

NMSB2

January 24, 2006

Health Physicist License Review
Commercial and R&D Branch
Division of Nuclear Materials Safety
United States Nuclear Regulatory Commission, Region 1
475 Allendale Road
King of Prussia, Pennsylvania 19406-1415

LL 31125
03 37127
02500

(45-31125-01)

Subject: New License Application for Radiology Services of Northern Virginia, LLC.

To Whom It May Concern:

Any and all efforts on your part to expedite this license would be greatly appreciated. For financial reasons we are hoping that we can start business on or about April 1st 2006. Any questions or concerns feel free to call Allen C. Jones at (703) 727-2108.

Thank you Allen C. Jones RPh PharmD



81-01

138305

NMSCHRON MATERIALS-001

NRC FORM 313

(10-2005)

10 CFR 30, 32, 33,
34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0120

EXPIRES: 10/31/2008

Estimated burden per response to comply with this mandatory collection request: 4.4 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

APPLICATION FOR MATERIAL LICENSE

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, MISSISSIPPI, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TX 76011-4005

LL 31125
030 37127
02500

(45-31125-01)

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR (Check appropriate item)



A. NEW LICENSE



B. AMENDMENT TO LICENSE NUMBER



C. RENEWAL OF LICENSE NUMBER

2. NAME AND MAILING ADDRESS OF APPLICANT (Include ZIP code)

Allen C. Jones RPh PharmD



3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Radiology Services of Northern Virginia
13870 Park Center Drive, Building #5, Bay #22
Herndon, Va. 20171-3216

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Allen C. Jones RPh PharmD

TELEPHONE NUMBER

(703) 727-2108

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE

5. RADIOACTIVE MATERIAL

a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM

11. WASTE MANAGEMENT.

12. LICENSE FEES (See 10 CFR 170 and Section 170.31)

FEE CATEGORY 3C

AMOUNT
ENCLOSED

\$ 4,700.00

13. CERTIFICATION (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39, AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE

Allen C. Jones RPh PharmD

SIGNATURE

Allen C. Jones

DATE

01/22/2006

FOR NRC USE ONLY

TYPE OF FEE FEE LOG FEE CATEGORY AMOUNT RECEIVED CHECK NUMBER COMMENTS

APPROVED BY

PERSONAL INFORMATION WAS REMOVED
BY NRC. NO COPY OF THIS INFORMATION
WAS RETAINED BY THE NRC.

138305

NRC Materials License Application
Radiology Services of Northern Virginia

Item No. 5 Radioactive Material

	Byproduct, source, and/or special nuclear material	Chemical and/or physical form	Maximum possession amount
A.	Any byproduct material with atomic numbers 1-83 except molybdenum-99m, yttrium-90, iodine-131 and xenon-133	Any	100 millicuries per radionuclide and 1 curie total
B.	Molybdenum-99	Any	200 curies
C.	Technetium-99m	Any	200 curies
D.	Iodine-131	Commercial capsules and tositumomab (Bexxar®)	2 curies
E.	Xenon-133	Any	2 curies
F.	Yttrium-90	Any	600 millicuries
G.	Any byproduct material in a brachytherapy source as listed in 10 CFR 35.400	Sealed sources	500 millicuries
H.	Any byproduct material in a sealed source for diagnosis listed in 10 CFR 35.500	Sealed sources	1.5 curies per source and 5.5 curies total
I.	Any byproduct material listed in 10 CFR 31.11(a)	Prepackaged units for in vitro diagnostic tests	50 millicuries
J.	Any byproduct material identified in 10 CFR 35.65(a)	Any sealed source identified in 10 CFR 35.57(a) that has been manufactured, labeled, packaged, and distributed in accordance with a specific license issued pursuant to 10 CFR 32.74 or equivalent Agreement State regulations	300 millicuries
K.	Depleted Uranium	Metal	1000 kilograms

NRC Materials License Application
Radiology Services of Northern Virginia

Item No. 6 Purpose(s) for which licensed materials will be used

A - F	Preparation and distribution of radioactive drugs including compounding of iodine-131 and redistribution of used and unused molybdenum-99/technetium-99m generators to authorized recipients in accordance with 10 CFR 32.72. Preparation and distribution of radioactive drugs and radiochemicals including compounding of iodine-131 and redistribution of used and unused molybdenum99/technetium 99m generators to authorized recipients for non-medical use. Dispensing of iodine-131 will include the assaying and dispensing of commercial capsules, compounded capsules, and the compounding of tositumomab (Bexxar®).
G & H	Redistribution of sealed sources initially distributed by a manufacturer licensed pursuant to 10 CFR 32.74. Redistribution of sealed sources that have been registered either with the NRC Sealed Source Device Registry under 10 CFR 32.210 or with an Agreement State and have been distributed in accordance with an NRC or Agreement State specific license authorizing distribution to persons specifically authorized by an NRC or an Agreement State license to receive, possess, and use the devices.
I.	Redistribution to specific licensees or general licensees pursuant to 10 CFR 31.11 provided the packaging and labeling remain unchanged.
J.	Calibration and checking of the licensees instruments. Redistribution of sealed sources initially distributed by a manufacturer licensed pursuant to 10 CFR 32.74 to authorized recipients and to authorized recipients for non-medical use.
K.	Shielding for molybdenum-99/technetium-99m generators.

‘Distribution To’ definition:

For distribution purposes throughout this document, the definition of “Medical Use Licensees” to include those licensees authorized to possess such devices or RAM materials, to include Medical Use, Veterinarians, Laboratories and Other Radiopharmacies. Every effort will be made to obtain a hard copy of any recipients possession license authorizing possession of radioactive material for the on hand file at RSNova Herndon Virginia.

The definition of ‘RSNova’ throughout this document is ‘Radiology Services of Northern Virginia LLC.’ the applicant.

NUREG ITEM 8.5.1 – Unsealed and/or Sealed RAM Material, page 8-6

- Each radionuclide (element name and mass number) that will be used, including the form, and maximum requested possession limit is in the preceding table. References to Group or Subpart are not to be an absolute interpretation of use but should be interpreted with flexibility to allow the practice of Medicine and Pharmacy. Some general catchall categories are included as per the license example in NUREG Appendix E.

Response for Unsealed Materials – NUREG, page 8-8

RSNova proposes to possess in-house volatile materials.

- Iodine-131 liquid for the compounding of capsules and liquid dispensing will be manipulated in house. Safety precautions and procedures are outlined in; Section 8.9, Facility, page 42-49 for Fume Hood and Capsule Preparation; and Section 8.10.4, Personnel Monitoring Bioassay, page 55-58; of this license application.
- Xenon-133 gas will not be manipulated in house, but only redistributed in original manufacturers vial and lead. Safety precautions and procedures are outlined in Section 8.9 Facility, Handling Xenon of this license application.

Response for Sealed Sources – NUREG, pages 8-8 through 8-9

RSNova proposes to possess in-house sealed source and reference sources for calibration and to also redistribute to authorized Medical Use Licensees and to return old Sealed Sources to originating authorized vendors.

- Please refer to **Appendix A** of this license application for a list of all radionuclides and sealed sources, each listed by radionuclide, activity, manufacturer, model number and NRC ‘*Sealed Source and Device (SSD) Registration Certificate*’ number. This list is as comprehensive a list that RSNova can manage at this time, but it is not a comprehensive listing of all vendors and sealed source that might be possessed and/or redistributed. Equivalent data will be obtained for all equivalent sealed sources to be possessed and/or redistributed.
- RSNova confirms that each sealed source, device, and source/device combination is registered as an approved sealed source or device by NRC or Agreement State. Exempt quantities, foreign shipping, exempt distribution products and solutions are not subject to this requirement.
- RSNova confirms that the activity per source and maximum activity in each device will not exceed the maximum activity listed on the approved certificate of registration issued by NRC or by an Agreement State.

NUREG ITEM 8.5.2 – Financial Assurance and Recordkeeping for Decommissioning

RSNova is requesting possession limits of radioactive material below the excess of the limits specified in 10 CFR 30.35(b) and (d). Most commercial radiopharmacy applicants and licensees do not need to take any action to comply with the financial assurance requirements because the vast majority of radioactive material they possess and redistribute do not have half lives greater than 120 days and the total inventory of license materials with half lives greater than 120 days do not exceed the threshold in 10 CFR 30.35(b) and (d). No response required.

RSNova shall maintain, in an identified location (spill report notebook or Sealed Source wipe test records if contamination by long lived isotopes occurs), decommissioning records related to structures and equipment where radioactive materials are used or stored and related to leak testing sources. Transfer of records for decommissioning will be in accordance with 10 CFR 30.35(g) to either a new licensee or to the appropriate NRC regional office before license is terminated.

NUREG ITEM 8.6 – Purposes for which Licensed Material Will Be Used, page 7-11

NUREG ITEM 8.6.1 – Distribution and Redistribution of Sealed and Unsealed Materials, page 7-12 Additional Purpose(s) for Which Licensed Material Will Be Used

It is our intention to distribute/redistribute products to authorized recipients in accordance with the criteria and regulations listed in the NRC's NUREG-1556, Vol. 13, **Consolidated Guidance About Material License, Program-Specific Guidance About Commercial Radiopharmacy**

Response for Radiopharmaceuticals –NUREG, page 8-14

Distribution of Radiochemicals to Medical Use Licensees to include, but not limited to: In house compounded radiopharmaceuticals; Autologous leukocyte labeling; Unit dose and bulk products; Repackaging prepared radioactive drugs initially distributed by a manufacturer licensed pursuant to 10 CFR 32.72, or equivalent regulation of an Agreement State.

- RSNova confirms that radiopharmaceuticals will be prepared under the supervision of an ANP or will be obtained from a supplier authorized pursuant to 10 CFR 32.72, or under equivalent Agreement State requirements.
- All licensed materials to be distributed or redistributed are listed in the preceding RAM table. –NUREG Item 8.5.

Response for Generators – License Item ‘J’ and ‘L’ above NUREG, page 7-13

- RSNova confirms that the generators will be obtained from a manufacturer licensed pursuant to 10 CFR 32.72 and 32.73, or under equivalent Agreement State requirements.
- RSNova confirms that unused generators will be redistributed without opening or altering the manufacturer's packaging.

Response for Reagent Kits

- Reagent kits to be redistributed will have been received from a manufacturer authorized to distribute reagent kits in accordance with a specific approval issued pursuant to 10 CFR 32.73 or under equivalent regulations of an agreement state.
- Reagent kits will be redistributed and accompanied by the manufacturer supplied package insert, leaflet, brochure or other document that describes the procedures to be followed and the equipment and shielding to be used in processing radioactive material with the reagent kit.

Response for Redistribution of Used Generators License Items 'J' & 'L' NUREG, page 8-14

- Used generators will be shipped in the original manufacturer's packaging or equivalent. The column of the generator first being flushed and then all ports plugged with original manufacturer's stoppers. Used Generators will be distributed in compliance with USP standards.
- RSNova confirms that the manufacturer's packaging and labeling will not be altered.
- RSNova confirms that the generator will not be distributed beyond the expiration date shown on the generator label.
- RSNova confirms that the redistributed generator will be accompanied by the manufacturer supplied leaflet or brochure that provides radiation safety instructions for handling and using the generator, or that RSNova confirm with the recipient that the recipient is in possession of the supporting documents.
- RSNova confirms that only generators used in accordance with the manufacturer's instructions will be redistributed.

Response for Redistribution of Sealed Sources For Brachytherapy or Diagnosis - NUREG, page 8-15

- RSNova confirms that the sealed source for brachytherapy or for diagnosis to be redistributed will be obtained from a manufacturer authorized to distribute sealed sources for brachytherapy or diagnosis in accordance with a specific license issued pursuant to 10 CFR 32.74, or under equivalent Agreement State requirements.
- RSNova confirms that the manufacturer's packaging, labeling and shielding will not be altered and that redistributed sources will be accompanied by the manufacturer supplied package insert, leaflet, brochure, or other document that provide radiation safety instructions for handling and storing the sources.

Response for Redistribution of Calibration and Reference Sealed Sources - NUREG, page 8-15

- RSNova confirms that calibration and reference sealed sources to be redistributed to medical use licensees will be obtained from a person licensed pursuant to 10 CFR 32.74 or under equivalent Agreement State requirements, to initially distribute such sources.

- RSNova confirms that the manufacturer's labeling and packaging will not be altered and that redistributed sources will be accompanied by the manufacturer supplied calibration certificate and the leaflet, brochure, or document that provides radiation safety instruction for handling and storing the sources.

Response for Redistribution of prepackaged units for *In Vitro* tests. –NUREG, page 8-15

- RSNova confirms that the prepackaged units for *in vitro* tests to be redistributed will have been obtained from a manufacturer authorized to distribute the prepackaged units for *in vitro* tests in accordance with a specific license issued pursuant to 10 CFR 32.71, or under an equivalent license of an Agreement State.

Response for *In Vitro* to General Licensees –NUREG, page 8-15

- RSNova confirms that the manufacturer's packaging and labeling of the prepackaged units for *in vitro* tests will not be altered in any way.
- RSNova confirms that each redistributed prepackaged unit for *in vitro* tests will be accompanied by the manufacturer supplied package insert, leaflet, or brochure that provides radiation safety instructions for general licensees.

Response for *In Vitro* to Specific Licensees –NUREG, page 8-16

- RSNova confirms that the labels, package insert, leaflet, brochure, or other documents accompanying the redistributed prepackaged units for *in vitro* tests will NOT reference general licenses, exempt quantities, or NRC's regulations that authorized a general license (e.g., 10 CFR 31.11)
- RSNova confirms that the labeling on redistributed prepackaged units for *in vitro* tests will conform to the requirements of 10 CFR 20.1901 and 20.1904.

NUREG ITEM 8.6.2 –Preparation of Radiopharmaceuticals, page 8-16

Response for Preparation of Radiopharmaceuticals, page 8-16

Preparation of Radiopharmaceuticals to include, but not limited to;

- In house compounded of radiopharmaceuticals
- Technetium-99m kit preparation
- Autologous leukocyte labeling
- Iodine-131 compounding of capsules manipulated in house
- Dispensing I-131 liquid manipulated in house
- Repackaging of prepared radioactive drugs initially distributed by a manufacturer licensed pursuant to 10 CFR 32.72, or equivalent regulation of an Agreement State.
- Unit dose and bulk products by prescription order
- Production and compounding of PET isotopes and PET radiopharmaceuticals.

**Pharmacy Operations - Regulatory Environment 10 CFR 32.72 -describing,
*Manufacture and distribution of radiopharmaceuticals containing byproduct material for
medical use under part 35.***

The nuclear pharmacy is licensed by the State Board of Pharmacy (pending) in the State of Virginia in which the facility is located and is, therefore, subject to laws and regulations set forth by the State Board of Pharmacy. The Nuclear Pharmacy will be required to comply with the applicable provisions of the Federal Food, Drug and Cosmetic Act and/or USP Guidelines. The FDA has made available a guideline to assist nuclear pharmacies in determining if they must register under Section 510 of the Act. This publication, NUCLEAR PHARMACY GUIDELINE CRITERIA FOR DETERMINING WHEN TO REGISTER AS A DRUG ESTABLISHMENT is dated May 1984. USP guidelines will be used for those radiopharmaceuticals which have not been approved for compounding or manufacturing by the FDA. State Pharmacy Regulations will be followed if a discrepancy arises.

Requests for radiopharmaceuticals from physicians (MD or D.O.) holding licenses issued by the Nuclear Regulatory Commission or Agreement State, and who also hold a license to practice medicine in this state or an adjoining state will be handled and treated as a prescription. Only these radiopharmaceuticals which the physician is licensed to possess will be dispensed.

RSNova does not at this time propose to manufacture generators or reagent kits or any other radiopharmaceuticals starting with raw materials except for cyclotron products. It is our intention to prepare radiopharmaceuticals which have been manufactured by Squibb, Mallinckrodt, DuPont, Medi-Physics, Amersham, and others, and to distribute or redistribute these products in dose form to nuclear medicine departments licensed to use them. The labeling and dispensing of these doses meets FDA requirements as specified in the Federal Food, Drug and Cosmetic Act, Section 503 and $^{51}\text{O}(g)(1)$. USP guidelines will be used for those radiopharmaceuticals which have not been approved for compounding or manufacturing by the FDA. State Pharmacy Regulations will be followed if a discrepancy arises.

Should RSNova anticipate manufacturing and distribution of generators or reagent kits or a new radiopharmaceutical, the normal procedure for meeting FDA and NRC and/or Agreement State requirements would be followed, such as applying to the Food and Drug Administration for an IND or NDA and applying to the NRC and/or Agreement State, for a license amendment. Where the FDA has not made a ruling on a procedure then the USP Guidelines will be used.

Radiopharmaceuticals distributed for human use shall be:

- Repackaged or distributed from radiopharmaceuticals that are the subject of a FDA-approved NDA or for which an IND has been accepted by the FDA and/or USP Guidelines
- Prepared from generators and reagent kits that are the subject of a FDA-approved NDA or for which an IND has been accepted by the FDA and/or USP Guidelines.

If IND radiopharmaceuticals, radiopharmaceuticals prepared from generators or reagent kits that are under IND status, these drugs will be dispensed:

- In accordance with directions provided by the sponsors of the IND; and
- Only the physicians who have been accepted by the sponsors of the IND to participate in clinical evaluations of the drug; and
- With the understanding that the physician is responsible to the sponsors of the IND for use of the drug in accordance with protocols and information obtained through the use of the drug.



COMMONWEALTH OF VIRGINIA

Board of Pharmacy

6603W. Broad Street, 5th Floor
Richmond, Virginia 23230

(804) 662-9911 (Tel)
(804) 662-9313 (Fax)

APPLICATION FOR A PHARMACY PERMIT

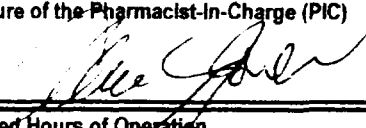
Check Appropriate Box(es):

- | | | | |
|---|----------|--|----------|
| <input checked="" type="checkbox"/> New ³ | \$270.00 | <input type="checkbox"/> Change of Pharmacist-In-Charge ² | \$50.00 |
| <input type="checkbox"/> Change of Ownership ² | \$50.00 | <input type="checkbox"/> Change of Location ³ | \$150.00 |
| <input type="checkbox"/> Change of Pharmacy Name ² | No Fee | <input type="checkbox"/> Remodeling of Prescription Dept. ³ | \$150.00 |
| <input type="checkbox"/> Reinstatement ^{1, possibly 3} | | | |

¹ If reinstatement, due to: ☐ Lapse of Permit or ☐ Suspension or Revocation of a Permit

The required fees must accompany the application. Make check payable to "Treasurer of Virginia".

Applicant—Please provide the information requested below. (Print or Type) Use full name not initials

Name of Pharmacy Radiology Services of Northern Virginia		
Street Address 13870 Park Center Road Renaissance Park at Dulles Bldg 5, Bay22		Area Code and Telephone Number
City Herndon	State Virginia	Zip Code 20171
If a current pharmacy permit is held, indicate the permit number 0201-	Area Code and Telephone Number (currently working number) (703) 727-2108	
(Print) Name of the Pharmacist-In-Charge (PIC)(if change of PIC, list incoming) Allen C. Jones RPh PharmD	License Number of the PIC 0202- 007262	
Signature of the Pharmacist-In-Charge (PIC) 		Date 1/22/2006
Expected Hours of Operation 7am til 5pm	² Effective Date of Change	
Expected Opening, Moving, or Completion Date 4/1/2006	Requested Inspection Date ³	
IMPORTANT: Please read and complete page 2 of this application.		
³ A 14-day notice is required for scheduling an opening or change of location inspection. Drugs may not be stocked prior to inspection and approval.		

FOR BOARD USE ONLY: Acknowledgement of Inspection Request

An inspector will call prior to the requested date to confirm readiness for inspection. If the inspector does not call to confirm the date, the responsible party should call the Enforcement Division at (804) 662-9934 to verify the inspection date with the inspector.

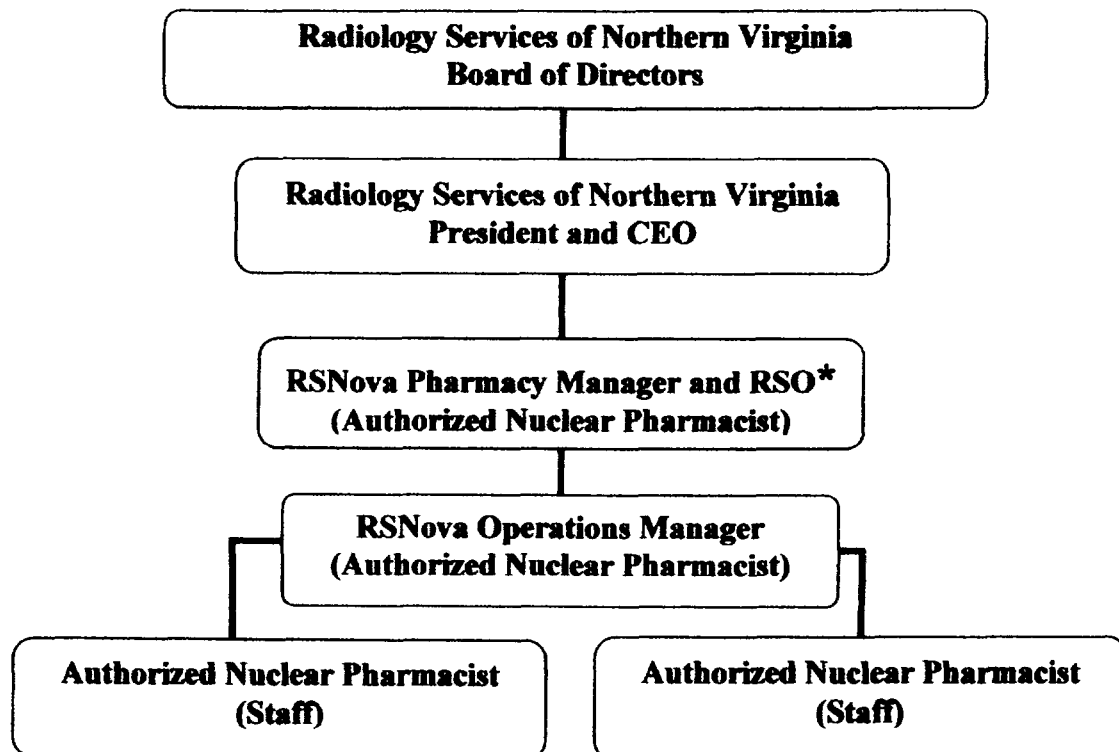
Date Processed: _____ Assigned Inspection Date³: _____

**NRC Materials License Application
Radiology Services of Northern Virginia**

**Item No. 7 Individuals (s) responsible for radiation safety program and their
training / experience**

- 7.0** **Radiation Safety Officer is Allen C. Jones, R.Ph.,PharmD**
Allen C. Jones R.Ph., PharmD was RSO at Eastern Isotopes license #45-25221-01MD for 5 years. Responsibilities are as per the NRC's NUREG-1556, Vol. 13, Consolidated Guidance About Material License, Program-Specific Guidance About Commercial Radiopharmacy, Section 8.7.1. Appendix H. During his absence, another qualified "authorized user" will perform his duties to assure regulatory compliance. The RSO will delegate safety program duties to trained employees at the authorized place of use.

7.1 **Management Structure**



***Radiation Safety Officer may change with proper approval, but will
always be credentialed as an Authorized Nuclear Pharmacist**

**NRC Materials License Application
Radiology Services of Northern Virginia**

**Item No. 7 Individual(s) Responsible for Radiation Safety Program and their
Training and Experience**

**7.2 Radiation Safety Officer (RSO) is: Allen C. Jones R.Ph., PharmD
Name has appeared as RSO on NRC license 45-25221-01MD**

**7.3 Authorized Nuclear Pharmacists are: Licensure for these pharmacists can be
determined by going to web site www.dhp.virginia.gov/pharmacy then look up
license and Occupation Pharmacist. Amy Smith married name is Mize.**

- | | | |
|----|-------------------|---|
| a. | John M. Tabb, Jr. | Name appears on NRC license 45-25349-01MD |
| b. | Steven Mize | Name appears on NRC license 45-25349-01MD |
| c. | Tim Younkin | Name appears on NRC license 45-25349-01MD |
| d. | Thanh Huynh | Name appears on NRC license 45-25349-01MD |
| e. | Amy Smith | Name appears on NRC license 45-25349-01MD |
| f. | Rebecca Wynne | Name appears on NRC license 45-25349-01MD |
| g. | James Babb | Name appears on NRC license 45-25349-01MD |
| h. | Allen C. Jones | Name appears on NRC license 45-25349-01MD
Copy of Virginia Pharmacy License enclosed |
| i. | Craig C. Barlow | Name appears on NRC license 34-31064-01MD |
| j. | John Thomas | Name appears on NRC license 45-25221-01MD |
| k. | Scott C. Brower | Name appears on NRC license 45-25221-01MD |

**Item No. 8. Training for Individuals Working or Frequenting Restricted Areas
(Occupationally Exposed and Ancillary Personnel)**

**Licensee has developed and will implement and maintain written procedures
for a training program for each group of workers including:**

**NRC Materials License Application
Radiology Services of Northern Virginia**

**Item No. 8. Training for Individuals Working or Frequenting Restricted
Areas (Occupationally Exposed and Ancillary Personnel)**

- a. topics covered
- b. qualifications of the instructors
- c. method of training
- d. method for assessing the success of the training
- e. frequency of training and refresher training

**Item No. 8. Training for Personnel Involved in Hazardous Materials
Preparation and Transport**


Licensee has developed and will implement and maintain written procedures for training personnel involved in hazardous materials package preparation and transport that meet the applicable requirements in:

49 CFR 172.700

49 CFR 172.702

49 CFR 172.704

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF HEALTH PROFESSIONS

Pharmacist
Number 0202007262
Expires 12/31/2006
ALLEN CAMPBELL JONES


Written Notification of Change of
Address Required Within 30 Days
of Change

*Name Change Request Must be
Accompanied by a Photocopy of
Marriage License or Court Order

Signature

For Name*/Address Changes, Mail to:
Department of Health Professions
Board of Pharmacy
6603 West Broad Street, 5th Floor
Richmond, VA 23230-1712

My New Name* is:

My New Address is:

City, State Zip Code

Signature (0202007262)

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF HEALTH PROFESSIONS
Robert A. Nebeker, Director

Elizabeth Scott Russell
Executive Director
(804) 662-9911

BOARD OF PHARMACY

6603 West Broad Street, 5th Floor
Richmond, VA 23230-1712
www.dhp.virginia.gov/pharmacy

Pharmacist License

ALLEN CAMPBELL JONES

Expires
12/31/2006

Number
0202007262

To Provide Information or File a
Complaint About a Licensee, Call: 1-800-533-1560

PERSONAL INFORMATION WAS REMOVED
BY NRC. NO COPY OF THIS INFORMATION
WAS RETAINED BY THE NRC.

Item No 9.0
Facilities and Equipment

9.1 Licensure as a Pharmacy

Licensee has applied for license/permit to operate as a Pharmacy in:

Virginia

License No. Pending

9.1 Site Description:

The Radiology Services of Northern Virginia is a Nuclear Pharmacy located at Renaissance Park Building 5 Bay 22 (13870 Park Center Dr. Herndon Va. The facility is a part of Renaissance Park located just off Route 28 off of McLaren Road., between Route 50 and the Dulles Toll Road.



COMMONWEALTH OF VIRGINIA

Board of Pharmacy

6603W. Broad Street, 5th Floor
Richmond, Virginia 23230

(804) 662-9911 (Tel)
(804) 662-9313 (Fax)

APPLICATION FOR A PHARMACY PERMIT

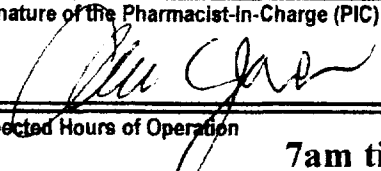
Check Appropriate Box(es):

- | | | | |
|---|----------|--|----------|
| <input checked="" type="checkbox"/> New ³ | \$270.00 | <input type="checkbox"/> Change of Pharmacist-In-Charge ² | \$50.00 |
| <input type="checkbox"/> Change of Ownership ² | \$50.00 | <input type="checkbox"/> Change of Location ³ | \$150.00 |
| <input type="checkbox"/> Change of Pharmacy Name ² | No Fee | <input type="checkbox"/> Remodeling of Prescription Dept. ³ | \$150.00 |
| <input type="checkbox"/> Reinstatement ^{1, possibly 3} | | | |

¹ If reinstatement, due to: ☐ Lapse of Permit or ☐ Suspension or Revocation of a Permit

The required fees must accompany the application. Make check payable to "Treasurer of Virginia".

Applicant—Please provide the information requested below. (Print or Type) Use full name not initials

Name of Pharmacy Radiology Services of Northern Virginia		
Street Address 13870 Park Center Road Renaissance Park at Dulles Bldg 5, Bay22		Area Code and Telephone Number
City Herndon	State Virginia	Zip Code 20171
If a current pharmacy permit is held, indicate the permit number 0201-		Area Code and Telephone Number (currently working number) (703) 727-2108
(Print) Name of the Pharmacist-In-Charge (PIC)(if change of PIC, list incoming) Allen C. Jones RPh PharmD		License Number of the PIC 0202- 007262
Signature of the Pharmacist-In-Charge (PIC) 		Date 1/22/2006
Expected Hours of Operation 7am til 5pm		² Effective Date of Change
Expected Opening, Moving, or Completion Date 4/1/2006		Requested Inspection Date ³

IMPORTANT: Please read and complete page 2 of this application.

³ A 14-day notice is required for scheduling an opening or change of location inspection. Drugs may not be stocked prior to inspection and approval.

FOR BOARD USE ONLY: Acknowledgement of Inspection Request

An inspector will call prior to the requested date to confirm readiness for inspection. If the inspector does not call to confirm the date, the responsible party should call the Enforcement Division at (804) 662-9934 to verify the inspection date with the inspector.

Date Processed: _____ Assigned Inspection Date³: _____

NRC Materials License Application Radiology Services of Northern Virginia

9.1 Site Description:

Renaissance Park is zoned for light industrial use, and consists of several tenants please refer to (Exhibit B). We will have only one adjacent tenant since we are located on the end of the building. EMCOR is the tenant that resides to the west (Suite 13872 Bay 21). EMCOR is a fortune 500 company that tests mechanical and electrical systems.

The operation of a nuclear pharmacy at this site is consistent with all local codes and zoning laws (see pages 17 – 18). Bay 22 contains approximately 6800 square feet of space which is divided equally into thirds (approximately) between office space, restricted space, and unfinished warehouse space. Security is provided by both motion detector's and door closure sensors.

9.2 Facility Description:

Attachment 9.2(B) depicts the nuclear pharmacy floor plan, administrative spaces as well as the restricted area. The restricted area occupies the middle of the suite and is shown by line(s) connected by A,Q,B,C,D,E,F,G,H,I,J,j, M, and A.

9.2 (Room 2) Main Nuclear Pharmacy Dose Preparation Area

9.2 (Room 2) Fume Hood's

9.2 (Room 2) Containment Hood

9.2 (Room 3) Blood Labeling Room

9.2 (Room 1) Shipping Area

9.2 (N) Front Exit Hand / Foot Monitor

9.2 (O)Rear Exit Hand/ Foot Monitor



County of Fairfax, Virginia

To protect and enrich the quality of life for the people, neighborhoods and diverse communities of Fairfax County

Via Regular Mail and Facsimile (540-434-9627)

January 10, 2006

Allen C. Jones, RPh
Radiology Services of Northern Virginia
18935 Maplewood Lane
Leesburg, Virginia 20175

Re: Use Determination – Radiology Services of Northern Virginia
Renaissance Park, Building 5, Bay 22
13870 Park Center Road
Tax Map Ref: 24-2 ((1)) 12A
Zoning District: I-5, part WS

Dear Mr. Jones:

This is in response to your letter of November 14, 2005 requesting a use determination for your business, Radiology Services of Northern Virginia, and whether the use can be established at the referenced property.

Our records indicate that the referenced property is zoned I-5 General Industrial District and part Water Supply Protection Overlay District (WS), and is subject to the proffered conditions associated with Rezoning RZ 74-2-021. According to our records, the referenced property is not subject to any special exception, special permit, or variance approvals. Copies of the proffered conditions and the I-5 and WS District regulations are enclosed.

Based on your letter and our discussion of December 13, 2005, it is my understanding that Radiology Services of Northern Virginia is a radiopharmacy that will compound radiopharmaceuticals in an environment similar to a laboratory. The radiopharmaceuticals will be ordered by and delivered to licensed hospitals and clinics in northern Virginia and suburban Washington, D.C. for medical applications, but that there is no retail component to the business and customers will not be coming to the place of business. You note that your business is regulated by the Virginia Board of Pharmacy and the Nuclear Regulatory Commission, and that the radiopharmaceuticals produced have a half-life of six hours.

Based the above description, Radiology Services of Northern Virginia is an establishment for production, processing, assembly, manufacturing, compounding, preparation, cleaning, servicing, testing, repair or storage of materials, goods or products, which is a use permitted by

Department of Planning and Zoning
Zoning Administration Division
Ordinance Administration Branch

12055 Government Center Parkway, Suite 807

Fairfax, Virginia 22035-5505

Phone 703-324-1314 FAX 703-803-6372

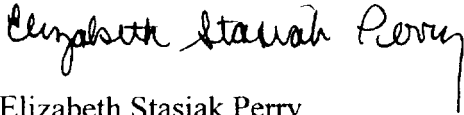
www.fairfaxcounty.gov/dpz/

Allen C. Jones, RPh
January 10, 2006
Page 2

right in the I-5 District and a use which is not precluded or limited by the proffered conditions associated with RZ 74-2-021.

I trust this satisfactorily responds to your request. Should you have any additional questions, please feel free to contact me at 703-324-1314.

Sincerely,



Elizabeth Stasiak Perry
Senior Assistant to the Zoning Administrator

ESP

Attachments: A/S

cc: Michael R. Frey, Supervisor
Sully District
William E. Shoup, Zoning Administrator
Eileen M. McLane, Deputy Zoning Administrator
for Ordinance Administration Branch
Leslie B. Johnson, Deputy Zoning Administrator
for Zoning Permit Review Branch

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NRC Materials License Application
Radiology Services of Northern Virginia
9.2.1 Site Description

The restricted area is provided with wall-mounted Hand/Foot monitors (HFM) at the front and rear doors (positions O & N). Three laminar-flow work cabinets comprise the main work area depicted in 9.2 (C). Each work cabinet is equipped with a remote-chamber dose calibrator, with the chamber permanently mounted flush with the surface of the work stations. Radiopharmaceuticals are prepared in the three work stations, placed in unit-dose pigs (transport shields), and moved to the opposite side of the work stations (packaging/shipping area) where they are wipe-tested and prepared for shipping. The packaging/shipping area is used to ship and receive packages containing radioactive materials. All packages shall be monitored at the time of shipment and return to the facility.

Immediately to the left of the three laminar-flow work stations, (east wall) on a counter top, a containment hood (CH) is installed. This hood is used during the preparation of all radiopharmaceuticals that require heating during preparation, and is designed to minimize contamination should a vial rupture during preparation. The containment hood is exhausted by a duct that is connected directly to the main duct exhausting the fume hood and served by the roof fan motor. Directly over the containment hood, a pre-filter and a charcoal box filter are installed to minimize any airborne emissions, should a vial rupture. The system is capable of maintaining airflow velocity of 20-30 feet per minute, with the front door raised 3 inches.

A wall-mounted, alarming, area monitor is installed adjacent to the "glove box" door.

Referring to 9.2 (A), permanent lead shielding to height of seven feet consists of:

0.25 inch lead	Wall Q-A
	Wall A-M

Leaded shielding used in the nuclear pharmacy has been designed to assure compliance with regulations addressed in 10 CFR 20.1301. Specifically, exposure received by "Members of the General Public" will be below 100 millirem/year. All personnel working within the confines of the restricted area, will be provided whole body and extremity dosimeters to measure their exposures to ionizing radiation to assure they do not exceed the regulatory limit of 5,000 millirem/year (whole body exposure) and 50,000 millirem/year (extremity exposure).

The restricted area of the nuclear pharmacy consists of a work area 20 feet by 70 feet.

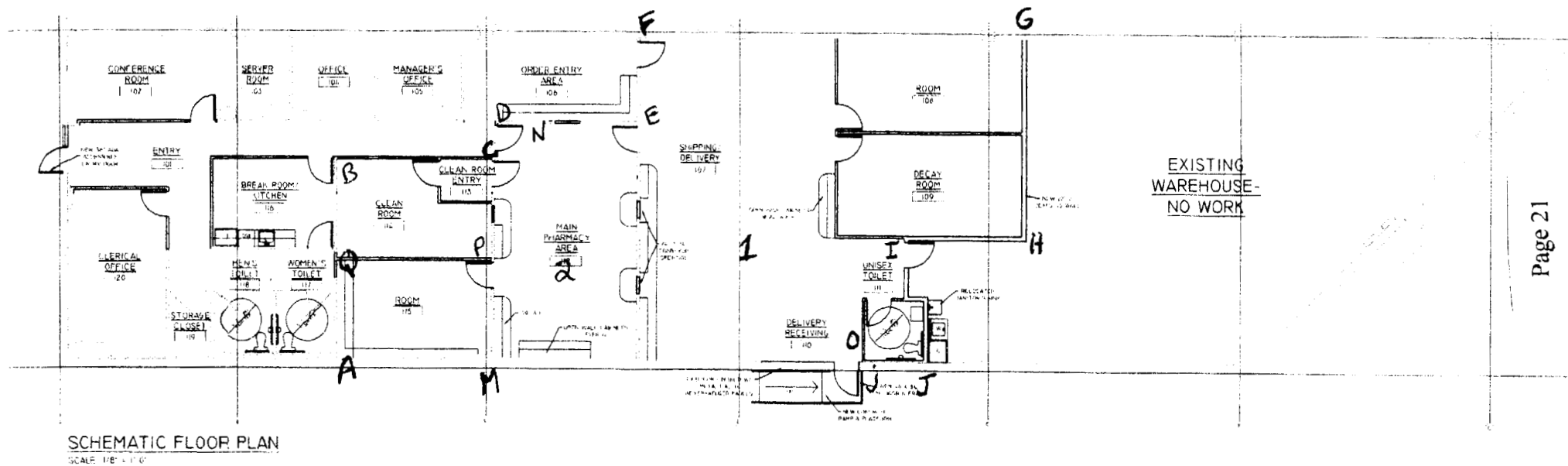
NRC Materials License Application Radiology Services of Northern Virginia

9.2 Facility Description:

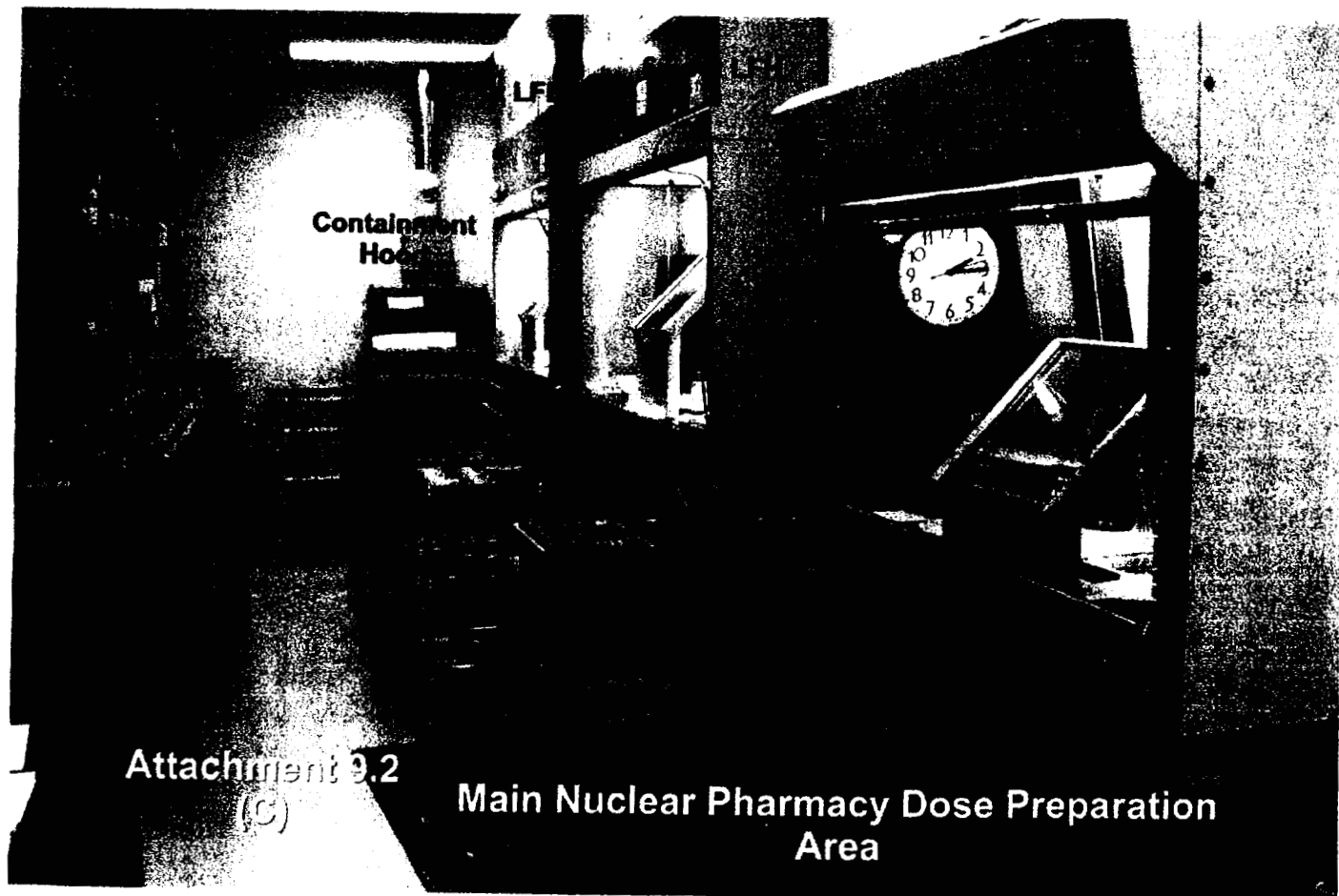
A separate room, designated "Generator Room" measures 6' by 19' and houses the Mo99/Tc99m generators as well as the chemical fume hood. The fume hood is utilized for storage of Xenon-133 gas and I-131 capsules prior to dispensing. Unit-dose vials of Xenon-133 will be acquired from licensed suppliers in sealed vials or ampoules. These vials will be shipped from the nuclear pharmacy in the same containers in which they are received. The "Generator Room" room, on walls adjacent to unrestricted areas, is provided with permanent lead shielding (0.25 inch thickness) extending to a height of seven feet. The chemical fume hood (face dimensions 29" x 41") is exhausted by a roof-mounted fan motor. Airflow at the face of the hood is maintained at a minimum of 50 feet per minute, measured with one door open. (face dimensions, one door open: 21" x 29"). The exhaust stack servicing the fume hood passes through the roof toward the middle of the building, and extends to a height of 10 feet above the surface of the roof. The exhaust stack is more than 20 feet from any air intake. Prevailing winds are from the northwest with an average velocity of 10 knots.

A separate room designated "Clean Room" measures 19 feet by 14.5 feet and is used in radiolabeling of blood components. Installed in the room are two laminar-flow work stations. To the rear of the Shipping/Delivery Area, is a room measuring approximately 17 feet by 22.5 feet, "Decay and Storage", is used for receiving and processing materials being returned from customers. This room is used to store radioactive waste materials held for decay and subsequent disposal. Radioactive materials are segregated by half-life into shielded barrels and retained until their radioactivity is indiscernible from background level, after which they are transferred as medical waste to a licensed agent for incineration.

On the east side of the building, the rear entrance/exit connects to the general restricted area through a room designated on 9.2(B) as "Delivery Receiving". Designated dedicated delivery personnel, contracted by radiopharmaceutical manufacturers, are allowed access to the drop-off area, but not the restricted area. This area enables delivery of radiopharmaceutical shipments at times when the pharmacy is closed. The delivery vestibule is the only area of the facility not serviced by a motion detector.



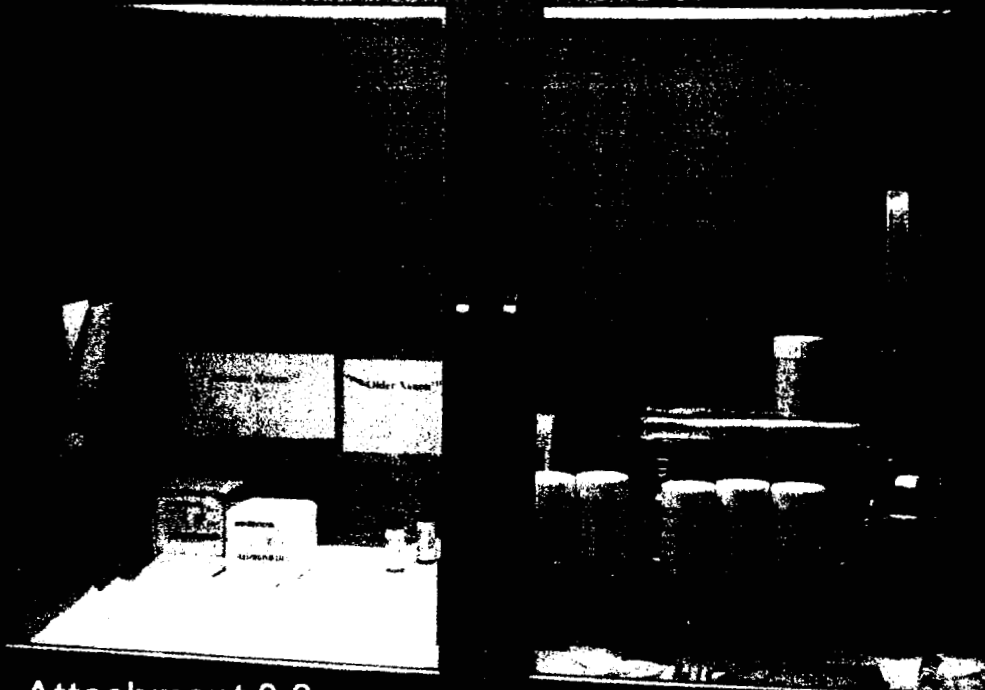
Attachment 9.2
B



Attachment 9.2
(C)

Main Nuclear Pharmacy Dose Preparation
Area

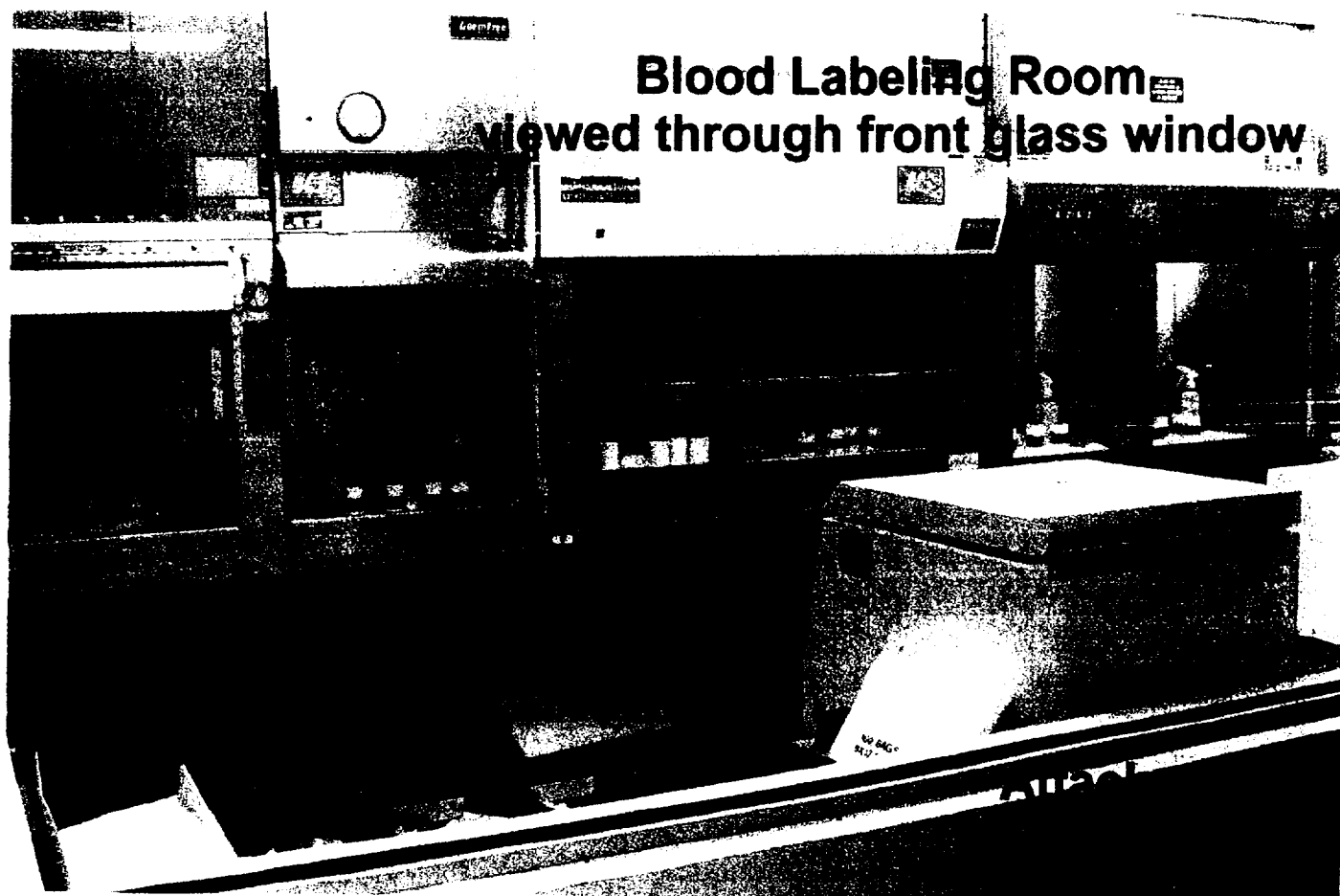
Fume Hood



Attachment 9.2
(D)

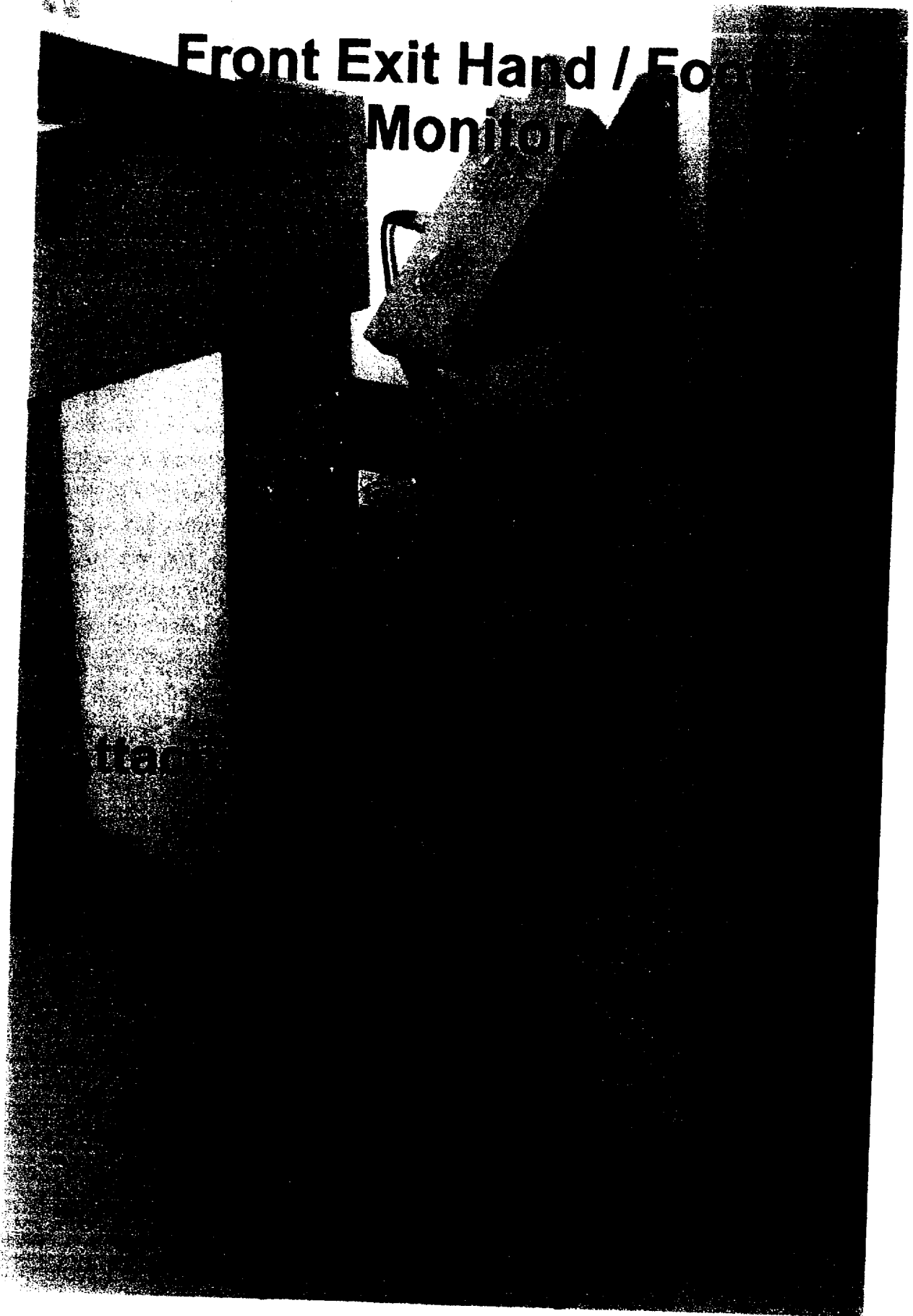
Box
Hot

Attachment 9.2
(E)





Front Exit Hand / Foot Monitor



Rear Exit Hand / Foot Monitor

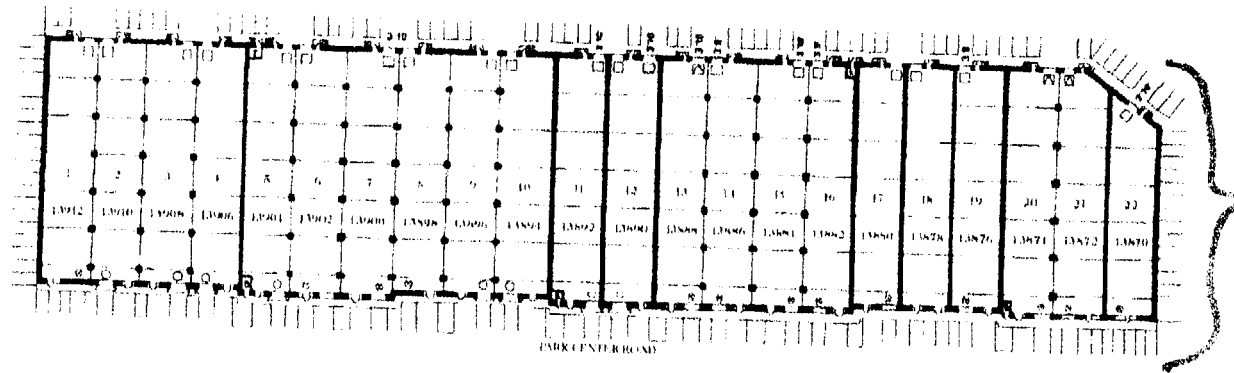
STOP

Survey

THE

**Attachment
9.2 (1)**

*Renaissance Park at Dulles
Building 5*



20 designated
parking spaces
at perimeter
of Bay 22

EXHIBIT "B"
PLAN OF THE PREMISES

NRC Materials License Application

Radiology Services of Northern Virginia

8.9 Special Equipment for Handling Millicurie Quantities of Radioiodine

A radioactive 'mini-hood' will be utilized for dispensing liquid sodium Iodine-131 and compounding Iodine-131 therapy capsules. The effluent from this fume hood will be exhausted through charcoal beds and then directly into the exhaust exit stack. The mini hood will be in continuous operation.

Two charcoal filters will be used in the Iodine-131 mini hood. Each filter is one foot square and one inch thick. One filter will be stacked on top of the other so that the Iodine-131 will be exhausted through two inches of charcoal. This ensures a trapping efficiency to keep levels released to unrestricted areas below 2×10^{-10} uCi/ml of Iodine-131. Measurements with an anemometer of air flow at the arm ports for this Iodine-131 'mini-hood' show a linear air flow of 50 to 70 feet/min with a total exhaust of 20 to 25 CFM. Measurements with an anemometer on the Iodine-131 'mini-hood' will be performed every 6 months. The fume hood will be adjusted or repaired if the measured airflow is less than the manufacturer's recommendations. The efficiency of this trapping system is checked weekly. The filter surfaces are measured with a survey meter. If there is a measurable amount of radiation and if the mR/Hr level of the top filter is equal to or greater than 10% of the mR/Hr level of the bottom filter, the bottom filter will be replaced. Air sampling for volatile Iodine-131 will be performed in conjunction with the use of the radioiodine fume hood. The records of weekly surveys of the iodine "mini-hood" charcoal filters conducted at Radiology Services of Northern Virginia will be maintained.

Procedures for completion of I-131 air monitoring

The following pages give detailed instructions for performing Iodine-131 air monitoring, including operating procedures for air filters. This is followed by installation instructions. This example procedures or it's equivalent, ex. as computer software, will be used.

8.9 Procedures for Iodine-131 air monitoring

A. Discussion

1. The handling of certain volatile radioactive materials may require that air sampling be performed to document that derived air concentrations (DAC) are not exceeded in either restricted or unrestricted areas.
2. Acceptable methods include:
 - a. air sampling data, and/or
 - b. Calculations (if those calculations can demonstrate that the DAC for a particular substance is not exceeded.) If calculations are submitted, it is necessary to document those specifications and measurements (such as fume hood flow in cfm, etc.) and check them periodically to ensure that the conclusions made from the calculations have not changed.
3. For volatile Iodine-131, the approach of using calculations may be taken to document that the DAC is not exceeded. The concentration of volatile Iodine-131 will be calculated using the "Worksheet for Radioactive Air Monitoring" or equivalent enclosed in Item 9.4.5, page 39.
4. Worksheets will be completed at least weekly if I-131 is on site or excepted for a period of time such as extended shutdowns or decommissioning. Completed worksheets will be maintained to show compliance with 10 CFR, Parts 20.1301 and 20.1302. Worksheet calculation may be performed by computer software.

B. Equipment

1. Vacuum pump with airflow gauges. Because Radiology Services of Northern Virginia will operate its air sampling equipment continually, evaluation of the effluent concentration should be done weekly, except for periods of time when I-131 is not present on site or during extended shutdowns or decommissioning.
2. Appropriate tubing
3. Filter holders.
4. Charcoal impregnated filter or filter paper
5. Scintillation well counter assembly and appropriate counting vials, or equivalent.
6. I-131 Capsule or Barium Standard Source Rod, in lieu of capsules, or equivalent to calibrate the well counter or equivalent.

8.9 Procedures for Iodine-131 air monitoring cont.

C. Operating procedure for air filters

1. Mount the air sampling apparatus in a manner which will ensure that effluents being released to both restricted and unrestricted areas will be sampled. Sampling may be done in the exhaust vent pipe on the upstream side of any additional air filtering system. Be sure that the standard laboratory fume hood sash opening is closed as far as possible so the face velocity across the fume hood opening is increased. This decreases the amount of volatile Iodine-131 that will escape into the restricted area.
2. The activity in the filter(s) are measured at least weekly when Iodine 131 inventory is maintained on site, and not required during shut downs, holidays or extended periods when I-131 is not present.
3. To measure the activity in the filter from each holder:
 - a. Fold or roll up the filter if applicable. Wear clean disposable gloves
 - b. Place the filter in a counting vial or in the same geometrical configuration as the standard source, and,
 - c. Count it in the gamma well. Make sure that the analyzer window is set for Iodine-131 and that an efficiency factor (ϵ_{I-131}) for this analyzer setting has been calculated.
4. Record the well counter background and net Iodine-131 count on the 'Worksheet for radioactive air monitoring'. Or use an equivalent computer software package to run the worksheet.
5. Record the sampling pump air flow in ml from measured flow of vacuum pump.

WORKSHEET FOR RADIOIODINE AIR MONITORING or equivalent

Date: _____

Employee: _____

Bkg: _____ cpm

Well counter setting: _____ KeV to _____ KeV (range of 100 KeV)

A. uCi of Iodine in filter:

1) Restricted filter

$$\begin{array}{l} \text{Net sample count (cpm)} \times \frac{\text{uCi of Standard}}{\text{net standard count (cpm)} \times 1.33} \\ \text{(_____ cpm)} \times \text{(_____ uCi)} / \text{(_____ cpm)} \times (1.33) = \text{_____ uCi} \end{array}$$

2) Unrestricted filter

$$\begin{array}{l} \text{Net sample count (cpm)} \times \frac{\text{uCi of Standard}}{\text{net standard count (cpm)} \times 1.33} \\ \text{(_____ cpm)} \times \text{(_____ uCi)} / \text{(_____ cpm)} \times (1.33) = \text{_____ uCi} \end{array}$$

B. Air flow through sampling pump:

Measured pump flow (ml/min) x pump duration (min) = total air volume (ml)

_____ ml/min x _____ min = _____ ml

C. Concentration of Iodine in air:

1) Restricted air filter

$$\text{_____ uCi (A.1)} / \text{_____ ml (B)} = \text{_____ uCi/ml}$$

2) Unrestricted air filter

$$\text{_____ uCi (A.2)} / \text{_____ ml (B)} = \text{_____ uCi/ml}$$

Signature: _____

ACTION LEVELS: Restricted area: 2×10^{-8} uCi/ml
Unrestricted area: 2×10^{-10} uCi/ml

SODIUM IODIDE 1-131 CAPSULE PREPARATION

...RECOMMENDED COMPOUNDING PROCEDURE ...

- (1) Confirm that the fume hood is operating and turn on the 1-131 "mini hood". Check to make sure the equipment is operating properly.
- (2) Vacuum should be in operation 24 hours a day. Turn on the vacuum pump for air monitoring if not already operating. Check to make sure the gauges and vacuum pump are operating properly.
- (3) Wear gloves and lab coat.
- (4) Calculate the amount of 1-131 solution needed to fill the prescription. Remember to take into consideration 'decay' if the therapy capsule is for the next day. Also, the residual volume left in the *Lo-Dose* syringe will be approximately 200-400 uCi. This must also be taken into consideration especially when very low millicurie capsules are made.
- (5) In the iodine mini hood' draw up the activity needed in a shielded *Lo-Dose* syringe and assay. Note: Refer to 'Guide for Capsule'. These volumes appear to be the capsule's holding capacity. If a greater volume than 0.27ml is needed, a second capsule should be made. In addition, only fill the syringe with that amount of solution to be injected into a single capsule.

Guide for Capsule - I-131 Assembly Recommended Capacities

Size of Inside Cap w/ Sodium Phosphate "X" "+ 1	Recommended Max Volume	Size of Outside Cap - Shell 'X'
#3	0.10 ml	#2
#2	0.20 ml	#1
#1	0.27ml	#0

Volume may vary due to the density of the Sodium Phosphate pack and/or humidity absorbed prior.

- (6) Place the shielded 1-131 *Lo-Dose* syringe and 1-131 solution in the fume hood so it is out of the way.
- (7) Set up lead finger assembly or the appropriate lead container with a drilled hole in the bottom to hold capsule. This setup will be referred to as the 'lead capsule holder'. (or equivalent)
- (8) Using a plastic cap leftover from a TB syringe, line the hole in the top of the lead fingers or, take a small piece of saran wrap (approx. 3' x 3') and place on top of the lead capsule holder or equivalent.

- (9) Separate the 'Outer Shell' (Size 'X' refer to table) gelatin capsule. Take the long end and push the plastic wrap into the lead capsule holder or place the long end of the gelatin capsule in the plastic lined finger.
- (10) Place a sodium phosphate capsule (Size 'X'+1- refer to table) (from the freezer) into the shielded long end of the 'Outer Shell' (size 'X') capsule.
- (11) Take an empty syringe and bore a pilot hole through the center top of the sodium phosphate capsule ('X' + 1). Note this procedure will prevent coring which very often clogs the needle.
- (12) Insert the needle of the shielded I-131 dose into the hole as far as it will go. Inject the capsule with a slow but constant injection. Note: If your injection is made too slowly, you will increase the chances that the sodium phosphate powder will harden prematurely before you are able to make the entire injection. If your injection is made too quickly, the sodium phosphate's ability to absorb the solution will be exceeded. This will be obvious by the distorted appearance of the finished capsule.
- (13) Once the injection is complete, remove the needle from the capsule and cap. Place the empty I-131 syringe in its holder, usually a big standard lead dose pig (IC-004 or larger). Place out of the way.
- (14) Using a 'Brower's' modified straw, or equivalent, pick up the other side of the capsule half (size 'X') and place on the capsule in the lead capsule holder. Invert the straw and tap it down tightly.
- (15) Remove the capsule by picking up the completed capsule with the 'Brower' modified straw or needle nose tongs or equivalent and transfer the capsule to the 'dispensing container' and cap it.
- (16) Assay the I-131 therapy capsule, account for decay, and assure that the finished capsule strength is not greater than 10% which was ordered.
- (17) Remove your gloves and replace with new ones. (Make this step a part of your normal routine) Note: If for any reason your outer gloves are contaminated, it is important to change them now to assure that you don't cross contaminate the lead shipping container.
- (18) Dispense the I-131 therapy capsule in a heavy lead container. Note: It is recommended that a smear be performed on the lead container to assure that there is no removable contamination before the shielded lead container is removed from the I-131 handling area.

- (19) Rinse the syringe into a shielded 10ml or 20ml water 'wash vial'. Store the I-131 'wash vial' in the fume hood for future use. Dispose of the I-131 syringe in the appropriate radioactive waste bin. Note: This rinse procedure will help contain the I-131 if it becomes volatile and therefore helps reduce airborne I-131 contamination. Never rinse or use Saline with I-131 as the I-131 tends to volatilize in saline – always use sterile water.
- (20) Perform an area survey of the I-131 glove box and other immediate work areas to assure it is contamination free. Decontaminate if necessary.
- (21) Follow the air monitoring procedure as outlined in your NRC or Agreement State License.
- (22) Follow the thyroid bioassay procedure as outlined in your NRC or Agreement State License.

**NRC Materials License Application
Radiology Services of Northern Virginia**

Radiation Safety Program 10.0:

Item No. 10.2 Survey Instruments:

Licensee will use equipment that meets the radiation monitoring instrument Specifications published in Appendix J to NUREG – 1556, Vol. 13, dated September 1999 and instruments will be calibrated by other persons authorized by The NRC, an Agreement State, or a licensed State to perform that service.

Item No. 10.3 Material Receipt and Accountability:

Licensee has developed, and will implement and maintain, written procedures for safely opening packages that meet the requirements in 10 CFR 20.1906.

Licensee will conduct physical inventories of sealed sources of licensed materials at intervals not to exceed six months.

Licensee has developed and will maintain written procedures for licensed material accountability and control to ensure that:

- **License possession limits are not exceeded;**
- **Licensed material in storage is secured from unauthorized access or removal**
- **Licensed material not in storage is maintained under constant surveillance and control; and**
- **Records of receipt, transfer, and disposal of licensed material are maintained.**

10.4 Occupational Dosimetry:

Licensee has developed and will implement and maintain written procedures For monitoring occupational dose that meet the requirements in:

**10 CFR 20.1501, 10 CFR 20.1502, 10 CFR 20.1201, 10 CFR 20.1202,
10 CFR 20.1203, 10 CFR 20.1204, 10 CFR 20.1207, 10 CFR 20.1208,
and 10 CFR 20.2106, as applicable.**

10.6 Safe Use of Radionuclides and Emergency Procedures:

NRC Materials License Application Radiology Services of Northern Virginia

10.7 Safe Use of Radionuclides and Emergency Procedures:

Licensee has developed and will implement and maintain written procedures for the safe use of radioactive materials that address:

- **Facility and personnel radioactive contamination minimization, detection, and control;**
- **Performing molybdenum-99 breakthrough measurements on all generator elutions used to prepare drugs for human medical use; and**
- **Use of protective clothing and equipment by personnel**

That meet the requirements in 10 CFR 20.1101, 10 CFR 20.1801, 10 CFR 20.1802, 10 CFR 30.34(g) and 10 CFR 19.11 (a)(3), as applicable.

Licensee has developed and will implement and maintain written procedures for identifying and responding to emergencies involving radioactive material, including:

- **Lost, stolen, or missing material;**
- **Exposures to personnel and the public in excess of NRC regulatory limits;**
- **Releases of licensed materials in effluents and the sanitary sewer in excess of NRC regulatory limits;**
- **Excessive radiation levels or radioactive material concentrations in restricted or unrestricted areas;**
- **Radioactive spills and contamination;**
- **Fires, explosions, and other disasters with the potential for the loss of containment of licensed material; and**
- **Routine contacts with fire departments**

that meet the requirements in 10 CFR 20.1101, 10 CFR 20.2201, 20.2202, 20.2203 and 10 CFR 30.50, as applicable.

10.8 Surveys:

Licensee has developed, and will implement and maintain, written procedures for a survey program that specifies the performance of

**NRC Materials License Application
Radiology Services of Northern Virginia**

radiation and contamination level surveys in restricted and unrestricted areas, personnel contamination monitoring, action levels, and the frequencies and records maintenance of those surveys and monitoring that meet the requirements in 10 CFR 30.53, 10 CFR 20.1501, and 10 CFR 20.2103, as applicable.

Type of Instrument	Number Available	Use
Ludlum, Model 3G-M Portable Survey Meter	2	Area surveys, package monitoring, personnel monitoring
Ludlum, Model 14C G-M Portable Survey Meter	4	Area surveys, package monitoring, personnel monitoring
Bicron, 2000 Portable Survey Meter	1	Area surveys, package monitoring, personnel monitoring
Ludlum, Model 2241 Digital Survey Meter	1	Area surveys, package monitoring, personnel monitoring
Ludlum Model 177 Alarming Ratemeter Hand-Foot Monitor	3	Personnel monitoring, one at front and rear access to restricted area
Ludlum Model 375 Digital Area Monitor	1	Provides continuous monitoring in primary dose preparation area
Capintec CRC-15R Radiopharmaceutical Dose Calibrator	3	Radiopharmaceutical dose measurement
Caprac-R® Well/Wipe Counter	1	Wipe Test analysis
Ludlum Model 2200 Single Channel Analyzer	2	Wipe Test analysis
Victoreen Model 862 Pocket Dosimeter	2	Personnel dosimetry
Multichannel Analyzer	1	BioAssay

10.9 Dosage Measurement Systems: (cont)

Licensee has developed, and will implement and maintain a written procedure for the performance of dosage measurement system checks and tests that meet the requirements in 10 CFR 32.72 (c).

Beta-emitting drugs are assayed using dose calibrator correction factors determined by assaying a manufacturer supplied NIST traceable standard.

NRC Materials License Application Radiology Services of Northern Virginia

10.11 Minimization of Contamination:

Please refer to responses in sections:

- **Facilities and Equipment;**
- **Radiation Safety Program – Safe Use of Radionuclides and Emergency Procedures;**
- **Radiation Safety Program – Surveys;**
- **Radiation Safety Program – Leak Testing; and**
- **Waste Management**

10.12 Radioactive Drug Labeling for Distribution:

Attachment 10.12 (A) illustrates the four parts of the RSNV prescription label as it is printed in sheet form:

The “Syringe Label” portion is affixed to the unit-dose syringe.

The “Transport Shield Label” is affixed to the lower part of the syringe transport shield.

The left half of the prescription label is annotated with the assayed activity, initialed by the pharmacist and / or pharmacist technician dispensing the dose, and retained as a permanent dispensing record. The right half of the prescription label is folded to expose all pertinent information as well as the bar code, and is attached to the transport shield, after which the labeled transport shield is sealed in shrink wrap.

Attachments 10.12 (B) and (C) illustrate the position of the syringe flag label to the syringe.

Attachment 10.12 (D) illustrates the sealed unit dose system, ready for final bar code scanning, packing and shipping.

**NRC Materials License Application
Radiology Services of Northern Virginia**

10.13 Radioactive Drug Shielding for Distribution

Compounded sterile radiopharmaceuticals will be dispensed in sterile, pyrogen-free vials or disposable syringes.

Radiopharmaceutical vials and syringes will be shielded during transport using commercial vial shields. Thickness of lead will be .25 inch or greater. (Please refer to attachments 10.13A and 10.13B)

Maximum activity/maximum survey reading at surface of transport shield for radiopharmaceuticals dispensed (exclusive of products shipped without manipulation and in manufacturer's original shipping package):

Radionuclide	Max Activity	Typically dispensed in:	Radiation Level at surface of transport shield
Technetium-99m	990 mCi	10 ml Vial	2 mR/hr
Samarium-153	100 mCi	Unit Dose Syringe	10 mR/hr
Strontium-89	6 mCi	Unit Dose Syringe	0.2 mR/hr
Yttrium-90	3 mCi	Unit Dose Syringe	20 mR/hr

10.14 Leak Tests

Licensee has developed, and will implement and maintain, written procedures for leak testing that meet the requirements in 10 CFR 30.53, 10 CFR 20.1501, and 10 CFR 20.2103.

**NRC Materials License Application
Radiology Services of Northern Virginia**

11. Waste Management

11.1 Pharmacy-generated Radioactive Wastes

Licensee has developed and will implement and maintain written procedures for waste management that meet the requirements in:

**10 CFR 20.1904(b)
10 CFR 20.2001(a)
10 CFR 20.2003
10 CFR 20.2006
10 CFR 20.2108
10 CFR 30.51, as applicable**

11.2 Returned Wastes from Customers

Licensee has developed and will implement and maintain written procedures for customer return of pharmacy supplied syringes and vials and their contents to specify that:

- **only pharmacy supplied syringes and vials and their contents may be returned to the pharmacy;**
- **instructions will be provided to radiopharmacy customers for the proper preparation and packaging of the radioactive waste for return to the radiopharmacy; and**
- **instructions will be provided to the pharmacy staff for the pick-up, receipt and disposal of the returned radioactive waste**

that meet the requirements in:

**10 CFR 20.1904(b)
10 CFR 200.2001(a)
10 CFR 30.33
10 CFR 71.5, as applicable**

99m-TcO₄

**CHESAPEAKE
GENERAL**

Wed, 11-16-05

****REPRINT****

99m-TcO₄

KIT PREPARATION/VIAL
4.00ml 75.00mCi 11-16-05@12:00
Per Physician's Order Rx#881331

99m-TcO₄

KIT PREPARATION/VIAL
4.00ml 75.00mCi 11-16-05@12:00
Per Physician's Order Rx#881331



Rx#881331 Radiology Services Of Hampton
814 Greenbrier Circle Suite H Chesapeake Virginia 23320
99m-TcO₄ 1.36ml MinQS:4.00l
75.00mCi 11-16-05@12:00 Per Physician's Order
Exp: 11-17-05 04:30 KIT PREPARATION/VIAL

757-578-7213

814 Greenbrier Circle Suite H Chesapeake Vi

Caution Fed(USA) law prohibits dispensing without prescription



Radiology Services Of Hampton Roads
814 Greenbrier Circle Suite H Chesapeake Virginia 23320
757-578-7213

NRC # 45-25349-01MD

Rx#881331 Run: [#1 11-16-05 05:38]

Customer: CHESAPEAKE GENERAL

Doctor : DAUGHDRILLE, Rph :

Patient : Per Physician's Order

Proc : KIT PREPARATION/VIAL

Rad. Phar: **99m-TcO₄**

Inv/Lot#: 136832

Cal Act : **75.00mCi 11-16-05@12:00**

Cal Time: 12:00 11-16-05

Manuf : In-house prep.

Vol./Qty: **1.36ml MinQS:4.00ml**

Expires : 11-17-05 04:30

Dose Rt :



****REPRINT****

Radiology Services Of Hampton Roads
814 Greenbrier Circle Suite H Chesapeake Virginia 23320
757-578-7213

NRC # 45-25349-01MD

Rx#881331 Run: [#1 11-16-05 05:38]

Customer: CHESAPEAKE GENERAL

Doctor : DAUGHDRILLE, Rph :

Patient : Per Physician's Order

Proc : KIT PREPARATION/VIAL

Rad. Phar: **99m-TcO₄**

Inv/Lot#: 136832

Cal Act : **75.00mCi 11-16-05@12:00**

Cal Time: 12:00 11-16-05

Manuf : In-house prep.

Vol./Qty: **1.36ml MinQS:4.00ml**

Expires : 11-17-05 04:30

Dose Rt :



****REPRINT****

Attachment 10.12 A



Attachment 10.12 A

Rad Pharm: Tc99m Cardiolite
 Lot: 133517/18
 Act: 25.00mCi: 09-09-05012.30
 Cal: 12:30 09-09-05
 Manuf: BMS
 Vol./Qty: 0.46ml MinQS: 0.50ml
 Expires: 09-10-05
 Dose Rt: IV

Rad Pharm: Tc99m Ca
 Lot: 133517/18
 Cal Act: 25.00mCi
 Cal Time: 12:30 09-09-05
 Manuf: BMS
 Vol./Qty: 0.46ml
 Expires: 09-10-05
 Dose Rt: IV

REPRINT**

REPRINT

Tc99mCa
 BAL PERRI
 109-09-05
 FEBB R

Unit Dose Syringe with Syringe Flag Label Attached

Attachment 10.12
 (B)

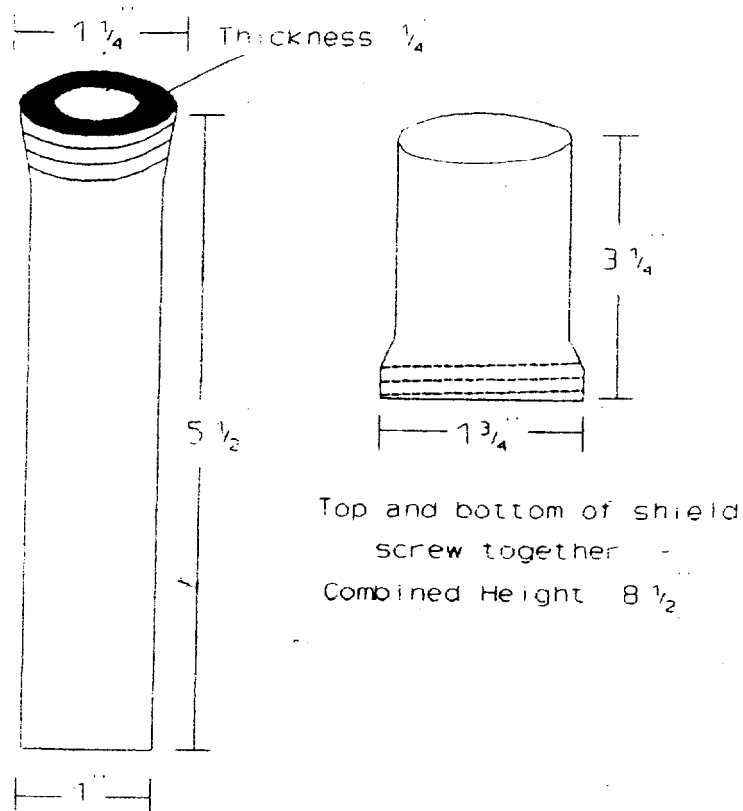
**Attachment 10.12
(C)**



Unit Dose Syringe with Label

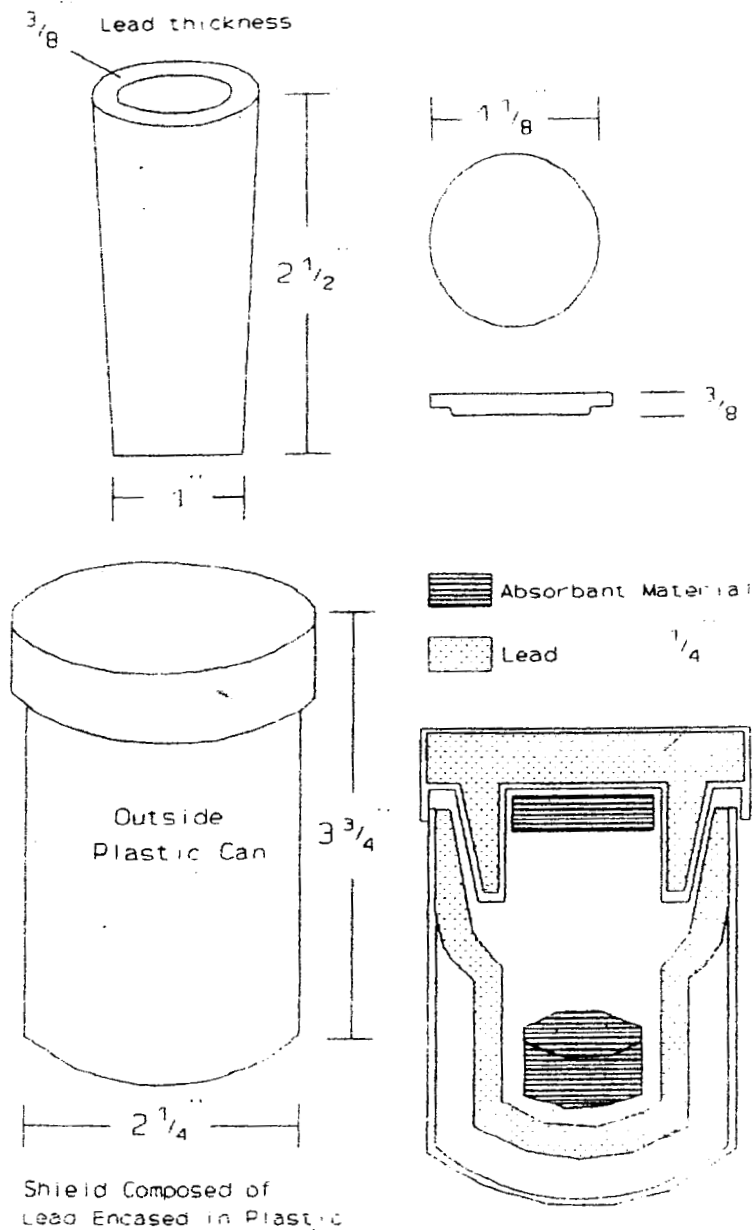
Attachment 10.12 (D)

**Sealed, Labeled, Unit Dose,
Ready to pack and ship**



Shield composed of lead encased in plastic

VIAL SHIELDS



Appendix A

RADIOACTIVE MATERIAL AND USE

Part A – Sealed Sources, Calibration Sources, Reference Standards Only

Radionuclide (name/abbrev.)	# of Sources	Activity uCi	Activ ity (Bq)	Units	Source Manu.	Source Model	Source Type	NRC Reg. Number	Storage Manu.	Storage Model	Anticipated Use
Cesium 137		200.0	7.4	MBq	NEN-Dupont	NES-356 (or in a set)	Ref Vial	NR 0476-S-111-S			
		0.1	3.7	kBq	NEN-Dupont	NES139S Rod	Rod				
Cesium 137		<=500	<=		Amersham	CDC.V1	Vial	NR 136 S 182 S			
		250	9.3	MBq	Amersham	CDR.562	Vial	NR 136 S 182 S			
			3.7	kBq	Amersham	CDR.5410	Tube				
		<=88000	<=2.96	GBq	Amersham	CDC.T1	Tube	NR 136 S 255 S			Brachetherapy
					Amersham	CDCS.J	Tube	NR 136 S 255 S			Brachetherapy
Cesium 137			3.7	MBq	AEA-QSA	CDRB1548	Chk Src				
			9.3	MBq	AEA-QSA	CDR.562	Vial	NR 136 S 182 S			
			3.7	kBq	AEA-QSA	CDR5210	Rod				
			3.7	kBq	AEA-QSA	CDR5410	Tube				
			4.0	kBq	AEA-QSA	CDRB4545	Tube				
			1.0	kBq	AEA-QSA	CDR06022	Chk src				
Cesium 137		150.0		MBq	CIS	6215	Ref Vial	NR 0219-S-104-S			
		250.0	9.2	MBq	CIS	6216	Ref Vial	NR 0219-S-104-S			
Cesium 137		200.0	7.4	MBq	IPL	RV-137-200	Ref Vial	CA 0406 S 148 S			
		250.0	9.25	MBq	IPL	RV-137-250	Ref Vial	CA 0406 S 148 S			
		<=100	<=3.7	MBq	IPL	GF-137	Rod/disk	CA 406 S 106 S			
					IPL	LDS-137	Planar	CA 406 S 176 S			
		<=5000			IPL	6133	Solution	N/A			
		<=100			IPL	7133	Solution	N/A			
Cesium 137		<=300.0	<=	MBq	NAS	MED3550Cs137	Vail	CA 0510 S 114 S			
		<=30	<=	kBq	NAS	MED3400Cs137	Rod	CA 0510 S 113 S			
		<=1	37	kBq	NAS	CAL2600Cs137	Disk				
		<=1	37	kBq	NAS	CAL2702Cs137	Disk				
		<=1	37	kBq	NAS	ENV4082Cs137					

RADIOACTIVE MATERIAL AND USE

Part A – Sealed Sources, Calibration Sources, Reference Standards Only

Radionuclide (name/abbrev.)	# of Sources	Activity uCi	Activ ity (Bq)	Units	Source Manu.	Source Model	Source Type	NRC Reg. Number	Storage Manu.	Storage Model	Anticipated Use
Barium 133		250	9.25	MBq	NEN-Dupont	NES358 (or in a set)	Ref Vial	NR 0476-S-111-S			
		<=200	7.4	MBq	NEN-Dupont	NES8060	Spot	NR 0476-S-112-S			
		0.1	3.7	kBq	NEN-Dupont	NES138s rod+	Rod				
Barium 133		<=500			Amersham	BDC.V1	Ref Vial	NR 0136-S-181-S			
		250	9.3	MBq	Amersham	BDR.562	Ref Vial	NR 0136-S-181-S			
					Amersham	BDR.5410	Tube				
					Amersham	BDR.8250					
					Amersham	BDR.8251					
Barium 133		250	9.3	MBq	AES-QSA	BDR562	Ref Vial	NR 0136-S-181-S			
		0.1	3.7	kBq	AES-QSA	BDR5210	Rod				
		0.1	3.7	kBq	AES-QSA	BDR5410	Rod				
			4.0	kBq	AES-QSA	BDRB4543	Rod				
Barium 133		250	9.25	MBq	CIS	6317	Ref Vial	NR 0219-S-104-S			
		20			CIS	1136	Spot				
Barium 133		250	9.25	MBq	IPL	RV-133-250	Ref Vial	NR 0406 S 148 S			
		<=100	<=3.7	MBq	IPL	GF-133	Rod/Disk	CA 406 S 106 S			
		<=5000		MBq	IPL	6133	Solution	N/A			
		<=100			IPL	7133	Solution	N/A			
Barium 133		<=300.0		MBq	NAS	MED3550Ba133	Ref Vial	CA 0510 S 114 S			
		<=30		kBq	NAS	MED3400Ba133	Rod	CA 0510 S 113 S			
		<=1	37	kBq	NAS	CAL2600Ba133	Disk				
		<=1	37	kBq	NAS	CAL2702Ba133	Disk				
		<=1	37	kBq	NAS	ENV4082					

RADIOACTIVE MATERIAL AND USE

Part A – Sealed Sources, Calibration Sources, Reference Standards Only

Radionuclide (name/abbrev.)	# of Sources	Activity uCi	Activ ity (Bq)	Units	Source Manu.	Source Model	Source Type	NRC Reg. Number	Storage Manu.	Storage Model	Anticipated Use
Cobalt 60		50	1.85	MBq	NEN-Dupont	NES354 (or in a set)	Ref Vial	NR 0476-S-111-S			
		100	3.7	MBq	NEN-Dupont	NES355	Ref Vial				
Cobalt 60		<=500			Amersham	CKC.V1	Ref Vial	NR 0136-S-184-U			
			1.9	MBq	Amersham	CKR.560					
		250	9.3	MBq	Amersham	CKR.562	Ref Vial	NR 0136-S-184-U			
					Amersham	CKR.5410	Tube				
Cobalt 60			1.9	MBq	AES-QSA	CKR560	Ref Vial	NR 0136-S-184-U			
		0.1	3.7	MBq	AES-QSA	CKR5210	Rod				
		0.1	3.7	MBq	AES-QSA	CKR5410	Rod				
			4.0	MBq	AES-QSA	CKRB4549	Rod				
Cobalt 60		50	1.85	MBq	CIS	6418	Ref Vial	Nr 0219-S-104-S			
Cobalt 60		<=100	<=3.7	MBq	IPL	GF-060	Rod/disk	CA 406 S 106 S			
		<=5000		MBq	IPL	6060	Solution	N/A			
		<=100			IPL	7060	Solution	N/A			
		0.0135	0.5	kBq	IPL	EAB-060	Planar	CA 406 S 176 S			
Cobalt 60		<=300		MBq	NAS	MED3550Co060	Ref Vial	CA 0510 S 114 S			
		<=30		kBq	NAS	MED3400Co060	Rod	CA 0510 S 113 S			
		<=1	37	kBq	NAS	CAL2600Co060	Disk				
		<=1	37	kBq	NAS	CAL2702Co060	Disk				
		<=1	37	kBq	NAS	ENV4082					

RADIOACTIVE MATERIAL AND USE – Cobalt 57 - Page 1
Dupont – NEN
Part A – Sealed Sources, Calibration Sources, Reference Standards Only

Radionuclide (name/abbrev.)	# of Sources	Activity uCi	Activity (Bq)	Units	Source Manu.	Source Model	Source Type	NRC Reg. Number	Storage Manu.	Storage Model	Anticipated Use
Cobalt 57		5	185	MBq	NEN-Dupont	NES206 (or in a set)	Ref Vial	MA 0476-S-185-S			
		10	370	MBq	NEN-Dupont	NES8206	Ref Vial	MA 0476-S-185-S			
		1	37	MBq	NEN-Dupont	NES352	Ref Vial	MA 0476-S-187-S			
		3	111	MBq	NEN-Dupont	NES283	Marker	MA 0476-S-188-S			
		25	0.925	MBq	NEN-Dupont	NES288	Spot				
		50	1.85	MBq	NEN-Dupont	NES289	Spot				
		100	3.7	MBq	NEN-Dupont	NES8031	Spot				
		<2000	<74	MBq	NEN-Dupont	NES8061	Spot				
		50	1.85	MBq	NEN-Dupont	NES260	Pointer				
		<=500	<=18.5	MBq	NEN-Dupont	NES8260	Pointer				
		160	5.9	MBq	NEN-Dupont	NES8004	Ruler				
		460	17.0	MBq	NEN-Dupont	NES8005	Ruler				
		0.1	3.7	MBq	NEN-Dupont	NES137S rod+	Rod				
14" diameter		2	74	MBq	NEN-Dupont	NES293	Flood				
14" diameter		3	111	MBq	NEN-Dupont	NES296	Flood	MA 0476-S-194-S			
14" diameter		5	185	MBq	NEN-Dupont	NES297	Flood	MA 0476-S-194-S			
14" diameter		10	370	MBq	NEN-Dupont	NES298	Flood	MA 0476-S-194-S			
18.75" diameter		3	111	MBq	NEN-Dupont	NES393	Flood	MA 0476-S-194-S			
		2	74	MBq	NEN-Dupont	NES390	Flood	MA 0476-S-194-S			
18.75" diameter		5	185	MBq	NEN-Dupont	NES391	Flood	MA 0476-S-194-S			
18.75" diameter		10	370	MBq	NEN-Dupont	NES392	Flood	MA 0476-S-194-S			
	variable	<=25		MBq	NEN-Dupont	NES394	Flood	MA 0476-S-194-S			
23.5" diameter		5	185	MBq	NEN-Dupont	NES8009	Flood	MA 0476-S-194-S			
23.5" diameter		10	370	MBq	NEN-Dupont	NES8012	Flood	MA 0476-S-194-S			
23.5" diameter	variable	11-25		MBq	NEN-Dupont	NES8150	Flood	MA 0476-S-194-S			
23.9 x 16.4" rect		5	185	MBq	NEN-Dupont	NES8300	Flood	MA 0476-S-193-S			
23.9 x 16.4" rect		10	370	MBq	NEN-Dupont	NES8400	Flood	MA 0476-S-193-S			
23.9 x 16.4" rect		15	555	MBq	NEN-Dupont	NES8430	Flood	MA 0476-S-193-S			
23.9 x 16.4" rect		20	740	MBq	NEN-Dupont	NES8450	Flood	MA 0476-S-193-S			
18 x 14" rect		5	185	MBq	NEN-Dupont	NES8470	Flood	MA 0476-S-193-S			
18 x 14" rect		10	370	MBq	NEN-Dupont	NES8480	Flood	MA 0476-S-193-S			
18 x 14" rect	variable	11-25			NEN-Dupont	NES8490	Flood	MA 0476-S-193-S			
		7.5	278	MBq	NEN-Dupont	NES8495	Flood	MA 0476-S-193-S			
	variable	<=25		MBq	NEN-Dupont	NES8496	Flood	MA 0476-S-193-S			

RADIOACTIVE MATERIAL AND USE- Cobalt 57 - Page 2
Amersham – AES-QSA
Part A – Sealed Sources, Calibration Sources, Reference Standards Only

Radionuclide (name/abbrev.)	# of Sources	Activity uCi	Activ ity (Bq)	Units	Source Manu.	Source Model	Source Type	NRC Reg. Number	Storage Manu.	Storage Model	Anticipated U
Cobalt 57		<=10000			Amersham	CTC.VI CTRQ	Ref Vial	IL 0136-S-292-S			
		1	37	MBq	Amersham	CTR.564	Ref Vial	IL 0136-S-292-S			
		3	111	MBq	Amersham	CTR.566	Ref Vial	IL 0136-S-292-S			
		5	185	MBq	Amersham	CTR.568	Ref Vial	IL 0136-S-292-S			
					Amersham	CTR.5410	Tube				
23 x 17.3"		7.7	285	MBq	Amersham	CTR500	Flood	IL 0136-S-339-S			
23 x 17.3"		11	407	MBq	Amersham	CTR501	Flood	IL 0136-S-339-S			
23 x 17.3"		16.5	610.5	MBq	Amersham	CTR601	Flood	IL 0136-S-339-S			
23 x 17.3"		22	814	MBq	Amersham	CTR701	Flood	IL 0136-S-339-S			
17.5 x 12"		11	407	MBq	Amersham	CTR801	Flood	IL 0136-S-339-S			
15.5" diameter		11	407	MBq	Amersham	CTR201	Flood	IL 0136-S-339-S			
18.5" diameter		5.5	203.5	MBq	Amersham	CTR291	Flood	IL 0136-S-339-S			
18.5" diameter		11	407	MBq	Amersham	CTR301	Flood	IL 0136-S-339-S			
24" diameter		11	407	MBq	Amersham	CTR401	Flood	IL 0136-S-339-S			
		1	37	MBq	AES-QSA	CTR.564	Ref Vial	IL 0136-S-292-S			
			111	MBq	AES-QSA	CTR.566	Ref Vial	IL 0136-S-292-S			
			185	MBq	AES-QSA	CTR.568	Ref Vial	IL 0136-S-292-S			
		0.1	3.7	kBq	AES-QSA	CTR5210	Rod				
		0.1	3.7	kBq	AES-QSA	CTR5410	Rod				
			4.0	kBq	AES-QSA	CTRB4547	Rod				
			2	kBq	AES-QSA	CTRB3788	Chk src				

RADIOACTIVE MATERIAL AND USE- Cobalt 57 - Page 3
CIS
Part A – Sealed Sources, Calibration Sources, Reference Standards Only

Radionuclide (name/abbrev.)	# of Sources	Activity uCi	Activ ity (Bq)	Units	Source Manu.	Source Model	Source Type	NRC Reg. Number	Storage Manu.	Storage Model	Anticipated Use
Cobalt 57		1000		MBq	CIS	6112	Ref Vial	NR 0219-S-112-S			
		3000			CIS	6113	Ref Vial	NR 0219-S-112-S			
		5000			CIS	6114	Ref Vial	NR 0219-S-112-S			
		20	740	MBq	CIS	1133	Spot				
		150			CIS	8125	Marker				
		100			CIS	0131	Pointer				
		60			CIS	9130	Ruler				
13" diameter		3	111	MBq	CIS	5103 EHSB25	Flood	MA 0219-S-111-S			
13" diameter		5	185	MBq	CIS	5104 EHSB30	Flood	MA 0219-S-111-S			
13" diameter		10	370	MBq	CIS	5105 EHSB40	Flood	MA 0219-S-111-S			
18" diameter		3	111	MBq	CIS	5107 EHSC25	Flood	MA 0219-S-111-S			
18" diameter		5	185	MBq	CIS	5108 EHSC30	Flood	MA 0219-S-111-S			
18" diameter		10	370	MBq	CIS	5109 EHSC40	Flood	MA 0219-S-111-S			
20" diameter		5	185	MBq	CIS	5110 EHSD30	Flood	MA 0219-S-111-S			
20" diameter		10	370	MBq	CIS	5111 EHSD40	Flood	MA 0219-S-111-S			
16.5 x 24" rect	W/hand	10	370	MBq	CIS	5201 EHSE40	Flood	NH 0702-S-101-S			
16.5 x 24" rect	W/o hand	10	370	MBq	CIS	5202 EHSE40	Flood	NH 0702-S-101-S			
16.5 x 24" rect	W/hand	15	555	MBq	CIS	5203 EHSE45	Flood	NH 0702-S-101-S			
16.5 x 24" rect	W/o hand	15	555	MBq	CIS	5206 EHSE45	Flood	NH 0702-S-101-S			
16.5 x 24" rect	W/hand	20	740	MBq	CIS	5204 EHSE50	Flood	NH 0702-S-101-S			
16.5 x 24" rect	W/o hand	20	740	MBq	CIS	5205 EHSE50	Flood	NH 0702-S-101-S			

Part A – Sealed Sources, Calibration Sources, Reference Standards Only

Radionuclide (name/abbrev.)	# of Sources	Activity uCi	Activ ity (Bq)	Units	Source Manu.	Source Model	Source Type	NRC Reg. Number	Storage Manu.	Storage Model	Anticipated Us
Cobalt 57		3000			IPL	RV-57-3	Ref Vial	CA 0406-S-148-S			
		5000			IPL	RV-57-5	Ref Vial	CA 0406-S-148-S			
		10000			IPL	RV-57-10	Ref Vial	CA 0406-S-148-S			
		10	370	MBq	IPL	SM-57-10	Spot	CA 0406-S-169-S			
		25			IPL	SM-57-25	Spot	CA 0406-S-169-S			
		50			IPL	SM-57-50	Spot	CA 0406-S-169-S			
		100			IPL	SM-57-100	Spot	CA 0406-S-169-S			
		200			IPL	SM-57-200	Spot	CA 0406-S-169-S			
		100			IPL	PP-57-100	Pointer				
		20	740	MBq	IPL	RR-57-20	Ruler	CA 0406-S-170-S			
		20	740	MBq	IPL	FR-57-20	Ruler	CA 0406-S-171-S			
		50			IPL	FM-57-50	Marker	CA 0406-S-172-S			
		150			IPL	FM-57-150	Marker	CA 0406-S-172-S			
		<=100	<=3.7	MBq	IPL	GF-057	Rod/Disk	CA 406 S 106 S			
		<=5000		MBq	IPL	6057	Solution	N/A			
		<=100			IPL	7057	Solution	N/A			
					IPL	GF-057	Rod/disk	CA 406 S 106 S			
Cobalt 57		<=300.0		MBq	NAS	MED3550Co057	Ref Vial	CA 0510 S 114 S			
		100	3.7	MBq	NAS	MED3500Co057	Flex Mark	CA 0510-S-118-S			
		200	7.4	MBq	NAS	MED3500Co057	Flex Mark	CA 0510-S-118-S			
		230	8.5	MBq	NAS	MED3501Co057	Flex Ruler	CA 0510-S-118-S			
		460	17	MBq	NAS	MED3501Co057	Flex Ruler	CA 0510-S-118-S			
		80	3	MBq	NAS	MED3502Co057	Rig Ruler	CA 0510-S-118-S			
		160	6	MBq	NAS	MED3502Co057	Rig Ruler	CA 0510-S-118-S			
		<=200	<=7.4	MBq	NAS	MED3503Co057	Spot	CA 0510-S-116-S			
		100	3.7	MBq	NAS	MED3504Co057	Pointer				
		100	3.7	MBq	NAS	MED3505Co57	I.&R Marker				
		<=30		kBq	NAS	MED3400Co057	Rod	CA 0510 S 113 S			
		<=1	37	kBq	NAS	CAL2600Co057	Disk	CA 0510-S-111-S			
		<=1	37	kBq	NAS	CAL2702Co057	Disk	CA 0510-S-109-S			
		<=1	37	kBq	NAS	ENV4082	Test Tube	CA 0510-S-108-S			

Part A – Sealed Sources, Calibration Sources, Reference Standards Only

Radionuclide (name/abbrev.)	# of Sources	Activity uCi	Activ ity (Bq)	Units	Source Manu.	Source Model	Source Type	NRC Reg. Number	Storage Manu.	Storage Model	Anticipated Us
Cobalt 57											
29 x 18" rec		5	185		NAS	MED3702	Flood	CA 0510 S 120 S			
29 x 18" rec		10	370	MBq	NAS	MED3702	Flood	CA 0510 S 120 S			
29 x 18" rec		15	555	MBq	NAS	MED3702	Flood	CA 0510 S 120 S			
29 x 18" rec		20	740	MBq	NAS	MED3702	Flood	CA 0510 S 120 S			
25 x 18" rec		5	185	MBq	NAS	MED3709	Flood	CA 0510 S 120 S			
25 x 18" rec		10	370	MBq	NAS	MED3709	Flood	CA 0510 S 120 S			
25 x 18" rec		15	555	MBq	NAS	MED3709	Flood	CA 0510 S 120 S			
25 x 18" rec		20	740	MBq	NAS	MED3709	Flood	CA 0510 S 120 S			
23 x 15.5 rec		5	185	MBq	NAS	MED3712	Flood	CA 0510 S 120 S			
23 x 15.5 rec		10	370	MBq	NAS	MED3712	Flood	CA 0510 S 120 S			
23 x 15.5 rec		15	555	MBq	NAS	MED3712	Flood	CA 0510 S 120 S			
23 x 15.5 rec		20	740	MBq	NAS	MED3712	Flood	CA 0510 S 120 S			
19.5 x 15.5 rec		5	185	MBq	NAS	MED3713	Flood	CA 0510 S 120 S			
19.5 x 15.5 rec		10	370	MBq	NAS	MED3713	Flood	CA 0510 S 120 S			
19.5 x 15.5 rec		15	555	MBq	NAS	MED3713	Flood	CA 0510 S 120 S			
19.5 x 15.5 rec		20	740	MBq	NAS	MED3713	Flood	CA 0510 S 120 S			
15.5 x 8.5 rec					NAS	MED3715	Flood	CA 0510 S 120 S			

Part A – Sealed Sources, Calibration Sources, Reference Standards Only

Radionuclide (name/abbrev.)	# of Sources	Activity uCi	Activ ity (Bq)	Units	Source Manu.	Source Model	Source Type	NRC Reg. Number	Storage Manu.	Storage Model	Anticipated Us
Cobalt 57											
16.5 diameter		2	74	MBq	NAS	MED3700	Flood	CA 0510 S 120 S			
16.5 diameter		3	111	MBq	NAS	MED3700	Flood	CA 0510 S 120 S			
16.5 diameter		5	185	MBq	NAS	MED3700	Flood	CA 0510 S 120 S			
15.0 diameter		2	74	MBq	NAS	MED3705	Flood	CA 0510 S 120 S			
15.0 diameter		3	111	MBq	NAS	MED3705	Flood	CA 0510 S 120 S			
15.0 diameter		5	185	MBq	NAS	MED3705	Flood	CA 0510 S 120 S			
21.0 diameter		2	74	MBq	NAS	MED3701	Flood	CA 0510 S 120 S			
21.0 diameter		3	111	MBq	NAS	MED3701	Flood	CA 0510 S 120 S			
21.0 diameter		5	185	MBq	NAS	MED3701	Flood	CA 0510 S 120 S			
21.0 diameter		10	370	MBq	NAS	MED3701	Flood	CA 0510 S 120 S			
19.5 diameter		2	74	MBq	NAS	MED3706	Flood	CA 0510 S 120 S			
19.5 diameter		3	111	MBq	NAS	MED3706	Flood	CA 0510 S 120 S			
19.5 diameter		5	185	MBq	NAS	MED3706	Flood	CA 0510 S 120 S			
19.5 diameter		10	370	MBq	NAS	MED3706	Flood	CA 0510 S 120 S			
22.5 diameter		5	185	MBq	NAS	MED3703	Flood	CA 0510 S 120 S			
22.5 diameter		10	370	MBq	NAS	MED3703	Flood	CA 0510 S 120 S			
21.0 diameter		5	185	MBq	NAS	MED3707	Flood	CA 0510 S 120 S			
21.0 diameter		10	370	MBq	NAS	MED3707	Flood	CA 0510 S 120 S			
26.5 diameter		5	185	MBq	NAS	MED3704	Flood	CA 0510 S 120 S			
26.5 diameter		10	370	MBq	NAS	MED3704	Flood	CA 0510 S 120 S			
25.0 diameter		5	185	MBq	NAS	MED3708	Flood	CA 0510 S 120 S			
25.0 diameter		10	370	MBq	NAS	MED3708	Flood	CA 0510 S 120 S			

This is to acknowledge the receipt of your letter/application dated

1/22/2006, and to inform you that the initial processing which includes an administrative review has been performed.

☒ NEW LICENSE APPLICATION (03037127)
There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

☐ Please provide to this office within 30 days of your receipt of this card

A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned **Mail Control Number** 138305.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.

BETWEEN: : (FOR LFMS USE)
: INFORMATION FROM LTS
: -----
:
License Fee Management Branch, ARM : Program Code: 02500
and : Status Code: 3
Regional Licensing Sections : Fee Category: _____
: Exp. Date: 0
: Fee Comments: _____
: Decom Fin Assur Req'd: _
: ::

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED

Applicant/Licensee: RADIOLOGY SVCS. OF NORTHERN VIRGINIA
Received Date: 20060126
Docket No: 3037127
Control No.: 138305
License No.: 45-31125-01
Action Type: New Licensee

2. FEE ATTACHED

Amount: \$4,700.00
Check No.: 2044

3. COMMENTS

Signed Mr. A. Perkins
Date 1/26/2006

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

1. Fee Category and Amount: _____

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

Amendment _____
Renewal _____
License _____

3. OTHER _____

Signed _____
Date _____