-we-do/regulatory/enforcement/enforc-pol.pdf>

206 of the Energy Reorganization Act of 1974

<http://www.nrc.gov/who-we-are/governing-laws.html>

cc:

David M. Peters, Radiation Safety Officer

R. Gregory
Smithsonian Institution

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OFFICE	DNMS/RI	N	DNMS/RI		DNMS/RI			
NAME	TThompson/TKT							
DATE	4/12/2005							

OFFICIAL RECORD COPY

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. Smithsonian Institution Office of Safety and Environmental Management</p> <p>2. P. O. Box 37012 Victor Building, Suite 9100, MRC-932 Washington, DC 20013-7012</p>	<p>In accordance with the letter dated April 11, 2005,</p> <p>3. License number 08-05938-13 is amended in its entirety to read as follows:</p> <p>4. Expiration date January 31, 2015</p> <p>5. Docket No. 030-30945 Reference No.</p>	
<p>6. Byproduct, source, and/or special nuclear material</p> <p>A. Hydrogen 3</p> <p>B. Carbon 14</p> <p>C. Phosphorous 32</p> <p>D. Phosphorous 33</p> <p>E. Sulfur 35</p> <p>F. Iodine 125</p> <p>G. Nickel 63</p> <p>H. Cesium 137</p> <p>I. Promethium 147</p> <p>J. Depleted Uranium</p>	<p>7. Chemical and/or physical form</p> <p>A. Any</p> <p>B. Any</p> <p>C. Any</p> <p>D. Any</p> <p>E. Any</p> <p>F. Any</p> <p>G. Foils or plated sources (Agilent Technologies/HP Model Nos. 19233 and 19235; Shimadzu Scientific Instruments Model Nos. ECD-2, 3, 4, 5, 6, 7, 8, 9, 9M, 14, 14C, 17, 2010)</p> <p>H. Graphite blocks</p> <p>I. Painted dials</p> <p>J. Metal</p>	<p>8. Maximum amount that licensee may possess at any one time under this license</p> <p>A. 90 millicuries</p> <p>B. 85 millicuries</p> <p>C. 120 millicuries</p> <p>D. 120 millicuries</p> <p>E. 120 millicuries</p> <p>F. 125 millicuries</p> <p>G. No single source to exceed the maximum activity specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission or an Agreement State</p> <p>H. Not to exceed 0.04 microcuries per block and 15 microcuries total</p> <p>I. 800 millicuries</p> <p>J. 11 kilograms</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 |
| K. Cesium 137 | K. Sealed Sources
(AEA Technology/QSA, Inc.
Model No. CDCW556 or
Isotope Product Laboratories
Model No. HEG-137) | K. No single source to exceed the maximum activity specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission or an Agreement State |
| L. Americium 241 | L. Sealed Sources
(AEA Technology/QSA, Inc.
Model No. AMNV.997 or
Isotope Product Laboratories
Model No. Am1.NO2) | L. No single source to exceed the maximum activity specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission or an Agreement State |
| M. Iron 55 | M. Sealed sources | M. Not to exceed 9 millicuries per source and 25 millicuries total |
| N. Cobalt 60 | N. Sealed sources | N. Not to exceed 10 microcuries per source and 40 microcuries total |
| O. Cadmium 109 | O. Sealed sources | O. Not to exceed 5 millicuries per source and 10 millicuries total |
| P. Barium 133 | P. Sealed sources | P. Not to exceed 10 microcuries per source and 20 microcuries total |
| Q. Americium 241 | Q. Sealed sources | Q. Not to exceed 1 millicurie per source and 2 millicuries total |
| R. Curium 244 | R. Sealed sources | R. Not to exceed 10 millicuries per source and 22 millicuries total |

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9. Authorized use:

A. through F. Research and development as defined in 10 CFR 30.4.

G. To be used for sample analysis in compatible gas chromatography devices that have been registered either with the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or with an Agreement State and have been distributed in accordance with a Commission or Agreement State specific license authorizing distribution to persons specifically authorized by a Commission or Agreement State license to receive, possess, and use the devices.

H. Component part of replica of CP-1 Fermi Pile for storage and display only.

I. Component part of meters of the Lunar Rover for storage and display only.

J. Component part of thermoelectric generator for storage and display only.

K. and L. In Troxler Electronics Laboratories, Inc. Model No. 3450 portable gauging devices for measuring physical properties of materials.

M. through R. Calibration of licensee's instruments.

CONDITIONS

10. A. Licensed material identified in Items 6.A. through 6.J. above may be used only at the licensee's facilities located at the Smithsonian Environmental Research Center, 647 Contees Wharf Road, Edgewater, Maryland, at outdoor experimental sites on Smithsonian property; the Laboratories of Analytical Biology, Museum Support Center, 4210 Silver Hill Road, Suitland, Maryland; the National Air and Space Museum, 601 Independence Avenue, Washington, D.C.; the National Museum of American History, 14th and Constitution Avenue, N.W., Washington, D.C.; the Paul E. Garber Facility, Building 15, 3904 Old Silver Hill Road, Suitland, Maryland; the Conservation and Research Center, Front Royal, Virginia; and the Molecular Genetics Laboratory, Propagation Building, the Department of Animal Health, and the Center for Biological Research, National Zoological Park, Washington, D.C. and at temporary job sites at sea aboard the R/V Cape Henlopen and the R/V Cape Hatteras, for in-vitro tracer studies at temporary job sites at sea 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.

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- B. Licensed material identified in Items 6.K. through 6.L. above may be used or stored at the licensee's facilities located at the National Air and Space Museum, 601 Independence Avenue, SW, Washington, D.C. and at temporary job sites of the licensee anywhere in the United States.
- C. Licensed materials identified in Items 6.M. through 6.R. above may also be used at the licensee's facilities located at: the Smithsonian Astrophysical Observatory, The Porter Exchange, 1815 Massachusetts Avenue, Cambridge Massachusetts; Hughes Danbury Optical System/Lexington, 10 Maguire Road, Lexington, Massachusetts; National Technical Systems/Boxborough, 1146 Massachusetts Avenue, Boxborough, Massachusetts; Parker Chomerics, 77A Dragon Court, Woburn, Massachusetts; Hughes Danbury Optical Systems/Danbury, 100 Wooster Heights Road, Danbury, Connecticut; and at temporary jobsites of the licensee anywhere in the United States.

11. A. Licensed material shall be used by, or under the supervision of:

Authorized UsersMaterial

Michael Braun	Carbon-14, Phosphorous-32, Phosphorus-33, and Sulfur-35
Janine Brown	Hydrogen-3, Carbon-14, Sulfur-35, and Iodine-125
Charles Burton	Promethium-147
Wayne Coats	Hydrogen-3, Carbon-14, and Sulfur-35
Robert Craddock	Cesium-137 and Americium-241 gauges only
Robert C. Fleisher	Carbon-14, Phosphorous-32, Phosphorus-33, and Sulfur-35
Charles L. Gallegos	Hydrogen-3, Carbon-14, and Sulfur-35
Cynthia Gilmore	Hydrogen-3, Carbon-14, and Sulfur-35
Liza Hamill	Hydrogen-3, Carbon-14, and Sulfur-35
Almus Kenter	Iron-55, Cobalt-60, Cadmium-109, Barium-133, Americium-241, and Curium-244
J. Patrick Megonigal	Hydrogen-3, Carbon-14, and Sulfur-35
Steven L. Monfort	Hydrogen-3, Carbon-14, Sulfur-35, and Iodine-125

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Authorized UsersMaterial

Patrick J. Neale	Hydrogen-3, Carbon-14, Phosphorous-32, Phosphorous-33, and Sulfur-35
Olar T. Oftedal	Hydrogen-3 and Carbon-14
David M. Peters	Hydrogen-3, Carbon-14, Phosphorous-32, Phosphorus-33, Sulfur-35, Iodine-125, Nickel-63, Cesium-137, Promethium-147, Depleted Uranium, Iron-55, Cobalt-60, Cadmium-109, Barium-133, Americium-241, and Curium-244
Roger Sherman	Cesium-137 and Depleted Uranium
Noreen Tuross	Carbon-14, Phosphorous-32, Phosphorus-33, and Sulfur-35
David E. Wildt	Hydrogen-3, Carbon-14, Sulfur-35, and Iodine-125
Elizabeth A. Zimmer	Carbon-14, Phosphorous-32, Phosphorus-33, and Sulfur-35

- B. Licensed material listed in Items 6.K. and 6.L. shall be used by or under the supervision and in the physical presence of individuals who have received the training described in the application dated September 5, 2002.

12. The Radiation Safety Officer for this license is David M. Peters.
13. The licensee shall not use licensed material in or on human beings.
14. The licensee shall not use licensed material in field applications where it is released except as provided otherwise by specific condition of this license.
15. A. Sealed sources shall be tested for leakage and/or contamination at intervals not to exceed six months or at 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

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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.
- 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 5 years.
16. Sealed sources or source rods containing licensed material shall not be opened or sources removed or detached from source rods or gauges by the licensee, except as specifically authorized.
17. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.
18. The licensee shall conduct a physical inventory every six months, or at other intervals approved by the U.S. Nuclear Regulatory Commission, to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for 5 years from the date of each inventory and shall include the radionuclides, quantities, manufacturer's name and model numbers, and the date of the inventory.
19. 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 or storage, or when not under the direct surveillance of an authorized user.
20. 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 Commission or an Agreement State to perform such services.

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21. Any cleaning, maintenance, or repair of the gauges that requires detaching the source or source rod from the gauge shall be performed only by the manufacturer or by other persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.
22. 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.
23. 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 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.
24. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

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25. 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 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 September 5, 2002 (ML022530132)
 - B. Application dated August 24, 2004 (ML042400539)
 - C. Letter dated October 14, 2004 (ML042950131)
 - D. Letter dated April 11, 2005 (ML051020143)
 - E. Letter dated April 12, 2005



For the U.S. Nuclear Regulatory Commission

Date April 12, 2005***Original signed by Thomas K. Thompson***

Thomas K. Thompson
Commercial and R&D Branch
Division of Nuclear Materials Safety
Region I
King of Prussia, Pennsylvania 19406