

## MATERIALS LICENSE

Amendment No. 20

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

302077

<p>Licensee</p> <p>1. Children's Mercy Hospital</p> <p>2. 2401 Gillham Road Kansas City, MO 64108-9898</p>	<p>In accordance with letters dated January 26, 1995, April 19, 1995, and November 15, 1996</p> <p>3. License Number 24-15513-01 is amended in its entirety to read as follows:</p> <p>4. Expiration Date October 31, 2000</p> <p>5. Docket or Reference No. 030-09259</p>	
<p>6. Byproduct, Source, and/or Special Nuclear Material</p> <p>A. Any byproduct material identified in 10 CFR 35.100</p> <p>B. Any byproduct material identified in 10 CFR 35.200</p> <p>C. Hydrogen-3</p> <p>D. Iodine-125</p> <p>E. Iodine-131</p> <p>F. Cesium-137</p> <p>G. Phosphorus-32</p> <p>H. Sulfur-35</p>	<p>7. Chemical and/or Physical Form</p> <p>A. Any radiopharmaceutical identified in 10 CFR 35.100</p> <p>B. Any radiopharmaceutical identified in 10 CFR 35.200 (excluding xenon-133, aerosols, and generators)</p> <p>C. Prepackaged kits</p> <p>D. Prepackaged kits</p> <p>E. Prepackaged kits</p> <p>F. Sealed sources (CIS-US Model No. CEA-ORIS-APIB 437C)</p> <p>G. Any</p> <p>H. Any</p>	<p>8. Maximum Amount that Licensee May Possess at Any One Time Under This License</p> <p>A. As needed</p> <p>B. As needed</p> <p>C. 5 millicuries</p> <p>D. 10 millicuries</p> <p>E. 10 millicuries</p> <p>F. 2 sources not to exceed 4100 curies total per device</p> <p>G. 140 millicuries</p> <p>H. 5 millicuries</p>

## 9. Authorized Use:

- A. Medical use described in 10 CFR 35.100.
- B. Medical use described in 10 CFR 35.200 (excluding xenon-133, aerosols, and generators).

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MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License Number

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## 9. Authorized Use (Continued)

C. through E. To be used in in vitro studies.

F. To be used in CIS-US Model IBL 437C irradiator for blood irradiation studies and irradiation of tissue cultures and laboratory animals (excluding explosive and flammable materials).

G. and H. To be used for in vitro laboratory research and development as described in 10 CFR 30.4.CONDITIONS

10. A. Locations of Use: 2401 Gillham Road, Kansas City, Missouri, and 2801 Wyandotte, Kansas City, Missouri.

B. Licensed material in Item 9.F. shall be used in the Main Chemistry Laboratory located at 2401 Gillham Road, Kansas City, Missouri.

11. Radiation Safety Officer: William J. Fields, Jr.

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

- A. Jerome Grunt, M.D.
- B. Campbell Howard, M.D.
- C. William J. Fields, Jr.
- D. Steven Buckley.
- E. Kenneth M. Alfieri, M.D.
- F. F. Glen Seidel, M.D.

Material and Use

- In vitro studies.
- In vitro studies.
- Cesium-137 irradiator.
- Cesium-137 irradiator.
- 10 CFR 35.100, 35.200 (excluding xenon-133, aerosols, and generators), and in vitro studies.
- 10 CFR 35.100 and 35.200 (excluding xenon-133, aerosols, and generators).

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SUPPLEMENTARY SHEET

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24-15513-01

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12. (Continued)

Authorized UsersMaterial and Use

C. Jeffrey L. Foster, M.D.

10 CFR 35.100, 35.200 (excluding xenon-133, aerosols, and generators), and in vitro studies.

H. Robert Allen White, Ph.D.

Items 6.G. and 6.H.

I. Judy L. Tate.

Cesium-137 irradiator.

J. Paul G. Rothberg, Ph.D.

Item 6.G.

K. I. David Schwartz, M.D.

In vitro studies.

L. Joy Johnson, M.D.

10 CFR 35.100 and 35.200 (excluding xenon-133, aerosols, and generators).

M. William Shaw, Ph.D.

In vitro studies.

N. Katherine Gyves-Ray, M.D.

10 CFR 35.100 and 35.200 (excluding xenon-133, aerosols, and generators), and in vitro studies.

13. Step-by-step operating procedures for the blood irradiator will be extracted from manufacturer supplied manuals and given to each operator of the unit, as part of the training and use program.
14. The emergency procedure in Item 4.e. of letter dated October 27, 1988, shall be implemented.
15. The licensee shall establish and implement the model training program that was published in Appendix A to Regulatory Guide 10.8, Revision 2.
16. The licensee shall establish and implement the model procedure for leak testing sealed sources that was published in Appendix H to Regulatory Guide 10.8, Revision 2.
17. The licensee shall establish and implement the model personnel external exposure monitoring program published in Appendix D to Regulatory Guide 10.8, Revision 2.
18. The licensee shall establish and implement the model waste disposal procedure published in Appendix R to Regulatory Guide 10.8, Revision 2.

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19. 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 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 March 27, 1990; and
- B. Letters dated June 22, 1990 (with attachments), July 30, 1990 (with attachments), November 7, 1990 (with attachments), December 6, 1991, September 21, 1992 (excluding Item No. 1), February 22, 1993, April 22, 1993, June 21, 1993, June 6, 1994, September 8, 1995, December 18, 1995 and November 15, 1996.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date

1/17/97

By

C. F. Lopez  
Nuclear Materials Licensing Branch, Region III

COPY



BETWEEN:

License Fee Management Branch, ARM  
and  
Regional Licensing Sections

(FOR LFMS USE)  
INFORMATION FROM LTS

S6

Program Code: 02120  
Status Code: 0  
Fee Category: 7C 3E  
Exp. Date: 20001031  
Fee Comments: 7C EFF. 2/12/86 3E-88  
Decom Fin Assur Req'd: N

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED

Applicant/Licensee: CHILDREN'S MERCY HOSPITAL  
Received Date: 961125  
Docket No: 3009259  
Control No.: 302077  
License No.: 24-15513-01  
Action Type: Amendment

2. FEE ATTACHED

Amount: \$440  
Check No.: 3020338

3. COMMENTS

Signed  
Date

*D. Hensley*  
*11-27-96*

B. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered / \_\_X\_\_)

1. Fee Category and Amount:

*(7C) 3E \$440*

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

Amendment ☒  
Renewal ☐  
License ☐

3. OTHER

Signed  
Date

*SC*  
*12/4/96*

DEC 09 1996

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Log	<i>Dec 1 III</i>
Remitter	
Check No.	<i>3020338</i>
Amount	<i>\$440</i>
Fee Category	<i>(7C) 3E</i>
Type of Fee	<i>Amend</i>
Date Check Rec'd	<i>12/3/96</i>
Date Completed	<i>12/4/96</i>
By	<i>SC</i>



2401 GILLHAM ROAD  
KANSAS CITY, MISSOURI 64108  
PHONE (816) 234-3000 FAX # (816) 842-7420

In Affiliation with The University of Missouri • Kansas City School of Medicine

November 15, 1996

Materials Licensing Section  
U.S. Nuclear Regulatory Commission  
Region III  
801 Warrenville Road  
Lisle, IL 60532-4351

Subject: Amendment to NRC License No. 24-15513-01

Children's Mercy Hospital requests an amendment to the subject named NRC License to move Nuclear Medicine from its present location in Room 2215 to a suite of rooms numbered 1401.37-1401.41, Children's Mercy Hospital. In order for the NRC to release the old Nuclear Medicine space for unrestricted use the following will be accomplished:

Perform a radiation/contamination close-out survey and decontaminate, if necessary, any equipment or facilities in Room 2215 prior to release for unrestricted use. A diagram of Room 2215 will be prepared for use in conducting the close-out survey with radiation survey and wipe test locations identified. Wipe samples will be taken of equipment and the installed counters, sink, flooring etc. The wipe samples will be analyzed with a LSC and the results recorded. A radiation survey will be performed with a calibrated end-window or pancake GM survey meter and the results recorded. Background readings for both instruments will be included. The results of the radiation/contamination survey will be submitted following receipt of the amendment to conduct the close-out survey and move Nuclear Medicine to its new location. The equipment (See Attachment No. 1) to be moved from Room 2215 to Rooms 1401.37-41 will be wipe tested and the results recorded. The surveys will be conducted by CMH's Radiation Safety Officer, William J. Fields, Jr. Mr. Fields will use the August 1987 NRC Publication, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material" for removal contamination limits.

Diagrams of Rooms 1401.37-41 (See Attachment No. 2) and their location in the new addition (See Attachment No. 3) to CMH are enclosed. The new addition into which Nuclear Medicine will move is contiguous with, and connected to, CMH. The street address is the same, 2401 Gillham Road. The equipment and the radioactive material work areas are identified on the enclosed line drawing. Room 1401.37 is bounded on the West by Ultrasound and a toilet; on the East by Room 1401.39, Nuclear Medicine Office and Room 1401.40, Hot Laboratory; on the North by a 6 foot corridor and Physical Therapy and on the South by a 6 foot corridor and two Radiographic/Fluorographic x-ray rooms. Above the suite of rooms is the ICU Lounge, a Waiting Room and a corridor and below is Respiratory Therapy offices and a corridor. 302077

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Materials Licensing Section  
U.S. Nuclear Regulatory Commission  
Region III  
801 Warrenville Road  
Lisle, IL 60532-4351  
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Re: NRC License No. 24-15513-01

are 9 inches thick, reinforced concrete, and the height from floor level to floor level is 14 feet 7 inches.

Room 1401.41 will house the Thyroid Probe and Well Counting System. To the West of this room is the Department of Radiology Employee Lockers and Lounge. The spaces above and below are as listed above for the suite of rooms. Room 1401.39 is the office space for Nuclear Medicine.

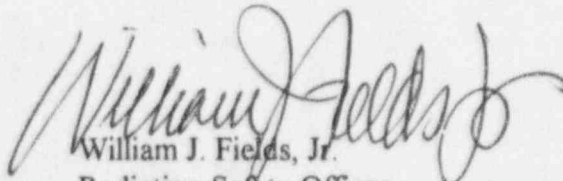
Room 1401.40 is the Hot Laboratory. It will house the Dose Calibrator, a leaded L-Shield, a sink, a lead lined storage bin, a fume hood, a refrigerator and a microwave oven. The refrigerator and the microwave oven are used for the storage and preparation of food, eggs, etc., for patient studies. No food or drink will be permitted in Nuclear Medicine Imaging or Hot Laboratory areas other than that required for patient studies.

Radioactive Materials to be used in accordance with current license Item Numbers 6.A. & B., 7.A. & B. and 8.A & B. Dr. F. Glen Seidel, Chair, Radiology, CMH, will continue to supervise the use of licensed materials in Nuclear Medicine. Individual dose syringes will be obtained from a Nuclear Pharmacy. Any radioactive wastes generated will be stored, for ten half lives, in the lead lined storage bin in Room 1401.40, surveyed with a GM survey meter and disposed of via CMH's trash system. The door to the Hot Laboratory will be locked when Nuclear Medicine is unattended or closed for the day.

The enclosed Key Plan (See Attachment 3) shows the relationship between the location of Room 2215 (Point A) and the suite of rooms 1401.37-.40 (Point B).

This application for the relocation of Nuclear Medicine was approved at the October 31st meeting of the CMH's Radiation Safety Committee.

Enclosed is a check in the amount of \$440 for the amendment as specified in fee Category 7C of 10 CFR 170.31.

  
William J. Fields, Jr.  
Radiation Safety Officer

Encl: Attachment 1, Equipment List  
Attachment 2, Rooms 1401.37-.40  
Attachment 3, Key Plan

**ATTACHMENT NO. 1**  
**Nuclear Medicine Equipment List**

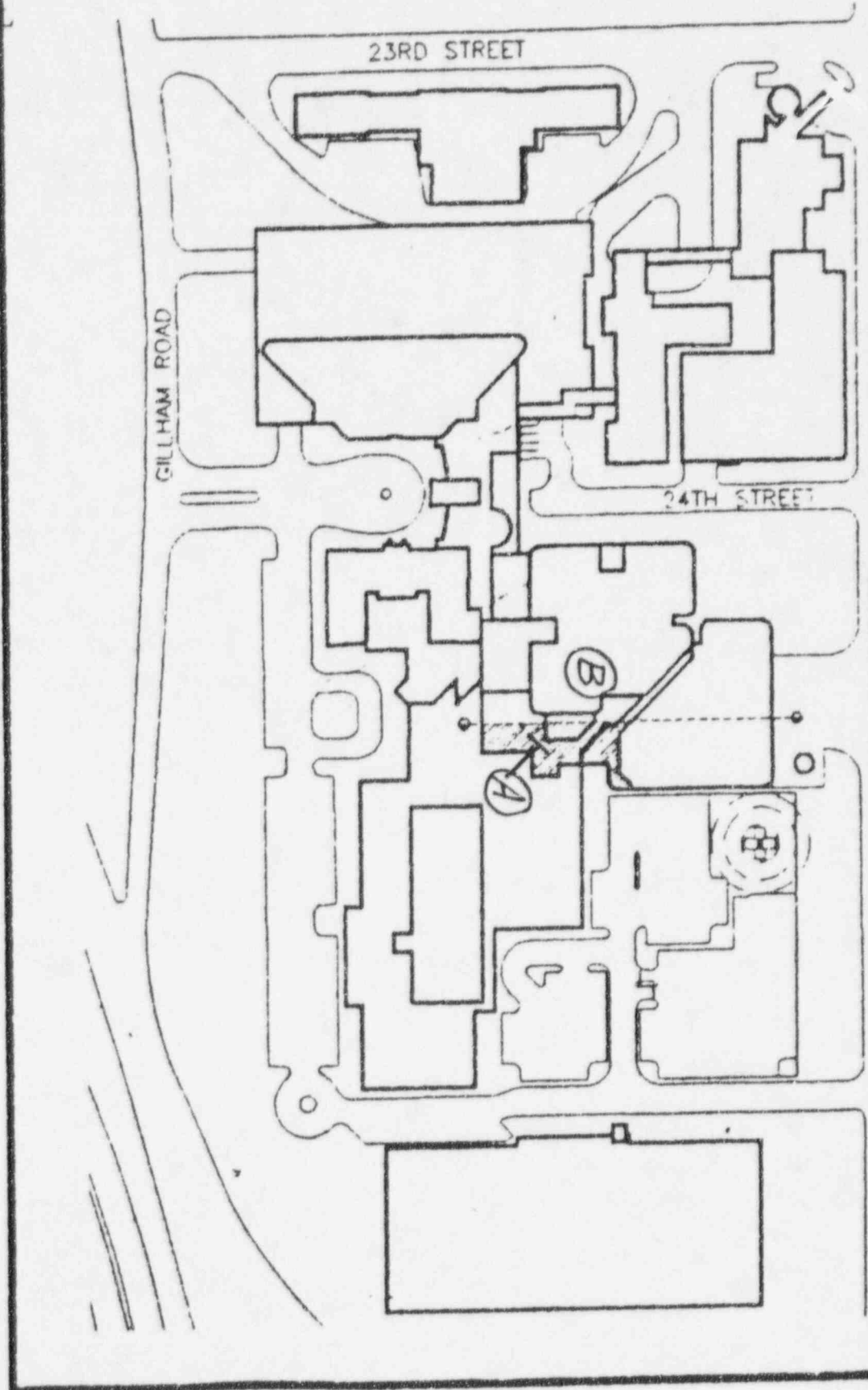
1. Capintec CR-7 Radioisotope Calibrator
2. Leaded L-Shield
3. Victoreen Wipe Test Counter
4. Ludlum Model 14C GM Survey Meter
5. Canberra Capitis 1000 Well Counter and Thyroid Probe
6. SMV DXT Dual Head SPECT Gamma Camera System
7. Critikon Dinamap Blood Pressure Monitor
8. Biochem - Microspan 9090A Combination Capnograph-Oximeter
9. Biomedical System Inc., Model 101 Patient EKG Monitor
10. Mitsubishi G370-100 Color Printer
11. NANA0 FlexScan F550i Display Monitors
12. SMV Acquisition Terminal
13. SMV Collimators -
  - 1 LEAP 140
  - 2 MEAP 300
  - 2 LEHR 140
  - 1 HEPH 360





# KEY PLAN

CHILDREN'S MERCY HOSPITAL  
NRC LICENSE NO. 24-15513-01  
ATTACHMENT NO. 3





2401 GILLHAM ROAD  
KANSAS CITY, MISSOURI 64108  
PHONE (816) 234-3000 FAX # (816) 842-7420

In Affiliation with The University of Missouri • Kansas City School of Medicine

November 20, 1996

B.J. Holt  
Chief of Nuclear Materials Licensing Branch  
United States Nuclear Regulatory Commission  
Region III  
Materials Licensing Section  
801 Warrenville Road  
Lisle, Illinois 60532-4351

Re: NRC Amendment to NRC License # 24-1552-01

Dear Ms. Holt:

Please find attached a letter from William J. Fields, Jr., Radiation Safety Officer at the Children's Mercy Hospital. The letter is concerning the move of our nuclear medicine department from its present location to a new room, within a new radiology department, in a building physically attached to the existing building.

This move is scheduled to occur the week of Jan. 6, 1997, as a part of relocation of the radiology department to the new space. Mr. Fields has outlined the standard procedures which will be followed pursuant to NRC regulations. We would appreciate it if you would please expedite this amendment since we are constrained by time. Thank you in advance for your prompt review of this application. Should you have any questions, do not hesitate to contact either myself or Mr. Fields.

Sincerely,

F. Glen Seidel, M.D.  
Chairman, Radiation Safety Committee  
Children's Mercy Hospital  
816-234-3273

Randall L. O'Donnell, Ph.D.  
President/CEO  
Children's Mercy Hospital

FGS:dc

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REGION III

pm 11/23/96

NOV 25 1996

JAN 21 1997

William J. Fields, Jr.  
Radiation Safety Officer  
Children's Mercy Hospital  
2401 Gillham Road  
Kansas City, MO 64108-9898

Dear Mr. Fields:

Enclosed is Amendment No. 20 to your NRC Material License No. 24-15513-01 in accordance with your request.

- A. Please be advised that we cannot authorize you to release your old nuclear medicine space for unrestricted use (even by other members of your staff) until we have received and reviewed a copy of the results of your close-out survey. The survey should consist of exposure rate measurements to show that all sources of radioactive material have been removed, and contamination checks of areas where radioactive materials were used or stored. Average radiation levels associated with surface contamination and removable contamination should not exceed those specified in the enclosed decontamination guide. Please submit the following information with your close-out survey:
- a. A diagram of your old facility with survey and wipe test results keyed to specific locations.
  - b. The name of the person performing the survey.
  - c. The date the survey was performed.
  - d. The instrument(s) used for exposure rate measurements and for analysis of the wipes.
  - e. Background readings.
  - f. The date that the survey instrument was last calibrated.

When submitting the close-out survey, please reference it as additional information to Control No. 302077. We will amend your license, without an additional fee, to remove your former nuclear medicine facility from your license at that time. Be advised, however, that if you request anything other than the removal of your former nuclear medicine facility, an amendment fee will be required.

302077

- B. In preparing this amendment, we took the opportunity to update and reformat your license as discussed below. These changes were essentially administrative modifications only that should have no effect on your licensed program.

Items B.1., B.2. and B.3. were reviewed and discussed with Nancy Burchell in a telephone conference with Colleen C. Casey on January 8, 1997.

1. Please note that, at this time, we changed the expiration date in item no. 4 of your license to reflect the one-time extension of your license, in accordance with 10 CFR 30.36(a)(2), copy enclosed. You should have received additional correspondence from us concerning this regulation and its effects on your license.
  2. We deleted Condition No. 13., as it appeared on Amendment No. 19, because the regulations in 10 CFR 30.35(g) contain the same provision. Therefore, this Condition is no longer necessary.
  3. In preparing this amendment we named Katherine Gyves-Ray, M.D. as an authorized physician user and we deleted Drs. Egelhoff, Borders, Kopperman and Segal, in accordance with your notification letters to us dated January 26, 1995 and April 19, 1995. Ms. Burchell confirmed to Ms. Casey that it would be appropriate for us to effect these changes at this time.
- C. During the above-mentioned telecon, Ms. Casey inquired after the lockability of the doors in your new nuclear medicine department. Ms. Burchell stated that all doors in the new department had locks.
- For future reference, please advise us as to the lockability status of doors and access points when submitting facility diagrams.
- D. Please review the enclosed document carefully and be sure that you understand all conditions. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region III office at (630) 829-9887 so that we can provide appropriate correction and answers.

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

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



2. Notify NRC, in writing, within 30 days:
  - a. When an authorized user or Radiation Safety Officer permanently discontinues performance of duties under the license or has a name change; or
  - b. When the licensee's mailing address changes (no fee is required if the location of byproduct material remains the same).
3. In accordance with 10 CFR 30.36(b) and/or license condition, notify NRC, promptly, in writing, and request termination of the license when you decide to terminate all activities involving materials authorized under the license.
4. Request and obtain a license amendment before you:
  - a. Receive or use byproduct material for a clinical procedure permitted under Part 35 but not permitted by your license issued pursuant to this Part;
  - b. Permit anyone, except individuals described in 10 CFR 35.13(b), to work as an authorized user under the license;
  - c. Change Radiation Safety Officers;
  - d. Order byproduct material in excess of the amount, or radionuclide, or form different than authorized on the license;
  - e. Add or change the areas of use or address or addresses of use identified in the license application or on the license; or
  - f. Change ownership of your organization.
5. Submit a complete renewal application with proper fee or termination request at least 30 days before the expiration date of your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of byproduct material after your license expires is a violation of NRC regulations. A license will not normally be renewed, except on a case-by-case basis, in instances where licensed material has never been possessed or used.

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

You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC will result in enforcement action against you. This could include issuance of a notice of violation, or imposition of a civil penalty, or an order suspending, modifying or revoking your license as specified in the General Policy and Procedures for NRC Enforcement Actions. Since serious consequences to employees and the public can result from failure to comply with NRC requirements, prompt and vigorous enforcement action will be taken when dealing with licensees who do not achieve the necessary meticulous attention to detail and the high standard of compliance which NRC expects of its licensees.

Sincerely,

Original Signed By  
Colleen C. Casey  
Nuclear Materials Licensing Branch

License No. 24-15513-01  
Docket No. 030-09259

Enclosures:

1. Amendment No. 20
2. 10 CFR Part 30
3. NRC Form 313

DOCUMENT NAME: M:\03009259.CL7

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	DNMS/RIII								
NAME	CCCasey:brt								
DATE	01/ /97								

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION III  
801 WARRENVILLE ROAD  
LISLE, ILLINOIS 60532-4351

December 3, 1996

William J. Fields, Jr.  
Radiation Safety Officer  
Children's Mercy Hospital  
Department of Radiology  
2401 Gillham Road  
Kansas City, MO 64108-9898

SUBJECT: ACKNOWLEDGEMENT OF CORRESPONDENCE  
(Letter Dated 11/15/96)

Dear Licensee:

In response to your request, we have completed the initial processing, which is an administrative review of your application for a(n):

☐ New License                      ☒ Amendment                      ☐ Renewal  
☐ Termination                      ☐ Auth User (Amendment not required)  
☐ Other \_\_\_\_\_

No administrative deficiencies were identified during this initial review. However, it should be noted that a technical review may identify omissions in the submitted information.

It appears that your request is routine (see 1-3 below, as applicable).

1. New and amendment actions are normally processed within 90 days, unless we find major deficiencies, or policy issues requiring central program office assistance.
2. Renewal actions are normally processed within 180 days, however, under timely filing (before expiration), you may continue to operate under your existing license.
3. Termination actions are normally processed within 90 days, unless confirmatory surveys following decontamination/decommissioning activities are involved.

A copy of your correspondence has been forwarded to our Licensing Fee and Debt Collection Branch (301/415-6097) for approval of the fee category and amount, if required.

If you have a compelling safety or business-related reason for requesting expedited review, please contact the Materials Licensing Branch at (630) 829-9887. We will try to complete your request as soon as practicable. Any correspondence about this request should reference the control number.

Nuclear Materials Support Branch

Mail Control No. 302077  
License No. 24-15513-01