

OFFICIAL RECORD COPY**MATERIALS LICENSE**

Amendment No. 25

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.

Licensee		
1. Old Dominion University		In accordance with the letter dated May 2, 1996
2. 1300 W. 49th Street Norfolk, Virginia 23529-0566		3. License Number 45-09599-03
		is amended in its entirety to read as follows:
		4. Expiration Date November 30, 2005 (extended)
		5. Docket or Reference No. 030-16045
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 numbers 3 through 83 and with a half-life of not more than 120 days, except as follows:	A. Any	A. Not to exceed 5.56 gigabecquerels (150 millicuries) per radionuclide and 185 gigabecquerels (5 curies) total, except as follows:
B. Cadmium 109	B. Electroplated sources	B. 740 megabecquerels (20 millicuries)
C. Calcium 45	C. Any	C. 148 megabecquerels (4 millicuries)
D. Carbon 14	D. Any	D. 7.41 gigabecquerels (200 millicuries)
E. Cesium 137	E. Sealed sources	E. 6.11 gigabecquerels (165 millicuries)
F. Chlorine 36	F. Any	F. 185 megabecquerels (5 millicuries)
G. Cobalt 60	G. Sealed sources	G. 370 megabecquerels (10 millicuries)
H. Hydrogen 3	H. Any	H. 7.41 gigabecquerels (200 millicuries)
I. Hydrogen 3	I. Foils	I. Not to exceed 6.76 gigabecquerels (250 millicuries) per foil and 27.78 gigabecquerels (750 millicuries) total

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MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number 45-09599-03

Docket or Reference Number 130-16045

Amendment No. 25

6. By-product, 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
J. Nickel 63	J. Foils or plated sources	J. Not to exceed 740 megabecquerels (20 millicuries) per source and 18.52 gigabecquerels (500 millicuries) total
K. Nickel 63	K. Sealed sources	K. 37 megabecquerels (1 millicurie)
L. Plutonium 236	L. Any	L. 185 kilobecquerels (5 microcuries)
M. Plutonium 239	M. Any	M. 185 kilobecquerels (5 microcuries)
N. Plutonium 239	N. Sealed neutron sources	N. 144 grams total
O. Strontium 90	O. Sealed sources	O. 928.7 megabecquerels (25.1 millicuries)
P. Thorium 229	P. Any	P. 74 kilobecquerels (2 microcuries)
Q. Thorium 232	Q. Any	Q. 3.70 megabecquerels (100 microcuries)
R. Tin 119m	R. Electrodeposited on foils	R. 148 megabecquerels (4 millicuries)
S. Uranium 232	S. Any	S. 37 kilobecquerels (1 microcurie)
T. Uranium 236	T. Solid	T. 555 kilobecquerels (15 microcuries)
U. Uranium (natural)	U. Any	U. 3.70 megabecquerels (100 microcuries)
V. Zinc 65	V. Any	V. 370 megabecquerels (10 millicuries)

9. Authorized use

A. through V. For research and development as defined in 10 CFR 30.4, including animal studies, training of students, and calibration of instruments.

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number 45-09599-03

Docket or Reference Number 000-16045

Amendment No. 25

CONDITIONS

10. Licensed material shall be used only at Old Dominion University in Norfolk, Virginia except that:
- A. Hydrogen 3, Carbon 14 and Iodine 125 may also be used aboard research vessels anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material; and
 - B. Nickel 63 foils or plated sources for research and development may also be used at temporary jobsites of the licensee anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material.
11. Licensed material shall be used by, or under the supervision of, individuals designated by the Radiation Safety Committee, Laura K. Moen, Ph.D., Chairman.
12. The Radiation Protection Officer for this license is Paul T. Sutcliffe.
13. A. Sealed sources and detector cells shall be tested for leakage and/or contamination at intervals not to exceed 6 months or at such other intervals as specified by the certificate of registration referred to in 10 CFR 32.210.
- B. Notwithstanding Paragraph A of this Condition, sealed sources designed to 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 6 months prior to the transfer, a sealed source or detector cell received from another person shall not be put into use until tested.
- D. Each sealed source fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to any use or transfer as a sealed source.
- E. Sealed sources need not be leak tested if:
- (1) they contain only hydrogen-3; or
 - (2) they contain only a radioactive gas; or
 - (3) the half-life of the isotope is 30 days or less; or
 - (4) they contain not more than 100 microcuries of beta and/or gamma emitting material or not more than 10 microcuries of alpha emitting material; or
 - (5) they are not designed to emit alpha particles, 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 or detector cell shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number 45-09599-03

Docket or Reference Number 920-16045

Amendment No. 25

(Continued)

CONDITIONS

13. F. The leak test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 30.50(b)(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 II, ATTN: Division of Nuclear Materials Safety, 101 Marietta Street, N.W., Suite 2900, Atlanta, GA 30323-0199. The report shall specify the source involved, the test results, and corrective action taken.
- G. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically licensed by the Commission or an Agreement State to Perform such services.
14. A. Detector cells containing titanium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 225 degrees Centigrade.
- B. Detector cells containing scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 325 degrees Centigrade.
15. 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.
16. Licensed material shall not be used in or on human beings or in products distributed to the public.
17. The licensee may transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."
18. The licensee is authorized to hold radioactive material with a physical half-life of less than 120 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 10 half-lives.
 - B. Before disposal as ordinary trash, byproduct material shall be surveyed at the container surface with the appropriate survey meter set on its most sensitive scale and with no interposed shielding to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.
 - C. A record of each disposal permitted under this License Condition shall be retained for three years. The record must include the date of disposal, the date on which the byproduct material was placed in storage, the radionuclides disposed, the survey instrument used, the background dose rate, the dose rate measured at the surface of each waste container, and the name of the individual who performed the disposal.
19. The licensee shall maintain records of information important to safe and effective decommissioning at Old Dominion University, Norfolk, Virginia, in accordance with the provisions of 10 CFR 30.35(g) until this license is terminated by the Commission.

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number 45-09599-03

Docket or Reference Number 45-16045

Amendment No. 25

(Continued)

CONDITIONS

20. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of unsealed licensed material to quantities less than 10^4 times the applicable limits in Appendix C of 10 CFR 20 pursuant to the provisions of 10 CFR 30.35(d).
21. This license does not authorize commercial distribution of licensed material.
22. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.
23. The licensee shall conduct a physical inventory every 6 months to account for all sources and/or devices received and possessed under the license.
24. Experimental animals, or the products from experimental animals, that have been administered licensed materials shall not be used for human consumption.
25. The licensee shall not acquire licensed material in a sealed source or device that contains a sealed source unless the source or device has been registered with the Nuclear Regulatory Commission under 10 CFR 32.210 or with an Agreement State.
26. 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 (with attachments) and cover letter dated May 23, 1995
 - B. Letters dated:
 - (1) May 31, 1990 (with attachments)
 - (2) November 8, 1995 [Clarifying information in response to NRC FAX dated 10/27/95]
 - (3) November 17, 1995 [Requests that Condition 18 authorize the decay-in-storage of waste with half lives of less than 120 days.]
 - (4) November 27, 1995 [Addition of new work site]
 - (5) January 22, 1996 [Change RSC Chairman]
 - (6) May 2, 1996 [Addition of another building for RAM use; Change wording of research vessels used; and Use of Ni-63 foils or plated sources for R&D at various sites in U.S.]
 - (7) May 29, 1996 [Additional information regarding Ni-63 foils or plated sources use; and Extension of expiration date in accordance with 10 CFR 30.36]

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

EARL G. WRIGHT

DATE JUN 07 1996

BY

Earl G. Wright

Region II, Division of Nuclear Materials Safety
101 Marietta Street, N.W., Suite 2900
Atlanta, GA 30323-0199

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

JUN 10 1996

INFORMATION FOR NRC MATERIAL LICENSEES

Please find enclosed:

- ☐ Your NRC material license
- ☒ Amendment to your NRC material license
- ☐ Amendment renewing your NRC material license
- ☐ Amendment terminating your NRC material license
- ☐ Notice for Radiographer Quality Assurance Approval Program

Please review the enclosed document carefully and be sure that you understand all conditions. If there are any errors or questions, please notify this office (ATTN: Ms. Diane Heim at (404) 331-4673) so that we can provide appropriate corrections and answers.

Please be advised that your license expires at the end of the day in the month and year stated in the license. Unless your license has been terminated, you must conduct your program involving byproduct materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:

1. Operate in accordance with NRC regulations 10 CFR 19, "Notice, Instructions and Reports to Workers Inspections," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.
2. Not possess and use materials authorized in Items 6, 7, and 8, on the license until:
 - a. you have constructed the facilities and obtained the equipment described in the license application and supporting documentation; and
 - b. you have notified the U. S. Nuclear Regulatory Commission, Region II, ATTN: Materials Licensing/Inspection Branch, in writing, that activities authorized by the license will be initiated;
 - c. you have submitted & certified implementation of a Quality Management Program (10 CFR 35.32) for radiotherapy, or for administering > 30 uCi of I-125 or I-131.
3. Notify NRC, in writing, within 30 days:
 - a. when an authorized user, Radiation Safety Officer, or Teletherapy Physicist permanently discontinues performance of duties under the license or has a name change; or
 - b. when the licensee's mailing address changes (no fee is required if the location of byproduct material remains the same).
4. In accordance with 10 CFR 30.36(b) 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; or
 - b. if you decide not to complete the facility, acquire equipment, or possess and use authorized material.

5. Request and obtain a license amendment before you:

- a. receive or use byproduct material for a clinical procedure permitted under Part 35 but not permitted by your license issued pursuant to this part.
- b. permit anyone, not authorized under 10 CFR 35, Subpart J, to work as an authorized user under a license for medical use of byproduct material.
- c. permit anyone, not authorized under 10 CFR 35, Subpart J, to work as a Radiation Safety Officer, Teletherapy Physicist, or Nuclear Pharmacist, under a license for medical use of byproduct material.
- d. order byproduct material in excess of the amount, or a different radionuclide or form, other than authorized on the license;
- e. add or change the areas of use or address (or addresses) of use identified in the license application or on the license; or
- f. change ownership of your organization.

6. Submit a complete renewal application with proper fee or termination request at least 30 days before the expiration date of your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of byproduct material after your license expires is a violation of NRC regulations. Transfer of licensed materials must be consistent with 10 CFR 30.41, 40.51 or 70.42, as applicable. A license will not normally be renewed, except on a case-by-case basis, in instances where licensed material has never been possessed or used.

In addition, please note that NRC Form 313 requires the applicant, by his/her signature, to verify that the applicant understands that all statements contained in the application are true and correct to the best of the applicant's knowledge. The signatory for the application should be the licensee or certifying official rather than a consultant.

You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC will result in enforcement action against you. This could include issuance of a Notice of Violation, or imposition of a Civil Penalty, or an order suspending, modifying or revoking your license as specified in the "General Statement of Policy and Procedures for NRC Enforcement Actions," NUREG-1600, (7/95). Since serious consequences to employees and the public can result from failure to comply with NRC requirements, prompt and vigorous enforcement action will be taken against those who do not achieve the necessary attention to detail and standard of compliance expected of licensees.

Thank you for your cooperation.

Enclosures:

- 1. NRC License
- 2. Category Marked Below for:
 - ☐ New licenses: NUREG-1600 (7/95); 19; 20; 30; 40 or 70, as appropriate; 71; 170; NRC Form 3; Agreement State list; and NRC Form 313.
 - ☐ New radiography licenses: Parts 34; 150.
 - ☐ New medical and teletherapy licenses: Part 35.
 - ☐ Amendments and renewals: NRC Form 313.

OLD DOMINION UNIVERSITY

Office of Environmental Health and Safety
1300 West 49th Street
Norfolk, Virginia 23529-0566
804-683-4495 (Seats) 683-4495
804-683-6025 (Fax)

May 29, 1996



Environmental
Health

Radiation
Safety

Industrial
Hygiene

Mr. Wade Liu
Materials Licensing Section
US Nuclear Regulatory Commission, Region II
101 Marietta St.
Atlanta, GA 30323

Dear Mr. Liu:

This letter is in response to your telephone inquiry of May 15, 1996 requesting information and clarification of the amendment request to license number 45-09599-03, dated May 2, 1996.

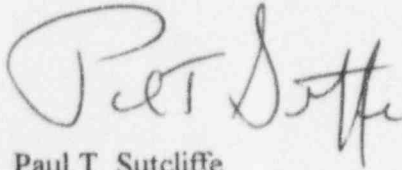
The Old Dominion University researcher is proposing to use a Barringer IONSCAN 400 Ion Mobility Spectrometer (IMS) in conjunction with field demonstration and studies of hand-held drug detection systems at various sites in the United States. These field demonstrations and studies will be conducted at locations where real world scenarios exist, i.e., various port cities and border crossings, and at the test facilities of the prospective user agencies (such as U.S. Customs and U.S. Coast Guard). The Barringer IONSCAN 400 IMS will be used as a quality assurance/quality control tool in the field to evaluate and validate the performance of the experimental hand-held detector prototypes that have been developed in the laboratory.

This instrument utilizes a nickel-63 source which can only be removed if the IMS is disassembled. The IMS will not be modified in any way. All service (including maintenance, repair, cleaning and replacement) on the radioactive source will be performed by the device manufacturer or other persons who have been authorized by the US NRC or an Agreement State.

This device will be transported to and from temporary sites either by a University, private, or rental vehicle and/or commercial aircraft. During ground transportation, the IMS will be secured inside the vehicle. When left unattended, the instrument will be locked inside a secured area of the vehicle such as an enclosed trunk.

I trust that the enclosed documentation will provide you with sufficient information concerning the proposed use of Old Dominion University's Barringer IONSCAN 400 Ion Mobility Spectrometer (IMS). If you need any additional information, or require further clarification, please contact me.

Sincerely,

A handwritten signature in dark ink, appearing to read "Paul T. Sutcliffe". The signature is fluid and cursive, with the first name "Paul" being more prominent than the last name "Sutcliffe".

Paul T. Sutcliffe
Radiation Safety Officer

5/15/96

TELEPHONE OR VERBAL CONVERSATION RECORD

TIME

~ 10:00

☒ A.M.
☐ P.M.

☐ INCOMING CALL

☒ OUTGOING CALL

☐ VISIT

PERSON CALLING

WADE T. LOO

OFFICE/ADDRESS

USNRC - RII ATLANTA, GA

PHONE NUMBER

EXTENSION

404-331-3932

PERSON CALLED

RACHEL DEMUNDA, ASST. DIR.
ENV. HEALTH + SAFETY

OFFICE/ADDRESS

OLD DOMINION UNIV.
NORFOLK VA

PHONE NUMBER

EXTENSION

804-683-4445

CONVERSATION

SUBJECT

LIC. AMENDMENT REQUEST 5/2/96

SUMMARY

- CALLED TO SPEAK WITH PAUL JUTCHIFFE, RSO; NOT THERE, WENT TO A MEETING FOR 2 WEEKS.

- LEFT MESSAGE WITH MS. DEMUNDA REGARDING ADDITIONAL INFO. ON ITEM C. (NI-63 F.T.I.)

→ @ PORTABLE G.C.s

@ SEPARATE OF OTHER DEVICE

@ USED FOR QA/QC PURPOSES

@ CONTROL OF RAM / SECURITY

@ RECIPROCALITY IN OTHER AGREEMENT STATES.

- WILL CRY WITH PAUL + SEND LTR APPROVING COMMENT + CLARIFY G.C. USE + CONTROL.

WD

ACTION REQUESTED

☐ ADVISE ME OF ACTION TAKEN.

INITIALS

DATE

ACTION TAKEN

INITIALS

DATE

BETWEEN:

License Fee Management Branch, ARM
and
Regional Licensing Sections

: (FOR LFMS USE)
: INFORMATION FROM LTS
: -----
: Program Code: 01100
: Status Code: 0
: Fee Category: EX 3L 1D 2C
: Exp. Date: 20051130
: Fee Comments: 170.11(A)(4)
: Decom Fin Assur Req'd: Y
:

1996 MAY 17 AM 9:30

LICENSE FEE TRANSMITTAL

A. REGION II

1. APPLICATION ATTACHED

Applicant/Licensee: OLD DOMINION UNIVERSITY
Received Date: 960510
Docket No.: 3016045
Control No.: 257060
License No.: 45-09599-03
Action Type: Amendment

2. FEE ATTACHED

Amount: _____
Check No.: _____

3. COMMENTS

Signed NWitt
Date 5/13/96

B. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered ✓)

1. Fee Category and Amount: EX 3L 1D 2C

2. Correct Fee Paid. ☒ Application may be processed for:

Amendment ✓
Renewal _____
License _____

FEE EXEMPT
170.11(A)(4)

3. OTHER _____

Signed Rita Messier
Date 5/17/96

RECEIVED BY LFMS	
Date	<u>5/17/96</u>
Log	<u>May 2 II</u>
By	<u>Xem</u>
Date Completed	<u>5/17/96</u>

OLD DOMINION UNIVERSITY

Office of Environmental Health and Safety
1300 West 49th Street
Norfolk, Virginia 23529-0566
804-683-4495 (Seats) 683-4495
804-683-6025 (Fax)

May 2, 1996



Mr. Earl Wright, NML
Materials Licensing Section
US Nuclear Regulatory Commission, Region II
101 Marietta St.
Atlanta, GA 30323

Dear Mr. Wright:

This letter is to request that license number 45-09599-03 be amended to include the following:

- A. The addition of the Old Dominion University Research Foundation Laboratory Building at 4211 Colley Ave., Norfolk, VA 23508, to the list of addresses where radioactive materials will be used or possessed (Item 3).
- B. Substitution of the statement "In addition to the above locations, aboard *research vessels* operating in the Chesapeake Bay and in the Atlantic Ocean" for "In addition to the above locations, aboard *Old Dominion University research vessels* operating in the Chesapeake Bay and in the Atlantic" (as it appears in Item 3 of the license renewal).
- C. The use of nickel-63 foils or plated sources for research and development at various sites in the United States.

These amendments are in addition to the procedures and information submitted in Old Dominion University's renewal application dated May 23, 1995, correspondences dated November 8, 1995, November 27, 1995, and amendment dated January 22, 1996.

Sincerely,

Paul T. Sutcliffe
Radiation Safety Officer

cc: Laura Moen, Ph.D.
Chair, Radiation Safety Committee

257060