DEPARTMENT OF THE ARMY
WALTER REED ARMY MEDICAL CENTER
6900 GEORGIA AVE NW
WASHINGTON DC 20307-5001

10 January 2005

REPLY TO
ATTENTION OF:
Office of the Deputy Commander
for Clinical Services

MS16
K-8

U.S. Nuclear Regulatory Commission
Region I
ATTN: Nuclear Materials Safety Branch (Ms. Sandy Gabriel)
475 Allendale Road
King of Prussia, PA 19406-1415

Dear Ms. Gabriel:

In response to your letter, NRC Docket No. 03001317, Control No. 135047, dated 29 September 2004, we hereby submit a completely revised broad scope license 10-year renewal application (NRC Form 313 with attachments). We are currently operating under Amendment No. 77 to license No. 08-01738-02, which has been extended under timely renewal procedures.

Your point of contact for this Command is Lieutenant Colonel John Mercier, Ph.D., (202) 356-0058.

Sincerely,

Thomas M. Fitzpatrick
Colonel, Medical Corps
Deputy Commander for Clinical Services

Enclosure

Copy Furnished:
Headquarters, US Army Medical Command, ATTN: POPM-SA, Fort Sam Houston, TX 78234.

MM/23
135047

NMSS/RGN1 MATERIALS-002

ML050140265

NRC FORM 313 (4-2004) 10 CFR 30, 32, 33, 34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR MATERIAL LICENSE

APPROVED BY OMB: NO. 3150-0120 EXPIRES: 10/31/2005

Estimated burden per response to comply with this mandatory collection request: 7 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 F52), 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.

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

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

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

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

030 01317

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 08-01738-02

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include ZIP code)*
   Department of The Army
   Walter Reed Army Medical Center
   Attn: Commanding Officer
   6900 Georgia Ave., NW
   Washington, DC 20307-5001

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED
   SEE ITEM #3 ATTACHMENT

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION
   LTC John Mercier, Ph,D., RSO
   TELEPHONE NUMBER
   (202) 356-0058

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)* 10CFR170(A)(5)
    FEE CATEGORY 7B | AMOUNT ENCLOSED $ EXEMPT

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	SIGNATURE	DATE
Thomas M. Fitzpatrick, M.D., DEPUTY CDR FOR CLIN. SVCS.		21 May 04

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			$		
APPROVED BY				DATE	

ITEM #3 ATTACHMENT
ADDRESSES WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Walter Reed Army Medical Center (WRAMC), Washington, D.C.; WRAMC Forest Glen Section and Annex, Silver Spring, Maryland; Rickman Building, 13 Taft Court, Rockville, Maryland; and The Gillette Building, 1413 Research Boulevard, Rockville, Maryland.

Note: The U.S. Army Medical Laboratory, Fort Meade, Maryland, has been removed from this renewal because the facility is now decommissioned. The Fort Meade facility is a drug testing laboratory that was authorized to use unsealed I-125 in microcurie quantities and sealed I-125 calibration sources in fractional microcurie quantities. The facility also had a gas chromatograph with an internal Ni-63 sealed source that never leaked and was disposed as radioactive waste on 9 March 1989. The last use of I-125 at the facility was in October 1999 and this was followed by a final contamination close out survey in November 1999. The WRAMC Health Physics Office (HPO) radioactive material inventory records indicate that the maximum credible I-125 spill would have been 250 microcuries, which by decay would now be less than a picocurie. HPO transfer and disposal records indicate that the I-125 sealed sources and unused unsealed I-125 were transferred to the HPO radioactive waste facility on 2 November 1999. The HPO disposed of the I-125 as normal waste in May 2002 after decay-in-storage of 15 half-lives and a radiation survey of the waste that was indistinguishable from background. The authorization expired in August 2000 and was not renewed because a new non-radioactive drug test had been implemented. However, a permanent decision that the facility would not require future use of radioactive material was not made clear until 2004. As a result, the WRAMC HPO evaluated the facility for decommissioning criteria stated in NUREG 1757, Vol. 1, Rev. 1, published September 2003. The facility met Group 1 decommissioning guidance [e.g., radioactive material with half-life less than 120 days, maximum activity decayed to levels less than 10CFR 20 – Appendix C (1 μCi for I-125), and 10CFR30.36(j) close out survey completed with records available for review by NRC inspectors]. Under NUREG 1757 Group 1 decommissioning guidance, the facility does not require a decommissioning plan and may be removed from the license.

ITEMS #5 and #6 ATTACHMENT
RADIOACTIVE MATERIAL and
PURPOSES FOR WHICH LICENSED MATERIAL WILL BE USED

CHEMICAL AND MASS NUMBER	CHEMICAL AND PHYSICAL FORM	MAXIMUM ACTIVITY	AUTHORIZED USE
A. Any byproduct material with atomic numbers 1-83	A. Any	A. 400 mCi of each radionuclide with a total possession limit of 26 curies	A. Through K. Medical research, diagnosis, and therapy; research and development as defined in 10 CFR 30.4, to include animal studies; instrument calibration; reference; teaching and training
B. Hydrogen 3	B. Any	B. 2 curies	
C. Phosphorus 32	C. Any	C. 1 curie	
D. Strontium 90	D. Sealed sources	D.	
E. Molybdenum 99	E. Molybdenum 99/Technetium 99m Generators	E. 23 curies	
F. Technetium 99m	F. Any	F. 23 curies	
G. Iodine 131	G. Any	G. 2 curies	
H. Xenon 133	H. Any	H. 2 curies	
I. Cesium 137	I. Sealed sources	I.	
J. Gadolinium 153	J. Sealed sources	J.	
K. Iridium 192	K. Any	K.	

CHEMICAL AND MASS NUMBER	CHEMICAL AND PHYSICAL FORM	MAXIMUM ACTIVITY	AUTHORIZED USE
L. Cesium 137	L. Sealed sources	L.	L. through N. Instrument calibration; reference; teaching and training
M. Americium 241	M. Sealed source	M.	
N. Plutonium 239 and Americium 241	N. Sealed or plated sources	N. 0.01 mCi for each radionuclide with a total possession limit of 0.02 mCi	
O. Uranium depleted in Uranium 235	O. Bulk Metal	O. 400 kgms	O. Linear accelerator shielding; Research and development as defined in 10 CFR 30.4; instrument calibration; reference; teaching and training
P. Cesium 137	P. Sealed sources	P. per source with a total possession limit of	P. through Q. Self-shielded irradiators for use as described in respective SSD registration certificates
Q. Cobalt 60	Q. Sealed sources	Q. per source with a total possession limit of	

The NRC recently completed a satisfactory review of our Financial Assurance Submittal with Statement of Intent and Decommissioning Funding Plan (DFP) [Refer to NRC letter dated April 13, 2004, signed by the Chief of the Region I Nuclear Materials Safety Branch, NRC Control Nos. 132079 and 132080]. The radioactive material listed in this license renewal application does not constitute changes that would detract from the DFP. Hence, changes to the current DFP are not necessary.

Note the following significant radioactive material changes from Item 5 of our previous license:

1. Removal of Cesium-137 sealed sources (J.L. Shepherd & Associates Model 6810, Series 143), 600 curies per source with a total possession limit of 4,800 curies. The specified Cs-137 was for a blood irradiator that was transferred back to J.L. Shepard & Associates on 28 December 2004.

2. Removal of Iodine-125 sealed sources (3M Company seeds) with a maximum possession limit of 1 curie and Palladium 103 sealed sources with a maximum possession limit of 3 curies. In the past, these types of seeds were used for prostate permanent implants. Unused seeds were held for decay in storage prior to disposal. Current prostate treatments now use accelerator-produced Palladium-103 seeds which are not regulated by the NRC.

3. Removal of Iodine-125 sealed sources (Norland Inst. Co. # 178A591A, AECL #235, AECL #324 or Amersham Corp. #IMC.P2) with a total possession limit of 4 sources not to exceed 300 mCi each. These sources were used in bone analyzers and were routinely replaced about every 6 months. Eventually, the bone analyzers were replaced with x-ray technology. The last remaining I-125 source used for this purpose was disposed via the Army radioactive waste broker as documented on WRAMC's copy of the shipment manifest dated 9 March 1994.

4. Removal of Cobalt-60 sealed sources with a maximum possession limit of 500 mCi. These sources were used for calibration and training. Higher activity Co-60 sources were disposed via the Army radioactive waste broker as documented on WRAMC's copy of the shipment manifest dated 17 May 1994. Lower activity Co-60 sources are adequately covered by subitem A of Item 5 for isotopes with atomic numbers 3-83 with a maximum possession limit of 400 mCi for each isotope.

5. Removal Cs-137, sealed sources, with a maximum possession limit of 1.2 Ci. These calibration, reference and training sources are adequately covered under subitems A in Item 5 for isotopes with atomic numbers 3-83 with a maximum possession limit of 400 mCi for each isotope.

6. Removal of Krypton-85, any form, with a maximum possession limit of 1 Ci. The Kr-85 gas was used for calibration and training and was sealed in metal rods. Inventory records indicate that the last of these sources were disposed as radioactive waste in July 1985.

7. Removal of Americium 241, sealed sources, with a maximum possession limit of 200 mCi. These sources were used as reference sources and as internal standards in older counting systems. Inventory records indicate that the last of these sources were disposed as radioactive waste in January 1984.

8. Removal of Nickel-63 and I-129 sealed sources and foils as a separate items on the license with maximum possession limits of 1 curie each. These isotopes are adequately covered under subitem A in Item 5 for isotopes with atomic numbers 3-83 with a maximum possession limit of 400 mCi for each isotope.

9. Removal of Ir-192 sealed sources as a separate item on the license with a maximum possession limit of 6 curies. This isotope is adequately covered under the subitem K in Item 5 for Ir-192 in any form with a maximum possession limit of 2 curies. Ir-192 sealed sources are usually purchased as seeds encased in nylon ribbons for used in brachytherapy treatments. After treatments, the seeds are returned to the vendor. As well, the use of Ir-192 for intravenous brachytherapy (IVB) procedures was terminated in December 2003 with the sources being returned to the vendor on 16 March 2004. The HPO may also use some Ir-192 seeds for instrument calibration, reference, or teaching and training.

10. Removal of Thorium, any form, with a maximum possession limit of 5 kgms. Other than check sources in exempt microcurie amounts, WRAMC has no records to support the use of thorium in NRC licensed activities.

11. Removal of Uranium, any form, with a maximum possession limit of 50 kgms. WRAMC has no records to support the use of Uranium in NRC licensed activities. Records do indicate that chemical reagents like uranyl acetate, such as those used in electron miscroscopy, has been used at WRAMC. However, the use of this generally licensed radioactive material does not require integration into the broad scope license compliance program.

12. Removal of Carbon 14, Sulfur 35, Chromium 51, Iodine 125, each listed for any form with roughly 1 to 2 curie maximum possession limits. Based on past inventory records, these isotopes are adequately covered under subitem A in Item 5 for isotopes with atomic numbers 3-83 with a maximum possession limit of 400 mCi for each isotope.

13. Reduction of Hydrogen 3 and Phosphorus 32 maximum possession limits. The reduced amounts are based on a review of past inventory records.

Also, note for the record that on 20 May 2000, Varian Medical Systems took custody of a Varian linear accelerator (CL6/100, serial # 240) that was removed from the WRAMC Radiation Oncology Service. The accelerator contained about 106 kg of depleted uranium (DU) shielding. The transfer of the DU complied with the vendor's agreement state license. Currently, WRAMC operates three Varian linear accelerators. Two of the accelerators contain a total of about 220 kg of DU shielding (CLINAC 6/100 and 600C). The third accelerator does not contain DU. The HPO also holds several kg of DU metal for reference, teaching and training.

ITEM #7 ATTACHMENT
INDIVIDUALS RESPONSIBLE FOR RADIATION SAFETY PROGRAM

1. Duties and Responsibilities of the Radiation Safety Committee (RSC) include the following:

a. Oversight of the radiation safety and NRC license compliance program. This includes the following topical areas: radiation safety training, radiation dosimetry, overexposure investigations, major radioactive material spills and unusual occurrences, internal and external audits and annual reports.

b. Assisting, enabling and/or empowering the Radiation Safety Officer (RSO) and authorized users to achieve radiation safety compliance.

c. Recommending solutions to open issues, such as unresolved audit findings, and tracking issues to closure.

d. Ensuring that patient and staff doses are kept as low as reasonably achievable (ALARA).

e. Review and approval of radiation safety program revisions, authorization applications, authorization amendments, and authorized users.

2. The RSC is established pursuant to 10CFR33.13(c)(1) whereby the majority of members are trained and experienced in the safe use of radioactive material. The RSC controls it's own membership to allow for personnel turnover, as well as, gains and losses in functional use of radioactive material. The minimum voting membership of the RSC tends to be the Deputy Commander for Clinical Services (DCCS, Chair and Management Rep), the RSO, a staff health physicist, a staff radiation therapy physicist, a radiation oncology physician, a nuclear pharmacy representative, a nuclear medicine physician, a nursing representative, a Walter Reed Army Institute of Research (WRAIR) representative and an Armed Forces Institute of Pathology (AFIP) representative. A quorum requires at least half the voting members, of which, the RSO and the DCCS (or his management substitute) must attend.

3. The RSC should meet quarterly and shall meet at least semi-annually and at the call of the Chair. RSC meetings may be in person or by electronic forum.

4. Except for appointment of a permanent RSO, the RSC maintains authority for designating the responsible radioactive material users (e.g., authorized users, authorized nuclear pharmacists, authorized medical physicists, principle investigators, and co-investigators). The criterion used by the RSC in approving users is discussed below. As well, RSO approval is required for all authorized users, authorized nuclear pharmacists, authorized medical physicists, principle investigators, and co-investigators.

5. For HUMAN USE (e.g., diagnosis, therapy and human studies), licensed material shall be used by or under the supervision of individuals designated by the Walter Reed Army Medical

Center (WRAMC) Radiation Safety Committee (RSC). The training and experience of authorized users, authorized nuclear pharmacists, and authorized medical physicists will be evaluated using the criteria in 10 CFR 35. The RSO may designate authorized users (i.e., on an interim basis) with final approval by the RSC at the next routine RSC meeting.

6. For HUMAN USE EMERGING TECHNOLOGIES (e.g., diagnosis, therapy and human studies), licensed material shall be used by or under the supervision of individuals designated by the Walter Reed Army Medical Center (WRAMC) Radiation Safety Committee (RSC). The training and experience of authorized users will be evaluated using the criteria in 10 CFR 35 that most closely matches the new technology, as well as, complete vendor training specific to the new equipment and/or procedure or equivalent training provided by an authorized user previously approved for the new technology. The RSO will not provide interim approvals for new technology users. Approval for authorized users by the RSC, with RSO concurrence, is required prior to implementation of the new technology. The RSC, with RSO concurrence, may provide interim approval of authorized users undergoing new technology training that takes place at WRAMC.

7. For NON-HUMAN USE (e.g., research and development), Principle Investigators and Co-Investigators who meet training and experience criteria expressed in NUREG 1556, Volume 7, Section 8.7.2 (December 1999), may be designated as authorized users by the RSO (i.e., on an interim basis) with final approval by the RSC at the next routine RSC meeting. Although not a rule, investigators who meet the following criteria will normally receive final approval: 1) bachelors degree, 2) at least two months of hands-on laboratory experience using equivalent types and amounts of radioactive material, and 3) completion of a one-day didactic radiation safety course or equivalent training.

8. For SELF-SHIELDED IRRADIATORS, the training and experience criteria expressed in NUREG 1556, Volume 5, Appendix G (October 1998), will guide the RSO in designating authorized users (i.e., on an interim basis) with final approval by the RSC at the next routine RSC meeting. In addition to the RSO and authorized users of the irradiators, staff members of both the HPO and the irradiator facility safety office may also serve as instructors and assess potential irradiator operators for adequate skills. However, such HPO and safety office staff members must have passed a written exam and demonstrated hands-on knowledge of irradiator operation and safety in order to perform instructor and assessor duties independently.

9. The RSC uses the following process to review proposed human and non-human uses of byproduct material:

a. The authorized user submits an authorization application or amendment for the proposed use of byproduct material. The documentation addresses the following:

1) **Purpose for which the byproduct material will be used,**
2) **Isotope, chemical and physical form, and quantities,**
3) **A general description of the protocol (research use), and**
4) **Proposed locations for use, storage and disposal of the byproduct material .**

b. The application or amendment is then reviewed by the HPO. The HPO staff assesses the need for dosimetry or bioassay, an appropriate frequency for contamination surveys, and if any special health physics or non-standard radiation safety procedures or equipment are warranted.

c. Once satisfied that the byproduct material will be properly controlled and that patient and worker safety are adequately addressed, the RSO may grant interim approval.

d. The RSO presents the application or amendment for discussion at the next routine RSC meeting. The RSC determines by vote if the application or amendment should be approved, disapproved, conditionally approved (with approval authority passed to the RSO once the RSC conditions are met), or if more information is needed for discussion at a follow-up RSC meeting.

10. The RSC criteria to approve proposed human and non-human uses of byproduct material, new procedures, and new facilities, is the following:

a. The RSC decision must be guided by a perceived benefit outweighing a perceived risk or that the perceived risk is negligible. As well, the decision should not result in a significant detriment to safety and health or substantial increase in environmental risk. Hence, the RSC decision should be risk-based and the ALARA concept should be taken into consideration.

b. The criteria provided in the NUREG 1556 Series (e.g., Volumes 5, 7, 9 & 11), 10CFR20 through 10CFR35, NRC Information Notices, or other appropriate references (e.g., ANSI standards, NCRP reports, HPS position statements) will serve as a basis for the RSC's approval or disapproval decisions.

c. For all RSC decisions that directly affect the Radiation Safety Program, to include approval of radioactive material users, the RSO must be in agreement.

11. Except for NRC approval of the RSO, the Radiation Safety Committee (RSC) intends to continue to assume full decision and approval authority for all aspects of the broad scope license and radiation safety program. WRAMC has a long history of NRC compliance excellence and this, in part, is a result of the RSC having the authority to promptly address, and reach closure on, issues that would otherwise enter a license amendment process. Under this renewal of the broad scope license, the WRAMC RSC requests continued flexibility by remaining exempt from submitting routine license amendments related to Items #7 through #11. For flexibility in making radiation safety program changes without prior NRC approval, the following statements are provided:

a. Locally approved revisions to the radiation safety program will be limited to the following topics: training program, audit program, radiation monitoring program, radioactive material receipt and tracking program, contamination survey program, radioactive material safe use procedures, radiological emergency procedures. Other radiation safety program topics will require NRC approval prior to implementation of changes.

b. Prior to implementation, revisions to the program will be reviewed and approved by the RSC and documented in the RSC minutes.

c. Prior to implementation, appropriate staff will be trained on revised procedures.

d. Radiation safety program revisions will be in accordance with the Codes of Federal Regulations, will not change license conditions and will not decrease the effectiveness of the program.

e. The audit program will be amended to evaluate radiation safety program revisions, as appropriate.

f. An exception to 11.b above occurs when the RSC delegates independent authority to the RSO on selected programs or topics. This delegated authority is limited to programs or topics that are exclusively, or predominately, the management purview of the RSO. For example, the RSO will maintain authority to approve changes in the radiation safety training and audit programs and then subsequently inform the RSC and document the changes in the RSC minutes.

12. Duties and Responsibilities of the RSO include the following:

a. Supervision of the radiation safety and NRC license compliance program. This includes the following sub-programs and topical areas: health physics support to brachytherapy patients and radioiodine ablation patients, radiation safety training, radiation dosimetry, bioassays, overexposure investigations, radioactive material spill investigations, radioactive waste, audits, area surveys, authorization application reviews, authorization amendment reviews, radioactive material ordering and receipt, radioactive material tracking and inventory, sealed source leak tests, radioactive material transport, effluent monitoring, decontamination and decommissioning, facility design reviews, and shielding evaluations.

b. Action officer for the RSC.

c. Termination of unsafe procedures or activities involving radioactive material.

d. Ensuring that patient and staff doses are kept ALARA.

e. Ensuring the radiation safety program is adequately documented.

13. 10CFR35.24(c) Waiver. To meet military operational contingencies, support homeland security missions, or support national security objectives, the RSO may be sent on extended deployments (60 to 180 days) without warning. The RSO need not be present as long as communications between the RSO and WRAMC management can be maintained (e.g., phone, email, video teleconferencing, etc.). In such cases, the RSC will designate an acting RSO who meets the training and experience criteria in 10CFR35. Since WRAMC has sufficient depth in authorized users and professional health physics staff, the RSO can ensure that one or more authorized users or staff health physicists are fully qualified to serve as acting RSO via a signed

preceptor statement (NRC 313A). In the event communications cannot be maintained, 10CFR35.24(c) will apply starting from the time that communications fail.

14. The senior management's delegation of authority to the RSO includes the statement below and is available for review by NRC inspectors:

"The Radiation Safety Officer (RSO) is given, and may exercise at any time, full authority to manage and audit the radiation safety program, to communicate directly with all radioactive material users, to direct personnel to comply with Nuclear Regulatory Commission (NRC) rules and regulations, to enforce NRC license requirements and radiation safety regulations, to immediately terminate any unsafe or non-compliant operation involving radioactive material, and to lead radiological emergency response operations."

15. A NRC Form 313A, curriculum vitae and copy of board certification for the Radiation Safety Officer (RSO), LTC John R. Mercier, Ph.D., is attached.

ITEM #8 ATTACHMENT
TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

The radiation safety training program is managed by the WRAMC Health Physics Office and is designed to ensure compliance with 10CFR 19, 20, 30 and 35. Workers likely to receive an annual occupational dose in excess of 1 mSv (100 mrem) receive initial and refresher training commensurate with their duties. To ensure the training is tailored for different audiences and/or targeted for site-specific functions, the Health Physics staff often refines radiation safety lectures and training materials. However, research staffs receive training that generally follows NUREG 1556, Volume 7, Appendix J (December 1999) and medical staffs receive training that generally follows NUREG 1556, Volume 9, Appendix J (October 2002). The RSO maintains authority to approve changes to the radiation safety training program. The radiation safety training program may be examined in detail during routine NRC inspections.

ITEM #9 ATTACHMENT
FACILITIES AND EQUIPMENT

1. Irradiators. WRAMC will ensure that each area where a self-shielded irradiator is located corresponds to the 'Conditions of Normal Use' and 'Limitations and/or Other Considerations of Use' on the respective irradiator Sealed Source and Device (SSD) Registration Certificate; the floor beneath each self-shield irradiator is adequate to support the weight of the irradiator; each self-shielded irradiator is secured to prevent unauthorized access or removal; and each area where a self-shielded irradiator is located is equipped with an automatically operated fire detection and control system (sprinkler, chemical, or gas) or the location of the area and other controls ensure a low-level radiation risk attributable to fires. Currently, the self-shielded irradiators are located as follows:

A. Building 503 (WRAIR), Forrest Glen Annex, Silver Spring, MD.

B. Building 503 (WRAIR), Forrest Glen Annex, Silver Spring, MD.

Procedures for routine maintenance of the self-shielded irradiators that follow manufacturer's written instructions are implemented and maintained. Non-routine maintenance is only performed by the irradiator manufacturer or by other persons authorized by the NRC or an Agreement State.

2. Facilities. The Radiation Safety Committee (RSC) maintains authority for approving radioactive material use, storage and waste facilities. Facilities are evaluated on their adequacy to protect health and minimize danger to life and property IAW 10CFR 30.33(a)(2) and 35.18(a)(3). As appropriate, the RSC considers factors such as ALARA design, planned use of facility, type and quantity of radioactive material, protective equipment, access control, contamination control, ventilation, filtration, shielding, alarms and radiation monitoring instruments when evaluating a facility for licensed activities. Isotope laboratories and use areas tend to have impervious floors, walls and countertops. Facility diagrams are attached for the Radiopharmacy Hot Lab, 7th Floor, and the Radiation Therapy Sealed Source Storage Room, 1st Floor, Building 2, WRAMC. Additional laboratory and facility diagrams may be examined during routine NRC inspections.

3. Instruments. To ensure compliance with 10CFR 20 and 35 requirements, WRAMC maintains a variety of radiation monitoring and survey instruments, as well as, gamma well counters and liquid scintillation counters. Radiation monitoring instruments will be calibrated by the manufacturer or other appropriately qualified person, business or agency. Additionally, WRAMC reserves the right to develop and implement survey meter calibration procedures compliant with 10CFR 20.1501 and 35.61. The RSO maintains authority for amending instrument specifications and the calibration program.

4. Dose Calibrators. Equipment used to measure dosages will be calibrated IAW nationally recognized standards or the manufacturer's instructions.

ITEM #10 ATTACHMENT
RADIATION SAFETY PROGRAM

1. Audit Program. In accordance with 10CFR 20.1101, the RSO evaluates, or arranges for guest auditors to evaluate, the radiation safety program at least once a year. The HPO staff also conducts routine internal audits of user authorizations on a semiannual basis. These internal audits address radioactive material security, labeling and posting requirements, availability of written radiation safety procedures, inventory logs, possession limits, survey logs, survey meter calibration, staff training status, and staff adherence to standard radiation safety procedures (e.g., use of gloves, lab coats, no food and drink in lab, etc.). The RSC is briefed on audit results. Audit findings are addressed and tracked to resolution by the RSO and/or the RSC. The HPO staff also conducts less formal spot checks for radioactive material security, labeling, meter calibrations and log books during routine area surveys (weekly, monthly or quarterly depending on the authorization). The RSO maintains authority for amending the audit program.

2. Ordering Radioactive Material. To ensure control of procurement and authorized use of radioactive material, the HPO maintains a centralized system for ordering. Unless exempted, all authorized users must receive HPO approval prior to ordering radioactive material and all shipments must be to a HPO receiving area. In this way, HPO can assure that possession limits are not exceeded and that users maintain compliance with their authorizations. Exemptions to this process have been granted. For example, the Nuclear Pharmacy currently holds an exemption and, independent of prior HPO approval, can order radioactive material within their authorization limits and receive packages. However, reports of radiopharmacy purchases are provided to the HPO.

3. Radioactive Material Receipt and Accountability. In accordance with 10CFR 20, 30 and 33, WRAMC has established cradle-to-grave tracking of radioactive materials. For non-exempt sealed sources, physical inventories are conducted at least every six months.

4. Occupational Dose. Occupational doses at WRAMC have been tracked for many years and are well known for the various occupational groups. Unmonitored workers are not likely to exceed 10% the allowable annual limits specified in 10CFR 20. Externally dosed workers specified by 10CFR 20.1502(a) will enter the dosimetry program and receive an extremity and/or whole body dosimeter. Internally dosed workers specified by 10CFR 20.1502(b) will enter the dosimetry program and be assessed for internal uptake via bioassay. Dosimetry services, currently provided by the Army, are NVLAP accredited.

5. Area Surveys. WRAMC has developed and implemented written procedures for area surveys IAW 10CFR 20.1101 that meets the requirements of 10CFR 20.1501 and 35.70.

6. Safe Use of Unsealed Radioactive Material. WRAMC has developed and implemented written procedures for safe use of unsealed licensed material that meets the requirements of 10CFR 20.1101 and 20.1301.

7. Spill Procedures. WRAMC has developed and implemented written procedures for safe response to spills of licensed material that meets the requirements of 10CFR 20.1101

8. Leak Tests. WRAMC has developed and implemented written procedures for leak tests that meet the requirements of 10CFR 20 and 35.67.

ITEM #11 ATTACHMENT
WASTE MANAGEMENT

1. Procedures. WRAMC has developed and implemented written waste disposal procedures for licensed material IAW 10CFR 20.1101, that also meet to applicable section of Subpart K to 10CFR 20 and 10CFR 35.92. Disposal of the licensed material in the irradiators will be by transfer of the irradiators to the supplier or to a licensee authorized to accept the irradiators.

2. Facility. Attached is a diagram of the Radioactive Waste Facility, Forrest Glen Annex. Solid waste is shipped from this facility, liquid waste is sampled for release to the sewer from this facility, and short-lived waste is decayed and released at this facility [Exception: Some short-lived waste is decayed and released by the Nuclear Pharmacy]. was originally designed, built and operated as a research reactor facility (decommissioned in 1979) with low vulnerability to hazards. The brick and concrete building is secured with locked metal doors, perimeter fence and locked gate. It has a forced circulation air system, heating and cooling system, alarm system, walk-in freezer, fire hydrant, and fire extinguisher.

NRC FORM 313A
(8-1999)

U.S. NUCLEAR REGULATORY COMMISSION

TRAINING AND EXPERIENCE

Note: Descriptions of training and experience must contain sufficient detail to match the training and experience criteria in the application regulations.

1. Name of Individual, Proposed Authorization (e.g. Radiation Safety Officer), and Applicable Training Requirements (e.g., 10CFR 35.50)

LTC JOHN R. MERCIER, PH.D., PE, DABR, SRO

2. For Physicians, State or Territory Where Licensed

3. CERTIFICATION

Specialty Board	Category	Month and Year Certified
American Board of Radiology	Diagnostic Radiological and Medical Nuclear Physics	June, 1995
Professional Engineer (Texas)	Nuclear Engineering License	March, 1995

4. DIDACTIC TRAINING

Description of Training	Location	Clock Hours	Dates of Training
Radiation Physics and Instrumentation	University of Texas at Austin	300	Sep 81 – Dec 84
	Cornell University, NY	300	Aug 89 – May 91
	Univ. of Texas Health Science Center	550	Aug 96 – Aug 99
Radiation Protection	University of Texas at Austin	50	Sep 81 – Dec 84
	Cornell University, NY	100	Aug 89 – May 91
	Univ. of Texas Health Science Center	150	Aug 96 – Aug 99
Mathematics Pertaining to the Use and Measurement of Radioactivity	University of Texas at Austin	200	Sep 81 – Dec 84
	Cornell University, NY	150	Aug 89 – May 91
	Univ. of Texas Health Science Center	100	Aug 96 – Aug 99
Radiation Biology	University of Texas at Austin	50	Sep 81 – Dec 84
	Cornell University, NY	150	Aug 89 – May 91
	Univ. of Texas Health Science Center	150	Aug 96 – Aug 99
Chemistry of Byproduct Material for Medical Use	Univ. of Texas Health Science Center	100	Aug 96 – Aug 99
Radiation Dosimetry	University of Texas at Austin	50	Sep 81 – Dec 84
	Cornell University, NY	150	Aug 89 – May 91
	Univ. of Texas Health Science Center	150	Aug 96 – Aug 99

5. PRACTICAL EXPERIENCE WITH RADITION (Actual use of radionuclides or equivalent experience)				
Description of Experience	**Name of Supervising Individual**	**Location and Corresponding Material License Number**	**Dates and Clock Hours of Experience**	**Related Radiation Safety Exam Score**
Nuclear Medical Science Officer, U.S. Army Environmental Hygiene Agency. Radiation protection, dosimetry and calibration duties for: Any byproduct material with atomic no.'s 1 – 84, any form, not to exceed 800 mCi each or 10 Ci total. Any byproduct material with atomic no.'s 1 – 100, any form, not to exceed 15 uCi each or 500 uCi total. J.L Shepard Cs-137 sealed 130 mCi calibration source. Various plutonium and uranium sources.	LTC Eugene Potter, CHP	Aberdeen Proving Ground, MD USNRC Licenses: #19-09880-01, #SMB-707and #SNM-860	Jan 85 – Dec 85 (900 hours)	N/A
Radiation Safety Officer, Darnall Army Community Hospital. Radiation protection, dosimetry radioactive waste management, health physics program management and calibration duties for: Any byproduct material with atomic no.'s 1 – 83 for use as radiopharmaceuticals in diagnosis and therapy. Various calibration sources.	MAJ Jerome Karwacki,M.D.	Fort Hood, TX USNRC License #42-19113-01	Jan 86 – Dec 88 (6000 hours)	N/A
Graduate Student, Cornell University. Senior reactor operator for TRIGA reactor, with 10^{14} neutron flux in core and 10^{12} neutron flux at beam ports. Gamma cell operator with 10 MCi Co-60 irradiation source.	Dr. K. Bingham Cady, Sc.D.	Ithaca, NY USNRC License #SOP-10973	Aug 89 - May 91 (1000 hours)	N/A
Project Engineer, Defense Nuclear Agency Plutonium Mining Project. Spectroscopy, calibration and respiratory protection duties for a unique environmental restoration project. Various plutonium and americium samples and sources.	Dr. Ed Bramlitt, Ph.D.	Johnston Island, Pacific Ocean	Jun 91 – Jun 92 (1000 hours)	N/A
Radiation Safety Officer (Broad Scope), Tripler Army Medical Center. Radiation protection, dosimetry radioactive waste management, health physics program management and calibration duties for: Any byproduct material with atomic no.'s 1 – 83 for use as radiopharmaceuticals in diagnosis and therapy. J.L Shepard Cs-137 sealed 2200 Ci irradiation source. Various calibration sources.	COL Tom Cashman, M.D.	Honolulu, HI USNRC License #53-00458-04	Jun 92 – Jun 96 (8000 hours)	N/A
Doctoral Candidate, University of Texas Health Science Center. Various research and calibration sources.	Dr. Dave Kopp, Ph.D.		Aug 96 – Aug 99 (100 hours)	N/A
Nuclear Scientist, U.S. Army Nuclear and Chemical Agency. Scientific editor and contributing author to a North Atlantic Treaty Organization allied engineering publication on sampling and identification of radiological agents.	Dr. Chuck Davidson, Ph.D.		Aug 99 – Aug 02 (500 hours)	N/A

Radiation Safety Officer (Broad Scope), Walter Reed Army Medical Center. Manages one of the largest health physics programs in both breadth and depth in the United States. Program oversight for medical diagnostic and therapeutic uses; Cs-137 and Co-60 irradiators; equipment calibration; human and animal research; pharmaceutical research and development; and related biomedical applications. Other institutions operating under the WRAMC NRC licenses include the Walter Reed Army Institute of Research, the Naval Medical Research Command and the Armed Forces Institute of Pathology.	COL Dallas Hack, M.D.	Washington D.C. USNRC Licenses #08-01738-02 #08-01738-03	Sep 02 – present (3000 hours)	N/A

6. FORMAL TRAINING

Degree, Area of Study	Name of Program and Location with Corresponding Materials License Number	Dates	Name of Organization that Approved the Program (e.g., Accreditation Council for Graduate Medical Education) and the Applicable Regulation (e.g., 10 CFR 35.294)
B.E.S., Nuclear Engineering	University of Texas at Austin		ABET Accredited
M.Eng., Nuclear Engineering	Cornell University, NY		ABET Accredited
Ph.D., Radiological Physics	Univ. of Texas Health Science Center	Ex. 6	CAMPEP Accredited

The American Board of Radiology

Organized through the cooperation of the
American College of Radiology, the American Roentgen Ray Society,
the American Radium Society, the Radiological Society of North America,
the Section on Radiology of the American Medical Association,
the American Society for Therapeutic Radiology and Oncology, the Association of
University Radiologists, and American Association of Physicists in Medicine
Hereby certifies that

John Rene Mercier, M.E.

Has pursued an accepted course of graduate study
and clinical work, has met certain standards and qualifications and
has passed the examinations conducted under the authority of
The American Board of Radiology
On this seventh day of June, 1995
Thereby demonstrating to the satisfaction of the Board
that he is qualified to practice the specialty of

Diagnostic Radiological and Medical Nuclear Physics

1934

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LIEUTENANT COLONEL JOHN R. MERCIER, Ph.D., PE, DABR, SRO
Leader, U.S. Army Radiological Advisory Medical Team
Chief, Health Physics, Walter Reed Army Medical Center
Radiation Safety Officer, Walter Reed Army Medical Center
Radiation Safety Officer, North Atlantic Regional Medical Command
Chair, DoD Weapons of Mass Destruction Human Response Panel
Senior NATO Umpire, Operational and Forensic Sampling of Radiological Agents

Walter Reed Army Medical Center
6900 Georgia Ave., NW
Bldg 41, Room 38
Washington, D.C. 20307-5001
wk: (202) 356-0058
john.mercier@us.army.mil

FORMAL EDUCATION

Doctor of Philosophy (Radiological Physics), The University of Texas Health Science Center, San Antonio, Texas.
Master of Engineering (Nuclear), Cornell University, Ithaca, New York,
Bachelor of Engineering Science (Nuclear), The University of Texas, Austin, Texas

EX 6

PROFESSIONAL CREDENTIALS

Diplomate, American Board of Radiology, Dual Certified in Diagnostic Radiological Physics and Medical Nuclear Physics, DABR Physicist # P1779, 1995
Licensed Medical Physicist, Texas, # MP0402, 1995
Licensed Professional Nuclear Engineer, Texas PE Registration # 80363, 1995
Licensed Nuclear Plant Senior Reactor Operator, TRIGA Reactor, NRC License #SOP-10973, 1990
Certified Hazard Control Manager, International Board of Hazard Control Management, Master Certification # 2490, 1993
"A" Proficiency Designator – Professional credential awarded to recognized experts by the Surgeon General of the United States Army, 2003

AFFILIATIONS AND PROFESSIONAL MEMBERSHIPS

Member, Sigma Xi – The Scientific Research Society
Member, Tau Beta Pi – The National Engineering Honor Society
Member, American Nuclear Society
Member, Health Physics Society
- Past President for Hawaii Chapter

Member, American Association of Physicists in Medicine
North Atlantic Treaty Organization (NATO):
- Senior NATO Umpire, Land Group 7 Expert Subgroup on Sampling and Identification of Biological, Chemical and Radiological Agents
- Past Head of U.S. Delegation, Expert Subgroup on Sampling and Identification of Radiological Agents
- Past Member, Land Group 7 on Joint Nuclear, Biological and Chemical (NBC) Defense
- Past Member, Land Group 7, Expert Working Group on Low-Level Radiation
- Past Member, Operational NBC Working Group
- Past Member, Medical NBC Working Party
- Past Member, Task Group on Radiation Treatments and Countermeasures

The Technical Cooperation Program (TTCP) of the American, British, Canadian, and Australian (ABCA) Alliance:
- Member, Technical Panel 13 on Radiation Hazards

Department of Defense:

Leader, U.S. Army Radiological Advisory Medical Team
Chair, DoD Weapons of Mass Destruction Human Response Panel
Lead Scientist, Special Weapons Operational Reconnaissance Detachment
Past Member, Nuclear Warfare Casualty Panel of Experts, Joint Readiness Clinical Advisory Board
Standing Member, DoD RADIAC Working Group
Member, Joint DoD/DOE Nuclear Weapon Accident Response Steering Group (NWARSG) and the NWARSG Technical Working Group

PUBLICATIONS

Mercier, J. R., *Mission and Capabilities of the U.S. Army Radiological Assistance Medical Team*, Proceedings of the 11th International Radiation Protection Association (IRPA), Madrid, Spain, May, 2004 (in print).

Haslip, D. S., and **Mercier, J. R.**, *A NATO Exercise on Radiological Sampling*, submitted to Health Physics in March, 2004.

Groeber, E., and **Mercier, J. R.**, *Development of Low-Cost Aerial Survey and Spectroscopy Systems*, Proceedings of the 37th Health Physics Society Midyear Topical Meeting: Radiological Air Monitoring and Dosimetry, Augusta, GA, February 8-11, 2004, p. 220-230.

Mercier, J. R. (Ed.), *Senior Umpire Report: 2003 NATO Field Trials for Sampling and Identification of Radiological Agents (SIRA)*, North Atlantic Treaty Organization (NATO) Document Number PfP(NAAG-LG/7-SIBCRA)D(2003)2, December, 2003.

Anno, G., R. Bloom, **J. R. Mercier**, R. W. Young, *Dose Response Relationships for Acute Ionizing Radiation Lethality*, Health Physics, 84(5), 2003, p. 565-575.

Mercier, J. R., and Moss, S. C., *The U.S. Army Radiological Advisory Medical Team*, Proceedings of the 36th Health Physics Society Midyear Topical Meeting: Radiation Safety Aspects of Homeland Security and Emergency Response, San Antonio, TX, January 26-29, 2003, p. 158-163.

Lankipalli, B. R., W. D. McDavid, S. B. Dove, E. Wieckowska, R. G. Waggener, and **J. R. Mercier**, *Comparison of Five Methods for the Derivation of Spectra for a Constant Potential Dental X-Ray Unit*, Dentomaxillofacial Radiology, 30, 2001, p. 264-269.

Mercier, J. R., Commander's Guide on Low-Level Radiation (LLR) Exposure in Military Operations, Edition 2, Standardization Agreement 2473, North Atlantic Treaty Organization, 2002.

Mercier, J. R., Commander's Guide on Nuclear Radiation Exposure of Groups During War, Edition 6, NATO Standardization Agreement 2083, North Atlantic Treaty Organization, 2001.

Mercier, J. R., D. T. Kopp, W. D. McDavid, S. B. Dove, J. L. Lancaster, and D. M. Tucker, *Modification and Benchmarking of MCNP for Low-Energy Tungsten Spectra*, Medical Physics, 27(12), 2000, p. 2680-2687.

Mercier, J. R., D. T. Kopp, W. D. McDavid, S. B. Dove, J. L. Lancaster, and D. M. Tucker, *Measurement and Validation of Benchmark-Quality Thick-Target Tungsten X-Ray Spectra below 150 kVp*, Radiation Research, 154, 2000, p. 564-581.

Mercier, J. R., D. T. Kopp, W. D. McDavid, S. B. Dove, J. L. Lancaster, and D. M. Tucker, *Using Measured 30-150 kVp Polychromatic Tungsten X-Ray Spectra to Determine Ion Chamber Calibration Factors*, Health Physics, 79(4), 2000, p. 402-406.

Mercier, J. R. (Ed.), *NATO Handbook for Sampling and Identification of Radiological Agents, Volume 1 (Operational)*, Allied Engineering Publication 49, North Atlantic Treaty Organization, 2000.

Mercier, J. R., Medical Aspects of Nuclear Weapons and Radiation Effects, Chapter 3 of the FY 01/02 Army Specific Military Requirements for Nuclear and Radiation Effects Information, published by the U.S. Army Deputy Chief of Staff for Operations and Plans (DCSOPS), August 2000.

Mercier, J. R., *Measurement and Monte Carlo Prediction of Diagnostic Tungsten X-Ray Spectra,* Ph.D. Dissertation, Graduate School of Biomedical Sciences, The University of Texas Health Science Center, San Antonio, TX, 1999. Available from UMI Dissertation Services, Ann Arbor, MI, 1999, UMI No. 9938769.

Seibert, J. A. (Chair), T. Bogucki, T. Ciona, J. Dugan, W. Huda, A. Karellas, **J. Mercier**, E. Samai, J. Sheppard, B. Stewart, O. Suleiman, D. Tucker, R. Uzenoff, J. Weiser, and C. Willis, *Acceptance Testing and Quality Control of Photostimulable Storage Phosphor Imaging Systems, Report of Task Group #10*, American Association of Physicists in Medicine, 1998.

Willis, C. E., **J. Mercier**, M. Patel, *Modification of Conventional Quality Assurance Procedures to Accommodate Computed Radiography*, Proceedings of the 13th Conference of Computer Applications in Radiology, Society for Computer Applications in Radiology, Denver, CO, 1996.

Mercier, J. R., and Bramlitt, E. T., *A Soil Cleanup on Johnston Atoll*, Proceedings of the First Symposium on Soil Cleanup in the Pacific Islands, American Society of Civil Engineers, Honolulu, HI, 1993.

Moroney, J. D., Johnson, N. R., Moroney, K. S., **Mercier, J. R.**, *An Improved Method for Removing Transuranics from Coral Soil at Johnston Atoll*, Proceedings of the 1992 Federal Environmental Restoration Conference, Hazardous Materials Control Resources Institute, Vienna, VA, 1992.

ABSTRACTS AND POSTERS

Mercier, J. R., The U.S. Army Radiological Advisory Medical Team, 6th Annual Force Health Protection Conference, Albuquerque, NM, August 11-17, 2003.

Liu, H. L., Y. Pu, T. Andrews, **J. Mercier**, P. T. Fox, and J.-H. Gao, Cerebral Blood Flow Measurement Using Adaptive Threshold for Singular Value Decomposition Technique on Dynamic Contrast Agent MR Perfusion Imaging, 7th Meeting of the International Society for Magnetic Resonance in Medicine, Philadelphia, PA, 1999.

Mercier, J. R., D. T. Kopp, D. M. Tucker, C. E. Willis and J. L. Lancaster, X-Ray Spectra Resolution Requirements for Characterization of Image Receptors, 84th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, Il, 1998.

Mercier, J. and D. Kopp, Preliminary Evaluation of the Monte Carlo Code MCNP4b for Diagnostic X-Ray Spectra, 40th Annual Meeting of the American Association of Physicists in Medicine, Medical Physics, 1998, 25(7), p. A105.

Willis, C. E., **J. R. Mercier**, M. G. Patel, Unresolved Issues in Computed Radiography, 38th Annual Meeting of the American Association of Physicists in Medicine, Medical Physics, 1996, 23(6), p.1076.

PROFESSIONAL AND LEADERSHIP EXPERIENCE

Chief, Health Physics 8/02 – present
Walter Reed Army Medical Center, Washington, D.C.

Lead the U.S. Army Radiological Advisory Medical Team (RAMT) in rapid response missions to save lives anywhere in the world. Chair the DoD Weapons of Mass Destruction Human Response Panel which is responsible for defining casualty criteria and developing casualty prediction models. Serve as executive agent and Radiation Safety Officer for broad-scope USNRC radioactive material and irradiator licenses (#'s 08-01738-02 and 08-01738-02). Direct comprehensive health physics services for world-renowned medical and research centers to include Walter Reed Army Institute of Research, the Armed Forces Institute of Pathology and Walter Reed Army Medical Center. Serve as regional Radiation and Laser Safety Officer and provide oversight and mission support services to Army medical facilities within the 21-state North Atlantic Regional Medical Command's umbrella of responsibility. Identify and train military scientists, as well as, develop test plans, techniques and procedures for the DoD Special Weapons Operational Reconnaissance Detachment (SWORD) in support of Combatant Commanders. Manage ~$500K annually and supervise 20 health physics professionals.

Nuclear Scientist 8/99 – 8/02
U.S. Army Nuclear and Chemical Agency, Springfield, VA

Served as primary consulting subject matter expert (SME) to Army Staff and other DoD/NATO/U.S. Government agencies on the medical effects of nuclear weapons and radiation. Set policy on friendly troop safety risk criteria and enemy personnel casualty criteria for nuclear weapons effects. Developed casualty estimation models for nuclear, biological and chemical (NBC) weapons. Served on numerous DoD and NATO SME panels for NBC research, operational doctrine and equipment development. Developed Army R&D requirements for radiobiology, biomedical technology and NBC operations. Served as Alternate Army Reactor Officer for the Army Reactor Office that maintains oversight of WSMR and APG fast burst reactors. Served on the Nuclear Employment Augmentation Team in support of Combatant Commanders.

Doctoral Student ( ) EX6
The University of Texas Health Science Center, San Antonio, TX

Research focused on diagnostic imaging, the use of Monte Carlo codes to simulate x-ray beam formation and transport, measurement of x-ray spectra, computed radiography and other digital imaging systems. Teaching duties and course work broadly covered the medical radiological physics profession.

Chief, Health Physics 6/92 – 6/96
Tripler Army Medical Center, Honolulu, HI 96859-5000

Executive agent and Radiation Safety Officer for a broad-scope USNRC radioactive material license (#53-00458-04). Directed comprehensive health physics services for a major teaching and research hospital. Developed or approved nuclear medicine, diagnostic radiology and radiation therapy QC protocols. Performed gamma camera acceptance testing. Evaluated and approved all Pacific region radiological facility designs. Conducted health and medical physics audits. Routinely provided formal and informal radiation safety training and imaging science lectures to nuclear medicine and radiology technologists. Routinely counseled physicians, patients, and hospital staff on radiation effects. Occasionally lectured radiology residents in imaging physics.

Project Engineer, Johnston Atoll Plutonium Mining Project 5/91 - 6/92
Defense Nuclear Agency, Kirtland AFB, NM 87115-5000

Spearheaded the Defense Nuclear Agency's $15 million Plutonium Mining Project. Led world's first successful remediation of plutonium contaminated soil. Designed several multichannel analyzer radioassay systems using sodium iodide and high-pure germanium spectroscopy detectors. Developed and enforced various radiation safety, bioassay, and respiratory protection programs.

Graduate Student [redacted] Ex 6
Cornell University, Ithaca, NY

Research focused on characterizing radiation damage to electronic components using the Cornell gamma irradiation facility. Gained experience as a federally licensed nuclear plant senior reactor operator (License # SOP-10973) that required mastery of all research facilities and radiological monitoring equipment within the reactor building. Developed experimental research protocols for the TRIGA reactor and assisted in training a reactor operator. Course work broadly covered the nuclear engineering profession.

Radiation Protection Officer 12/85 - 12/88
Darnall Army Community Hospital, Ft Hood, TX 76544-5063

Executive agent and Radiation Safety Officer for USNRC limited-scope radioactive material license (#42-19113-01). Hospital consultant for health physics, diagnostic radiology physics, & medical nuclear physics. Developed radiation protection, radiology QA/QC, & nuclear medicine QA/QC programs. Performed health & medical physics audits, calibrations, x-ray system & shielding surveys. Troubleshooted image quality problems. Trained all radiation workers.

Nuclear Medical Science Officer 1/85 - 12/85
US Army Environmental Hygiene Agency, APG, MD 21010-5422

Consulted Army and DoD installations for adequate radiation protection, radiology QA/QC, and nuclear medicine QA/QC programs. Wrote safety and QC procedures and evaluated x-ray system performance. Conducted radiological shielding evaluations and health hazard assessments of equipment and facilities.

Commander, Detachment 1, A Company 12/82 – 12/84
249th Supply and Transport Battalion, 49th Armored Division,
Texas Army National Guard, Killeen, TX

Exercised command. Led with honor and respect.

Platoon Leader, HHQ Company 8/81 – 11/82
249th Supply and Transport Battalion, 49th Armored Division,
Texas Army National Guard, Austin, TX

Developed leadership skills.

RECENT PROFESSIONAL SHORT COURSES AND EXERCISES

Radiological Mass Casualty Medical Preparations Course, 17-20 Feb 2004
Course Director and Lead Instructor, Walter Reed Army Medical Center

Nuclear, Radiation and High-Yield Explosives (NRE) Course, 10 Feb – 4 May 2004
Invited Lecturer, Uniformed Services University of the Health Sciences

North Atlantic Treaty Organization (NATO) Sampling and Identification of Radiological Agents (SIRA) Field Trials, 21-26 Sep 2003
Senior NATO Umpire, NATO Land Group 7 (Joint NBC Defense)

Radiological Accident Command, Control, and Coordination Course, 18-21 Aug 2003
Student, Defense Nuclear Weapons School

Hazard Prediction Assessment Capability (HPAC) Software Basic Course, 15-18 Jul 2003
Student, Defense Threat Reduction Agency

Medical Effects of Ionizing Radiation Course, 6-7 May 2003
Student, Uniformed Services University of the Health Sciences

Center for Disease Control (CDC) Radiological Event Tabletop Exercise – Louisville, KY, 11 Feb 03
Leader, U.S. Army Radiological Advisory Medical Team, DoD

Train the Trainer: Transportation Emergency Preparedness Program, 25 Jan 2003
Student, Department of Energy -- National Nuclear Security Administration

Operation Diligent Warrior Nuclear Weapon Accident Exercise, 7-25 Oct 2002
Leader, U.S. Army Radiological Advisory Medical Team, DoD

NATO Staff Officer's NBC Defense Policy Course, 9-13 Jul 2001
Lecturer and Student, The NATO School – Supreme Headquarters Allied Powers Europe

Joint Nuclear Operations and Targeting Course, 12-16 Jun 2000
Student, Defense Nuclear Weapons School