

## 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. Nuclear Imaging, Ltd.  
2. 109 South Petro Avenue  
Sioux Falls, South Dakota 57107

In accordance with letters dated  
May 3, 1996

3. License number 40-26908-01 is amended in  
its entirety to read as follows:

4. Expiration date December 31, 1992

5. Docket or  
Reference No 030-30273

6. Byproduct, source, and/or  
special nuclear material

- A. Any byproduct material  
identified in  
10 CFR 35.100  
B. Any byproduct material  
identified in  
10 CFR 35.200  
C. Any byproduct material  
identified in  
10 CFR 35.500  
D. Iodine-131  
E. Phosphorus-32  
F. Strontium-89  
G. Cesium-137

7. Chemical and/or physical  
form

- A. Any radiopharmaceutical  
identified in  
10 CFR 35.100  
B. Any radiopharmaceutical  
identified in  
10 CFR 35.200  
C. Sealed sources for  
diagnostic devices  
identified in  
10 CFR 35.500  
D. Iodide  
E. Soluble phosphate  
F. Chloride  
G. Sealed sources  
(Technical Operations,  
Inc. Model 77302)

8. Maximum amount that licensee  
may possess at any one time  
under this license

- A. As needed  
B. As needed  
C. 1.5 curies per  
source  
D. 90 millicuries  
E. 75 millicuries  
F. 12 millicuries  
G. 2 sources not to  
exceed 165  
millicuries per  
source

## 9. Authorized Use

- A. Medical use described in 10 CFR 35.100.  
B. Medical use described in 10 CFR 35.200.  
C. Medical use described in 10 CFR 35.500.  
D. Diagnosis and treatment of hyperthyroidism and cardiac dysfunction.  
E. Diagnosis and treatment of polycythemia vera, leukemia, bone metastases, and  
palliative treatment of bone metastases.  
F. Palliative treatment of bone metastases.

9611150077 960503  
PDR ADOCK 03030273  
C PDR

LICENSE FEE MANAGEMENT BRANCH

ML40

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License Number

40-26908-01

Docket or Reference Number

030-30273

Amendment No. 15

- G. For use in Technical Operations, Inc. Model 773 calibrator for training and calibration of licensee's survey meters and personnel dosimeters.

CONDITIONS

10. A. Locations of use:

1. 1101 N. Riverfront Drive, Mankato, Minnesota and 109 Petro Avenue, Sioux Falls, South Dakota.
2. Material identified in Items 6.D. through 6.F. shall be used at 109 Petro Avenue, Sioux Falls, South Dakota.
3. Licensed material identified in 10 CFR 35.100, 35.200 (except generators), and 35.500 may also be used at any hospital located in the states of Minnesota, South Dakota, and Wyoming, provided:
  - (1) The licensee addresses all use and record keeping requirements outlined in Section 35.80 of 10 CFR Part 35, and
  - (2) The hospital does not have a byproduct material license under Section 35.18 of 10 CFR Part 35, and
  - (3) The licensee has the prior written permission from the hospital's Administrator, and
  - (4) The licensee maintains a list of all hospitals serviced.

The licensee shall maintain for inspection by the Commission copies of written permission specified in Subitem 3 and the list specified in Subitem 4.

- B. Locations of storage: 516 W. 4th Avenue, Milbank, South Dakota; Curts Cycle Shop, I-90, Exit 265, Chamberlain, South Dakota; 631 S. 32nd Street, Spearfish, South Dakota; and 3020 Centerville Road, Suite B, Little Canada, Minnesota.

11. Radiation Safety Officer: W. A. Boade, M. D.

12. Authorized Users:

- A. W. A. Boade, M.D., for material identified in 10 CFR 35.100, 35.200, and 35.500; iodine-131 for treatment of hyperthyroidism and cardiac dysfunction; phosphorus-32 for treatment of polycythemia vera, leukemia, bone metastases, and palliative treatment of bone metastases; strontium-89 for palliative treatment of bone metastases; Cesium-137 in Technical Operations, Inc., Model 773 survey instrument calibrator.

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

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- B. Bert W. Larson, M.D., for material identified in 10 CFR 35.100, 35.200, and 35.500.
  - C. J. B. Crespo, M.D., for material identified in 10 CFR 35.100, 35.200, and 35.500.
  - D. Charles Flohr, M.D., for material identified in 10 CFR 35.100, 35.200, and 35.500.
  - E. John O. Judge, M.D., for material identified in 10 CFR 35.100, 35.200, and 35.500.
  - F. Roger Rae, CNMT, for Cesium-137 in Technical Operation Model 773 survey instrument calibrator.
  - G. Frank M Grund, M.D., for material identified in 10 CFR 35.100, 35.200, and 35.500.
  - H. Fred Clinton Lovrien, M.D., for material identified in 10 CFR 35.100, 35.200, and 35.500; iodine-131 for treatment of hyperthyroidism and cardiac dysfunction; phosphorus-32 for treatment of polycythemia vera, leukemia, bone metastases and palliative treatment of bone metastases; strontium-89 for palliative treatment of bone metastases.
  - I. Richard J. Backes, M.D., for material identified in 10 CFR 35.200 for cardiovascular clinical procedures.
  - J. Andrea Holden McQuire, M.D., for material identified in 10 CFR 35.100, 35.200, and 35.500.
13. Notwithstanding the requirements of Section 35.49 of Title 10, Code of Federal Regulations, Part 35, the licensee may receive licensed material in prepared individual doses and as technetium-99m eluate or as mixed with reagent kits from Sioux Valley Hospital, Sioux Falls, South Dakota; and Central Plains Clinic, Sioux Falls, South Dakota.
  14. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of licensed material to quantities below the minimum limit specified in 10 CFR 30.35(d) for establishing decommissioning financial assurance.
  15. The licensee is authorized to inject technetium-99m labeled hydroxymethylene diphosphonate (HDP) in a female Siberian tiger for the purpose of bone imaging as described in letters dated May 3, 1996. This authorization expires on May 31, 1996.

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SUPPLEMENTARY SHEET

License Number

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Amendment No. 15

16. 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 November 9, 1987
- B. Letter dated November 11, 1987
- C. Letter dated November 18, 1987
- D. Application dated March 22, 1988
- E. Letter dated April 11, 1988
- F. Application received February 21, 1989
- G. Application dated July 31, 1989
- H. Letter dated September 12, 1989
- I. Application dated October 15, 1990
- J. Application dated December 20, 1990
- K. Application dated September 20, 1991
- L. Application dated February 3, 1992
- M. Letter dated June 18, 1992
- N. Letter dated September 3, 1992
- O. Letter dated October 6, 1992
- P. Letter dated May 3, 1993
- Q. Application dated June 8, 1993
- R. Letter dated June 30, 1993
- S. Letter dated August 23, 1993
- T. Application dated December 2, 1994
- U. Letter dated February 27, 1995
- V. Application dated March 8, 1995
- W. Letter dated March 21, 1995
- X. Letter dated June 20, 1995
- Y. Letter dated July 17, 1995
- Z. Letter dated August 18, 1995
- AA. Letter dated September 21, 1995
- BB. Letter dated October 5, 1995
- CC. Letter dated January 3, 1996
- DD. Letters dated May 3, 1996

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Original Signed By  
Vivian H. Campbell

Date MAY 3 1996

By

Nuclear Materials Licensing Branch  
Region IV  
Arlington, Texas 76011





UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION IV

611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-8064

May 3, 1996

Nuclear Imaging, Ltd.  
ATTN: Corrine Connelly  
109 South Petro Avenue  
Sioux Falls, South Dakota 57107

SUBJECT: LICENSE AMENDMENT

Please find enclosed License No. 40-26908-01. You should review this license carefully and be sure that you understand all conditions. If you have any questions, you may contact the reviewer who signed your license at 817-860-8143.

NRC expects licensees to conduct their programs with meticulous attention to detail and a high standard of compliance. Because of the serious consequences to employees and the public which can result from failure to comply with NRC requirements, 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: Inspection and Investigations," 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 (no fee required if the location of radioactive material remains the same).
5. Request and obtain written NRC consent before transferring your license or any right thereunder, either voluntarily or involuntarily, directly or indirectly, through transfer of control of your license to any person or entity. A transfer of control of your license includes not only a total change of ownership, but also a change in the controlling interest in your company whether it is a corporation, partnership, or other entity. In addition, appropriate license amendments must be requested and obtained for any other planned changes in your facility or program that are contrary to your license or contrary to representations made in your license application, as well as supplemental correspondence thereto, which are incorporated into your license. A license fee may be charged for the amendments if you are not in a fee-exempt category.

6. Maintain in a single document decommissioning records that have been certified for completeness and accuracy listing all the following items applicable to the license:
  - Onsite areas designated or formerly designated as restricted areas as defined in 10 CFR 20.3(a)(14) or 20.1003.
  - Onsite areas, other than restricted areas, where radioactive materials in quantities greater than amounts listed in Appendix C to 10 CFR 20.1001-20.2401 have been used, possessed, or stored.
  - Onsite areas, other than restricted areas, where spills or other unusual occurrences involving the spread of contamination in and around the facility, equipment, or site have occurred that required reporting pursuant to 10 CFR 30.50(b)(1) or (b)(4), including areas where subsequent cleanup procedures have removed the contamination.
  - Specific locations and radionuclide contents of previous and current burial areas within the site, excluding radioactive material with half-lives of 10 days or less, depleted uranium used only for shielding or as penetrators in unused munitions, or sealed sources authorized for use at temporary job sites.
  - Location and description of all contaminated equipment involved in licensed operations that is to remain onsite after license termination.
7. 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.
8. Request termination of your license if you plan to permanently discontinue activities involving radioactive material.

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; imposition of a civil penalty; or an order suspending, modifying, or revoking your license as specified in the "General Statement of Policy and Procedure for NRC Enforcement Actions" (Enforcement Policy), 60 FR 34381, June 30, 1995.

Nuclear Imaging, Ltd.

-3-

Thank you for your cooperation.

Sincerely,

Original Signed By  
Vivian H. Campbell

Vivian H. Campbell  
Senior Health Physicist  
Nuclear Materials Licensing Branch

Docket: 030-30273  
License: 40-26908-01  
Control: 466081

Enclosures: As stated

MAY 3 1996

Nuclear Imaging, Ltd.

-4-

DOCUMENT NAME: P:\

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

RIV:NMLB		RIV:					
VHCampbell <i>nk</i>							
5/3/96							

OFFICIAL RECORD COPY



**NUCLEAR IMAGING, LTD.**

109 South Petro Avenue • Sioux Falls, South Dakota 57107 • (605) 330-9060

## ADDENDUM TO NRC LETTER:

Re: Special request for authorization to use radiopharmaceutical on a Siberian tiger.

Per your request, the following procedure will be followed after completion of the scan:

1. The animal will be returned to it's isolated holding pen for a minimum of twenty-four hours.
  2. After twenty-four hours has elapsed, the animal will be moved to a second isolated holding pen.
  3. After an additional twenty-four hours (48 hours post scan) the first holding pen will be surveyed for residual activity. Should the survey meter show no detectable radiation from animal excreta, the cage will be thoroughly cleansed in the normal manner.
  4. Should the original holding pen, after forty-eight hour post exam, show any activity, when surveyed, it will be held for an additional twenty-four hours before cleaning.
- The officials from the zoo have informed me that at the present time they have five empty holding pens for animals of this size. Each pen is completely isolated and animals do not have any contact or accessibility to one another.

466081



## FACSIMILE LEAD SHEET

DATE: 5.3.96TO: NAME: Ms. JACKIE Burks / Ms. Vivian CAMPBELLORGANIZATION: NRCFAX NUMBER: 817-860-8263FROM: NAME: Corinne Connelly

DEPARTMENT: \_\_\_\_\_

PHONE NUMBER: 800-333-0365FAX NUMBER: 605-330-0898TOTAL NUMBER OF PAGES (including lead sheet) 1

MESSAGE: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

PLEASE CALL OUR OFFICE (605-330-9060) IF THERE IS ANY PROBLEM WITH THIS TRANSMISSION OR ANY  
QUESTIONS ABOUT DOCUMENTATION.

466081



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION IV

611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-8064

1996 MAY -8 PM 2:08

BETWEEN: Doug Weiss, Chief  
License Fee and Debt Collection Branch  
Office of the Controller

D. Blair Spitzberg, Chief  
Nuclear Materials Licensing Branch, DRSS, Region IV

LICENSEE FEE TRANSMITTAL

A. REGION IV

1. APPLICATION ATTACHED

Applicant/Licensee: Nuclear Imaging, LTD

Application Dated: 5/3/96

Control No.: 466 081

License No.: 40-26908-01

2. FEE ATTACHED

Amount: \$ 430.<sup>00</sup>

Check No: 30816

3. Comments

Completed action on 5/3/96. By

Signed: Billie Gruszynski Date 5/7/96

B. LICENSEE FEE AND DEBT COLLECTION BRANCH

1. Fee Category and Amount: \_\_\_\_\_

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

Amendment \_\_\_\_\_

Renewal \_\_\_\_\_

License \_\_\_\_\_

Signed: \_\_\_\_\_ Date \_\_\_\_\_

BETWEEN:

LICENSE FEE MANAGEMENT BRANCH, ARM  
AND  
REGIONAL LICENSING SECTIONS

(FOR LEMS USE)  
INFORMATION FROM LTS

PROGRAM CODE: 02220

STATUS CODE: 2

FEE CATEGORY: 7C

EXP. DATE: 19921231

FEE COMMENTS:

DECOM FIN ASSUR REQD: N

1996 MAY -7 PM 2:08

LICENSE FEE TRANSMITTAL

A. REGION IV

1. APPLICATION ATTACHED  
APPLICANT/LICENSEE: NUCLEAR IMAGING, LTD.  
RECEIVED DATE: 960503  
DOCKET NO: 3030273  
CONTROL NO.: 466081  
LICENSE NO.: 40-26908-01  
ACTION TYPE: AMENDMENT

2. FEE ATTACHED

AMOUNT: \_\_\_\_\_  
CHECK NO.: \_\_\_\_\_

3. COMMENTS

SIGNED  
DATE

Billie Gruzynski  
5/6/96

B. LICENSE FEE MANAGEMENT BRANCH (CHECK WHEN MILESTONE 03 IS ENTERED 1)

1. FEE CATEGORY AND AMOUNT: 7C \$430

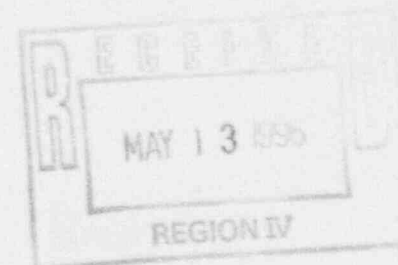
2. CORRECT FEE PAID, APPLICATION MAY BE PROCESSED FOR:

AMENDMENT \_\_\_\_\_  
RENEWAL \_\_\_\_\_  
LICENSE \_\_\_\_\_

3. OTHER \_\_\_\_\_

SIGNED  
DATE

Rita Messier  
5/8/96



Log	<u>May 1 IV</u>
Remitter	<u>030816</u>
Check No.	<u>4430</u>
Amount	<u>7C</u>
Fee Category	<u>amd</u>
Type of Fee	<u>5/8/96</u>
Date Check Rec'd.	<u>5/8/96</u>
Date Completed	<u>Res</u>
By:	



**NUCLEAR IMAGING, LTD.**

109 South Petro Avenue • Sioux Falls, South Dakota 57107 • (605) 330-9060

May 3, 1996

Ms. Jackie Burks  
U.S. Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive, #400  
Arlington, TX 76011-8064

Re: Request for one time authorization for special use of radiopharmaceutical.  
License number: 40-26908-01

Dear Ms. Burks:

This letter is to request a one time authorization for special use of radiopharmaceutical to perform a bone scan on a female Siberian tiger. The animal's weight is approximately 350 pounds and a proposed dose would be 35 mCi of technetium labeled HDP.

The request has been made by the Great Plains Zoo and Delbridge Museum of Sioux Falls, South Dakota as this animal is ranked number ten in the Survival of the Species Program. She is due to be bred soon and has an abnormal curvature of her spine plus an abnormal rear gait. The veterinarians at the zoo have attempted to x-ray the animal, however, the equipment they have available in their zoo hospital is not able to penetrate and give adequate images. The zoo officials are concerned about the physical capabilities of the female Siberian tiger to withstand the mount of a 500 pound male Siberian tiger. They also have concern of the animal's ability to carry and deliver the litter of cubs.

Zoo officials brought their concerns to our company and we have agreed to donate our services to assist them with this important animal in the Survival of Species Program. We have made the following preparations:

1. We have received written permission to bring radiopharmaceuticals to the zoo hospital located at 805 S. Kiwanis Ave. in Sioux Falls, South Dakota.
2. We have prepared additional spill kits, will have an abundance of appropriate clean up materials, and protective coverings. W.A. Boade, M.D., our Radiation Safety Officer, will be in attendance throughout the procedure.

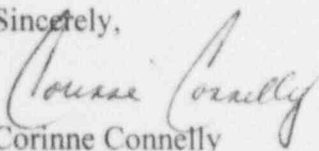
466081



3. It is the intent of the veterinarians and handlers to place the animal in a "crunch cage" to immobilize her during dose administration. The cat will then be released into her isolated holding pad. There will be no other animals in proximity to her. Shortly before beginning the scan, the cat will be sedated by dart gun administered by a veterinarian. She will be then placed in the zoo's infirmary where the scan will be performed. She will be catheterized to prevent any spill due to incontinence. This catheterization will also help in defining the area of interest throughout the scan. Should the cat begin to rouse from her anesthesia, the veterinarians will have gas on hand and be able to maintain her in an unconscious state throughout the entire procedure.
4. Following the scan, and removal of the urinary catheter, contaminated urine will be removed by Nuclear Imaging personnel, shielded and will be held for designated decay storage area. The animal will be returned to her isolated holding area and will not be allowed in contact with other animals for a minimum of 24 hours post scan. The scan area will be surveyed for residual activity. The area will be decontaminated in the routine manner if the need is indicated by the survey.
5. Zoo personnel will receive instruction on radiation safety and caution techniques. These instructions will include but not be limited to:
  - a. Directions to maintain distance from the animal. Any unnecessary contact will be prohibited.
  - b. They will be instructed that should the need to be close proximity or to handle the animal, protective covering such as rubber gloves, disposable lab coat, rubber shoe covering, etc. is to be used.
  - c. Feeding may be done in the normal time frame and under normal conditions with the understanding that personnel should not remain in close proximity to the animal for any extended periods of time.
  - d. Any questions from personnel regarding radiation will be addressed by the Radiation Safety Officer, W.A. Boade, M.D.

We respectfully request that this one time use authorization be approved as this particular animal is important to the Survival of the Species Program for the Siberian tiger.

Sincerely,

  
Corinne Connelly  
General Manager  
CC/srh



**NUCLEAR IMAGING, LTD.**

109 South Petro Avenue • Sioux Falls, South Dakota 57107 • (605) 330-9060

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