NRC FORM 374
(10-89)

U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 39, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	
1. Diagnostic & Interventional Cardiology, Inc. d.b.a. The Dayton Heart Center 2. 1530 Needmore Road Dayton, OH 45414	3. License number 34-26432-01 4. Expiration date September 30, 1997 5. Docket or Reference No 030-32853

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Any byproduct material identified in 10 CFR 35.100	A. Any radiopharmaceutical identified in 10 CFR 35.100	A. As needed
B. Any byproduct material identified in 10 CFR 35.200	B. Any radiopharmaceutical identified in 10 CFR 35.200 (excluding xenon-133)	B. As needed

9. Authorized Use:

A. Medical use described in 10 CFR 35.100.

B. Medical use described in 10 CFR 35.200 (excluding xenon-133).

CONDITIONS

10. Licensed material shall be used only at the licensee's facilities located at 1530 Needmore Road, Dayton, Ohio.

11. Radiation Safety Officer: Bradley A. Weber, D.O.

mt 30

COPY 2

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number 34-26432-01

Docket or Reference number 030-32853

12. Licensed material listed in Item 6 above is only authorized for use by, or under the supervision of, the following individuals for the materials and uses indicated:

Authorized Users	Material and Use
Bradley A. Weber, D.O.	35.100 and 35.200 (excluding xenon-133)
John Knox, D.O.	35.100 and 35.200 (excluding xenon-133)
Richard R. Black, D.O.	35.100 and 35.200 (excluding xenon-133)
Jeffrey D. Cushman. D.O.	35.100 and 35.200 (excluding xenon-133)

13. Pursuant to 10 CFR Part 40, "Domestic Licensing of Source Material," the licensee is authorized to possess, use, transfer, and import up to 999 kilograms of depleted uranium contained as shielding material.

14. The licensee shall maintain records of information related to decommissioning at the location listed in item 10 of this license as specified in 10 CFR 30.35(g) until this license is terminated by the Commission.

15. The licensee may not possess and use materials authorized in Items 6, 7, and 8 until:

    1. The licensee has constructed the facilities and obtained the equipment described in the application and supporting documentation; and

    2. The U. S. Nuclear Regulatory Commission, Region III, ATTN: Chief, Materials Licensing Section, 799 Roosevelt Road, Glen Ellyn, IL 60137 has been notified that activities authorized by the license will be initiated.

16. Within 30 days of the date of a decision not to complete the facility, acquire equipment, or possess and use authorized material, the licensee must notify the Commission in writing, of the decision.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number
34-26432-01

Docket or Reference number
030-32853

17. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below, except for minor changes in the medical use radiation safety procedures as provided in 10 CFR 35.31. The U.S Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.

A. Application dated July 8, 1992.

OR THE U.S. NUCLEAR REGULATORY COMMISSION

Date August 25, 1992

By _____
Materials Licensing Section, Region III

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM
AND
REGIONAL LICENSING SECTIONS

(FOR LFMS USE)
INFORMATION FROM LTS

PROGRAM CODE:
STATUS CODE: 3
FEE CATEGORY:
EXP. DATE: 0
FEE COMMENTS:
DECOM FIN ASSUR REQD?

LICENSE FEE TRANSMITTAL

A. REGION III

1. APPLICATION ATTACHED
APPLICANT/LICENSEE: DIAGNOSTIC & INTERVENTIONAL
RECEIVED DATE: 920713
DOCKET NO: 3032853
CONTROL NO.: 393682
LICENSE NO.:
ACTION TYPE: NEW LICENSEE

2. FEE ATTACHED
AMOUNT: $710.00
CHECK NO.: 2412

3. COMMENTS

SIGNED P. Leveleff
DATE 7-14-92

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE 03 IS ENTERED) ✓

1. FEE CATEGORY AND AMOUNT: 7C $710

2. CORRECT FEE PAID. APPLICATION MAY BE PROCESSED FOR:
AMENDMENT
RENEWAL
LICENSE ✓

3. OTHER

SIGNED Rita Jacques
DATE 7/16/92

RECEIVED
JUL 20 1992
REGION III

AUG 3 1 1992

Diagnostic & Interventional
Cardiology, Inc.
ATTN: Charles S. Walker
1530 Needmore Road
Dayton, OH 45414

Dear Mr. Walker:

Enclosed is your NRC License Number 34-26432-01 in accordance with your request.

Please review the enclosed document carefully and be sure that you understand all conditions. You must conduct your program involving radioactive materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:

1. Operate in accordance with NRC regulations 10 CFR Part 19, "Notices, Instructions and Reports to Workers; Inspections," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.

2. Possess radioactive material only in the quantity and form indicated in your license.

3. Use radioactive material only for the purpose(s) indicated in your license.

4. Notify NRC in writing of any change in mailing address.

5. Request and obtain appropriate amendment if you plan to change ownership of your organization, change locations of radioactive material, or make any other changes in your facility or program which are contrary to your license conditions or representations made in your license application and any supplemental correspondence with NRC. Any amendment request should be accompanied by the appropriate fee specified in 10 CFR Part 170.

6. Submit a complete renewal application with proper fee or termination request at least 30 days before the expiration date on your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of radioactive material after your license expires is a violation of NRC regulations.

7. Request termination of your license if you plan to permanently discontinue activities involving radioactive material prior to your expiration date.

You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions, and representations in your license application will result in enforcement action against you in accordance with the General Policy and Procedures for NRC Enforcement Actions, 10 CFR Part 2, Appendix C.

If you have any questions or require clarification of any of the above stated information, contact us at (708) 790-5625.

Sincerely,

Original Signed By
Peter J. Lee, Ph.D.
Materials Licensing Section

Enclosure: New License

RIII

Lee/dg
08/07/92

THE
DAYTON
HEART
CENTER

C. David Joffe, MD, FACC

Joel H. Tobiansky, MD, FACC

Timothy D. Markus, MD

July 8, 1992

U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Rd.
Glen Ellyn, Illinois 60137

Gentlemen:

Enclosed are two original copies of our application for a material license. Also included is our check in the amount of $710.00 for the application fee.

We would appreciate your earliest attention to this application. Please let us know if there are questions or if additional information is needed.

Sincerely,

Charles S. Walker
Administrator

CSW/tb
Encl.

2661 Salem Avenue
Suite 232
Dayton, Ohio 45406
513 . 277 . 4274
Fax 513 . 277 . 8476

NRC FORM 313
(9-88)
10 CFR 30, 32, 33, 34, 35 and 40

APPLICATION FOR MATERIAL LICENSE

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED BY OMB
3150-0120
Expires: 6-30-90

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.

APPLICATIONS FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY, NMSS
WASHINGTON, DC 20555

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS. IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIALS SAFETY SECTION B
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION II
NUCEAR MATERIALS SAFETY SECTION
101 MARIETTA STREET, SUITE 2900
ATLANTA, GA 30323

IF YOU ARE LOCATED IN:

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION III
MATERIALS LICENSING SECTION
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
MATERIAL RADIATION PROTECTION SECTION
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TX 76011

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION V
NUCLEAR MATERIALS SAFETY SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

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 JURISDICTION.

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

[X] A. NEW LICENSE
[ ] B. AMENDMENT TO LICENSE NUMBER _____
[ ] C. RENEWAL OF LICENSE NUMBER _____

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include Zip Code)*

Diagnostic & Interventional Cardiology, Inc.
d.b.a. The Dayton Heart Center
1530 Needmore Road
Dayton, Ohio 45414

3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED.

SAME

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION | TELEPHONE NUMBER

David E. Weiner, Senior Consultant, NMA-Medical Physics Consultation | (313) 826-8870

SUBMIT ITEMS 5 THROUGH 11 ON 8½ 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 AND EXPERIENCE

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

9. FACILITIES AND EQUIPMENT

10. RADIATION SAFETY PROGRAM

11. WASTE MANAGEMENT

12. LICENSEE FEES *(See 10 CFR 170 and Section 170.31)*
FEE CATEGORY 7C | AMOUNT ENCLOSED $ 710.00

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, 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.

SIGNATURE—CERTIFYING OFFICER	TYPED/PRINTED NAME	TITLE	DATE
X [signature]	X CHARLES S WALKER	X ADMINISTRATOR	X 7/8/92

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	COMMENTS
APP	Fuel 13	7C	
AMOUNT RECEIVED	CHECK NUMBER		
$710	2412		

APPROVED BY: Rita Jacques 7/16/92 | DATE

RECEIVED
JUL 18 1992
REGION III

NRC FORM 313 (9-88)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 7.5 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE OFFICE OF INFORMATION AND REGULATORY AFFAIRS, OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

CONTROL NO. 93682

TABLE OF CONTENTS
(Appendix Reference to Guide 10.8, Rev. 2)

TABLE OF CONTENTS (Continued)

ITEM #5		ITEM #6
BYPRODUCT MATERIAL	AMOUNT	PURPOSE
Material in 35.100	As needed	Medical use
Material in 35.200 except Xenon-133	As needed	Medical use

INDIVIDUALS RESPONSIBLE FOR RADIATION
SAFETY PROGRAMS - THEIR TRAINING & EXPERIENCE

Item #7.1

AUTHORIZED USERS FOR MEDICAL USE

AUTHORIZED USER	AUTHORIZATION
Bradley A. Weber, D.O.	35.100, 35.200
John Knox, D.O.	35.100, 35.200
Richard R. Black, D.O.	35.100, 35.200
Jeffrey D. Cushman, D.O.	35.100, 35.200

For above physicians, refer to the application for license #34-25976-01 for evidence of training and experience.

Item #7.3

RADIATION SAFETY OFFICER

Bradley A. Weber, D.O. with consultation from NMA/Mallinckrodt, Medical, Inc.

Item #8.1

TRAINING PROGRAM: Appendix A

We will establish and implement the model training program that was published in Appendix A to Regulatory Guide 10.8, Revision 2. The following identifies the groups of workers who will receive training and the method and frequency of training. Records of training will include list of attendees, dates, and topics and will be retained for three years.

INDIVIDUALS	FREQUENCY	METHOD
Chief Nuclear Medicine Technologist	Per the model program	Review by RSO, authorized user and/or as provided by our participation in visiting consultants.
Nuclear Medicine Technologist	Per the model program	Review by RSO, authorized user, Chief Nuclear Medicine Technologist and/or as provided by our visiting consultants.
Other staff as appropriate	At orientation and annually thereafter	Review by RSO, authorized user, Chief Nuclear Medicine Technologist and/or participation in health physics audits or review of the audit reports as provided by our visiting consultants.

Item #9.1

FACILITIES AND EQUIPMENT DIAGRAM

[ ] Lead Castle

Lead Shielding

5 L-Shield
9½" L x 10½" W x 16½" H x ½" T

6 Lead Castle
15" L x 16" W x 8" H x 2" T

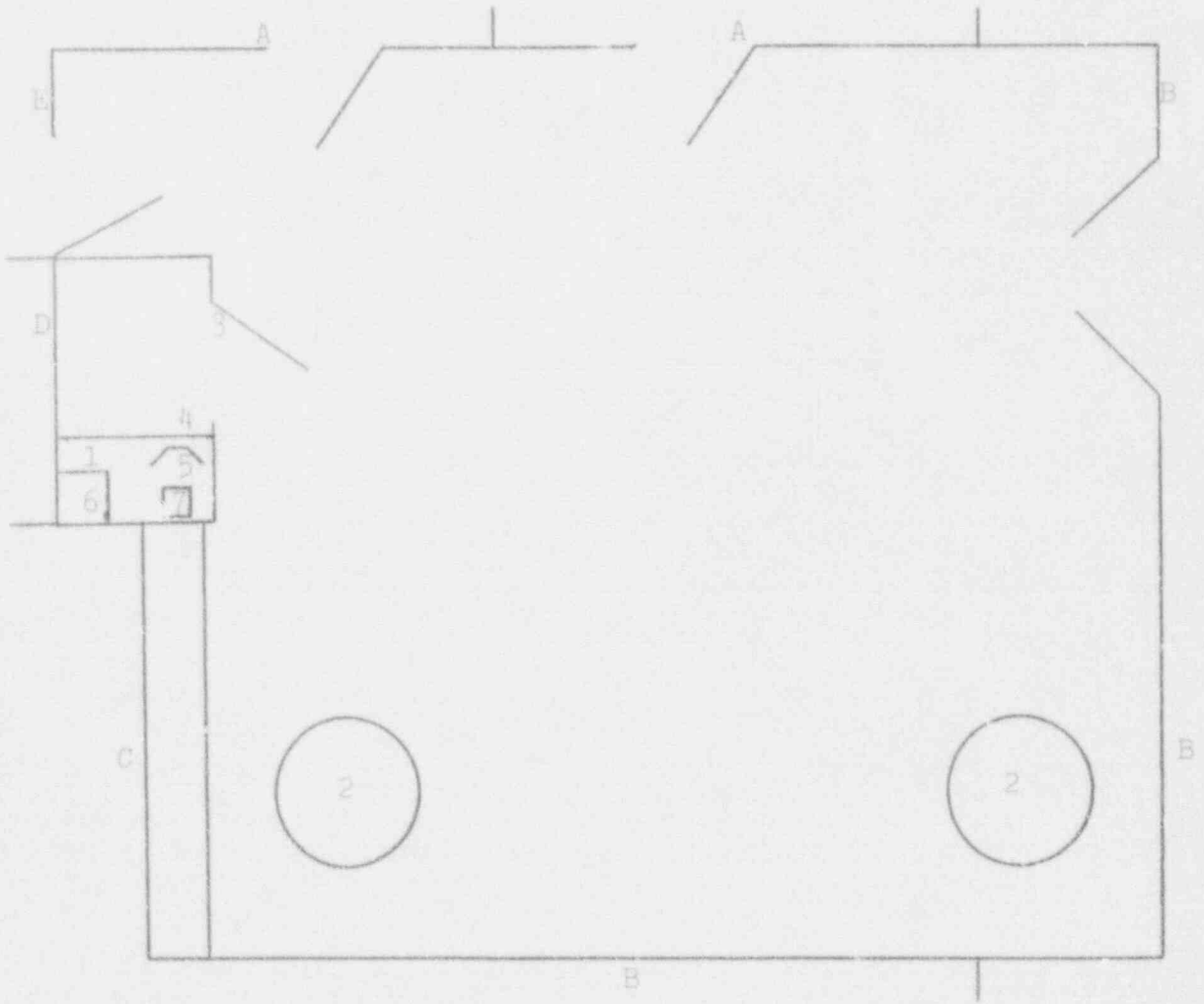
___ L x ___ W x ___ H x ___ T

___ L x ___ W x ___ H x ___ T

1 Survey Equipment
___ Uptake/Well
2 Camera
3 Lockable Door
4 Receipt Area
___ Generator
5 Kit/Dose Preparation
5 Isotope Storage
6 Waste Storage
7 Dose Calibrator
___ Fume Hood

Adjacent Areas

A	Treadmill
B	Corridor
C	Lounge
D	Darkroom
E	X-ray



Scale: 1"=5'

Page: 9-1
Prepared: 7/18/92

93682

Item #9.2

SURVEY INSTRUMENT CALIBRATION: APPENDIX B

We will establish and implement the model procedure for calibrating survey instruments that was published in Appendix B to Regulatory Guide 10.8, Revision 2. Otherwise, the survey instruments will be calibrated after servicing and at least annually by the manufacturer or by a commercial service such as NMA/Mallinckrodt Medical, Inc. The latter will be done in accordance with the procedure outlined in application for NMA's NRC license #34-16272-01 or by any other facilities specifically licensed by the NRC and/or an Agreement State. Records of these calibrations will be maintained and recommendations for repair will be followed. A survey meter will not be used beyond the anniversary of its last successful calibration.

Item #9.3

DOSE CALIBRATOR CALIBRATION

The dose calibrator will be calibrated as follows:

A. At least two sealed sources will be used to establish accuracy. They will consist of Co-57 and/or Ba-133 and Cs-137 with activities in excess of 50 uCi each.

   The accuracy of the assay of these standards will be at least ±5% and traceable to National Bureau of Standards sources. The dose calibrator will be checked for accuracy upon installation or repair and at annual intervals using the sealed sources listed above. The activity displayed by the dose calibrator must agree with the stated assay, corrected for decay, to within ±10%. If the unit displays readings with an error greater than ±10%, the unit will be repaired or replaced.

B. The dose calibrator will be checked for constancy each day of use. This will be accomplished using a Cs-137 standard. The sealed source will be placed in the chamber and the unit set to measure that nuclide. The activity displayed with background and decay considered, must fall within ±10% of the predicted activity based on the value obtained at the time of the last accuracy test.

The daily constancy check will be extended to include verification of displayed activities using the same standard but with the dose calibrator set to measure each of the different nuclides to be assayed on that day. With background and decay considered, variation in displayed activities must fall within ±10% of the activity shown at the time of the most recent accuracy check. If variations greater than ±10% are noted, the unit will be repaired or replaced.

C. The dose calibrator will be checked for activity linearity upon installation or repair and at quarterly intervals. This test will be performed using the maximum dose to be administered for patient studies. The linearity test will be continued by repeating the assay of the source several times a day over a two to three day period until the requirements of 10 CFR 35.50(b)(3) are met. In this way, the accuracy of the dose calibrator will be assured throughout the entire ranges of doses drawn for patient studies.

The linearity test data will be plotted or calculated as a function of activity vs. time and compared to predicted activities vs. the same time. The acceptable range of error will be ±10%. If test result error exceeds ±10%, the unit will be evaluated for the necessity of repair. The unit may be used in the interim using correction factors if appropriate.

As an alternative procedure, the linearity test can be performed with the use of the Calicheck Kit or the Linearator. The manufacturer's instructions for use will be followed. The source used shall be the activity of the largest dose used for patient studies. Limits of acceptability and corrective actions will be as described above.

D. The dose calibrator will be tested for geometrical variation upon installation and after chamber repair. This test will be performed using approximately 1-10 mCi of Tc-99m in a geometrical configuration approximating that of a point source. Correction factors will be used in clinical assays when geometry induced errors exceed ±10%. Please see the attached example geometry evaluation form for a detailed description of the procedure that will be followed for geometry testing.

Item #9.4

PERSONNEL EXTERNAL EXPOSURE MONITORING PROGRAM: APPENDIX D

We will establish and implement the model personnel external exposure monitoring program published in Appendix D to Regulatory Guide 10.8, Revision 2.

Item #10.1

RADIATION SAFETY OFFICER
DELEGATION OF AUTHORITY: APPENDIX F

We will issue the model Radiation Safety Delegation of Authority that was published in Appendix F to Regulatory Guide 10.8, Revision 2 as follows:

Radiation Safety Officer
Delegation of Authority

DELEGATION OF AUTHORITY

Memo To: All Employees
From: Chief Executive Officer
Subject: Delegation of Authority

Bradley A. Weber, D.O. has been appointed Radiation Safety Officer and is responsible for ensuring the safe use of radiation. The Radiation Safety Officer is responsible for managing the radiation safety program; identifying radiation safety problems; initiating, recommending, or providing corrective actions; verifying implementation of corrective actions; and ensuring compliance with regulations. The Radiation Safety Officer is hereby delegated the authority necessary to meet those responsibilities.

Item #10.2

PROGRAM FOR MAINTAINING OCCUPATIONAL RADIATION EXPOSURE AT MEDICAL INSTITUTIONS ALARA: APPENDIX G

We will establish and implement the model ALARA program that was published in Appendix G to Regulatory Guide 10.8, Revision 2 with the following exception. The Radiation Safety Officer will be responsible for performing the duties which are specified in Appendix G since there will not be a Radiation Safety Committee.

Item #10.3

PROCEDURE FOR LEAK TESTING SEALED SOURCES: APPENDIX H

We will establish and implement the model procedure for leak testing sealed sources that was published in Appendix H to Regulatory Guide 10.8, Revision 2.

Item #10.4

RULES FOR SAFE USE OF RADIOPHARMACEUTICALS: APPENDIX I

We will establish and implement the model safety rules published in Appendix I to Regulatory Guide 10.8, Revision 2.

Item #10.5

SPILL PROCEDURES: APPENDIX J

We will establish and implement the model spill procedures published in Appendix J to Regulatory Guide 10.8, Revision 2.

Item #10.6

PROCEDURE FOR ORDERING AND RECEIVING RADIOACTIVE MATERIAL: APPENDIX K

We will establish and implement the model guidance for ordering and receiving radioactive material that was published in Appendix K to Regulatory Guide 10.8, Revision 2.

Item #10.7

PROCEDURE FOR SAFELY OPENING PACKAGES CONTAINING RADIOACTIVE MATERIAL: APPENDIX L

We will establish and implement the model procedure for opening packages that was published in Appendix L to the Regulatory Guide 10.8, Revision 2.

Item #10.8

RECORDS OF UNIT DOSAGE USE: APPENDIX M.1

We will establish and implement the model procedure for unit dosage record system that was published in Appendix M.1 to Regulatory Guide 10.8, Revision 2.

Item #10.9

RECORDS OF MULTIDOSE VIAL USE: APPENDIX M.2

We will establish and implement the model procedure for a multidose vial record system that was published in Appendix M.2 to Regulatory Guide 10.8, Revision 2.

Item #10.10

MEASURING AND RECORDING MOLYBDENUM CONCENTRATION: APPENDIX M.3

We will establish and implement the model procedure for measuring and recording molybdenum concentration that was published in Appendix M.3 to Regulatory Guide 10.8, Revision 2.

Item #10.12

PROCEDURE FOR AREA SURVEYS: APPENDIX N

We will establish and implement the model procedure for area surveys that was published in Appendix N to Regulatory Guide 10.8, Revision 2 with the following exception. RSO review and initialing of area survey records as outlined in the model (Appendix N, Records 2) will be at least quarterly instead of monthly except where action levels are exceeded. In the latter case, prompt documented review by the RSO will be initiated through notification by the surveyor.

Item #10.13.2

WORKER DOSE FROM AEROSOLS: APPENDIX O

We will collect spent aerosol in a shielded trap, and for reusable traps, monitor the trap effluent with an air contamination monitor that we will check regularly according to the manufacturer's instructions.

Item #10.13.3

PUBLIC DOSE FROM AIRBORNE EFFLUENT

We will not directly vent spent aerosols and gases to the atmosphere and therefore no effluent estimation is necessary.

Item #11.1

PROCEDURE FOR WASTE DISPOSAL: APPENDIX R

We will establish and implement the general guidance and model procedures for waste disposal that were published in Appendix R to Regulatory Guide 10.8, Revision 2. In addition, waste materials will be returned to the radiopharmacy from which they were received.

DOSE CALIBRATOR GEOMETRY EVALUATION

FACILITY: LOCATION:
DEPARTMENT: ATTENTION:
MANUFACTURER: DATE:
MODEL: SETTING:
SERIAL #:

A. Variation in Volume Response - Syringe

1. This test was performed by placing a droplet or two of radioactivity consisting of approximately mCi of Tc-99m into a ml syringe. The syringe was assayed in the chamber and background subtracted for net activity. The volume of liquid in the syringe was increased in steps by adding appropriate amounts of water or saline. A 1ml volume was selected as a standard and ratios of measured activities to the reference volume activity calculated. This ratio is the correction factor.

VOLUME	ACTIVITY DISPLAYED	CORRECTION FACTOR
Drop or two	mCi	
0.5 ml	mCi	
1.0 ml	mCi	
1.5 ml	mCi	
2.0 ml	mCi	
2.5 ml	mCi	

2. Correction Factor = $\frac{\text{1 ml volume activity}}{\text{activity displayed}}$

The true activity of the sample is calculated as follows:

TRUE ACTIVITY = MEASURED ACTIVITY x C.F.

NMA- Medical Physics Consultation
2252 East 14 Mile Road
Warren, Michigan 48092

DOSE CALIBRATOR GEOMETRY EVALUATION

FACILITY: LOCATION:
SERIAL #: DATE:

B. Variation in Volume Response - Vial

1. This test was performed by placing a droplet or two of radioactivity consisting of approximately mCi of Tc-99m into a cc vial. The vial was assayed in the chamber and background subtracted for net activity. The volume of the liquid in the vial was increased in steps by adding appropriate amounts of water or saline. A 4ml volume was selected as a standard and ratios of measured activities to the reference volume activity calculated. This ratio is the correction factor.

VOLUME	ACTIVITY DISPLAYED	CORRECTION FACTOR
Drop or two	mCi	
2.0 ml	mCi	
4.0 ml	mCi	
6.0 ml	mCi	
8.0 ml	mCi	
10.0 ml	mCi	

2. Correction Factor = $\frac{\text{4 ml volume activity}}{\text{activity displayed}}$

The true activity of the sample is calculated as follows:

TRUE ACTIVITY = MEASURED ACTIVITY x C.F.

DOSE CALIBRATOR GEOMETRY EVALUATION

FACILITY: LOCATION:
SERIAL #: DATE:

C. Vial/Syringe Comparison

This test is designed to quantitate differences between activities measured in glass vials versus plastic syringes. This test was performed by assaying a syringe before and after injecting the syringe contents into a vial. The activity in the vial should be the difference in the two readings (with a volume correction, if significant).

Assay of full syringe (x C.F.) _____ mCi (A)

Assay of empty syringe (x C.F.) _____ mCi (B)

Calculated activity in vial (A-B) _____ mCi (C)

* * * * * * * * * * * * * * * * * *

Assay of vial _____ mCi (D)

* * * * * * * * * * * * * * * * * *

Correction Factor = $\frac{C}{D}$ = _____

D. COMMENTS: _____

_____

_____

_____
Consultant

_____
R.S.O.

CONTROL NO. 03582