EXHIBIT A

NRC Form 313T
10 CFR 35

U.S. NUCLEAR REGULATORY COMMISSION

Approved by OMB
3150-0081
Expires 1-31-85

APPLICATION FOR MATERIALS LICENSE – TELETHERAPY

INSTRUCTIONS – Complete Items 1 through 22 if this is an initial application or an application for renewal of a license. Use supplemental sheets where necessary. Item 22 must be completed on all applications and signed. Retain one copy. Submit original and one copy of entire application to: Director, Office of Nuclear Materials Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Upon approval of this application, the applicant will receive a Materials License. An NRC Materials License is issued in accordance with the general requirements contained in Title 10, Code of Federal Regulations, Part 30, and the Licensee is subject to Title 10, Code of Federal Regulations, Parts 19, 20, 21, and 35 and the license fee provision of Title 10, Code of Federal Regulations, Part 170. The license fee category should be stated in Item 22 and the appropriate fee enclosed.

1.a. NAME AND MAILING ADDRESS OF APPLICANT *(Institution, firm, clinic, physician, etc.)* INCLUDE ZIP CODE

V.A. Medical Center
50 Irving St., N.W.
Washington, D.C. 20422

TELEPHONE AREA CODE ( ) NUMBER

1.b. STREET ADDRESS(ES) AT WHICH RADIOACTIVE MATERIAL WILL BE USED *(If different from 1.a.)* INCLUDE ZIP CODE

2. PERSON TO CONTACT REGARDING THIS APPLICATION

John O. Bowman

TELEPHONE AREA CODE (202) NUMBER 745-8390

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

[ ] a. NEW LICENSE
[ ] b. AMENDMENT TO LICENSE NO.
[X] c. RENEWAL OF LICENSE NO. 08-00942-04

4. INDIVIDUAL USERS *(Name individuals who will use or directly supervise use of radioactive material. Complete Supplements A and B for each individual.)*

Attached

5. RADIATION SAFETY OFFICER (RSO) *(Name of person designated as radiation safety officer. If other than individual user, complete resume of training and experience as in Supplement A.)*

John O. Bowman

6. SEALED SOURCES TO BE USED IN TELETHERAPY UNITS *(Attach supplemental pages if necessary)*

	BYPRODUCT MATERIAL (Element and Mass No.)	NAME OF SOURCE MANUFACTURER	SOURCE MODEL NUMBER	MAXIMUM ACTIVITY PER SOURCE	NUMBER OF SOURCES
A.	Cobalt 60	AECL	C-146	11000 Ci	2
B.					
C.					

7. TELETHERAPY UNITS *(Attach supplemental pages, if necessary)*

	NAME OF MANUFACTURER (Include description, if unit is custom made)	MODEL NUMBER
A.	Phillip Medical Systems, Inc.	XK 5105/ 33/ 150
B.		
C.		

8. USE *(Attach supplementary pages, if necessary)*

A	B	C	
X			HUMAN USE ONLY
			HUMAN AND OTHER USE *(Specify on separate sheet)*

9. PERSONNEL MONITORING DEVICES

TYPE (Check and/or complete as appropriate)	SUPPLIER (Service Company)	EXCHANGE FREQUENCY
X (1) FILM BADGE – WHOLE BODY	R.S. Landauer, Jr. & Co.	Monthly
(2) THERMOLUMINESCENSE DOSIMETER (TLD) – WHOLE BODY		
(3) OTHER *(Specify)*		

EXHIBIT A (Continued)

INFORMATION REQUIRED FOR ITEMS 10 THROUGH 21

For Items 10 through 21, check the appropriate box(es) and submit a detailed description of all the requested information. Begin each item on a separate sheet. Identify the item number and the date of the application in the lower right corner of each page. If you indicate that an appendix to the teletherapy licensing guide will be followed, do not submit the pages, but specifiy the revision number and date of the referenced guide: Regulatory Guide 10. Rev. _____ Date: _____

10. MEDICAL ISOTOPE COMMITTEE	15. BEAM STOPS
X Names and specialties attached; and *(check one)*	Description of stops used to restrict beam orientation attached.
a. Duties as in Appendix A, or	16. SHIELDING EVALUATION
X b. Equivalent duties attached.	Evaluation of proposed shielding attached.
11. TRAINING AND EXPERIENCE	17. OPERATING AND EMERGENCY PROCEDURES
a. Supplements A & B attached for each individual user; and On File	X a. Description of operating procedures attached; and
b. Supplement A attached for RSO On File	X b. Copy of emergency procedures attached.
12. INSTRUMENTATION *(check one)*	18. INSTRUCTION OF PERSONNEL *(check one)*
a. Appendix C form attached, or	X a. Training program and schedule in Appendix H followed, or
X b. List manufacturer's name and model number	b. Description of instruction program for employees attached.
13. CALIBRATION OF INSTRUMENTS *(check one)*	19. LEAK TESTS OF SEALED SOURCES
a. Appendix D, Part 2 procedures followed for instrumentation calibration, or	X Description of leak-test procedures attached.
b. Description of sources, calibration frequency and equivalent procedures attached.	20. QUALIFIED EXPERT *(Use only if the individual fails to meet 10 CFR 35.24 requirements.)*
14. FACILITIES AND EQUIPMENT	Statement of qualifications of the expert who will perform teletherapy calibrations attached.
a. Description and drawing of facilities attached; and	21. ALARA PROGRAM *(check one)*
b. Description of patient viewing and communicating systems attached; and	ALARA Program as in Appendix I, or
c. Description of area safeguards attached.	X Equivalent ALARA program attached MCPM-115-1

22. CERTIFICATE

(This item must be completed by the applicant)

The applicant and any official executing this certificate on behalf of the applicant named in Item 1a certifies that this application is prepared in conformity with Title 10, Code of Federal Regulations, Parts 30 and 35, and that all information contained herein, including supplements attached hereto, is true and correct to the best of our knowledge and belief.

a. LICENSE FEE REQUIRED *(See section 170.31, 10 CFR 170)*	b. APPLICANT OR CERTIFYING OFFICIAL (Signature) A.A. Gavazzi
(1) LICENSE FEE CATEGORY	(1) NAME (Type or print) A.A. Gavazzi
(2) LICENSE FEE ENCLOSED $	(2) TITLE Medical Center Director
	c. DATE

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.

NRC 313T THERAPY LICENSE RENEWAL

Supplement to Page 1

4. Individual Users

Human Use:

Steven Lunzer, M.D.
Chief of Radiation Therapy Service

Mohammed A. Hussian, M.D.
Assistant Chief of Radiation Therapy Service

Lawrence Hill, M.D.

All three individual users are on the current license.

Non Human Use:
(calibrations and Tests).
Indu Patel, PH.D.
Dr. Patel is qualified under the provisions of 10.CFR 35.24(b)

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Medical Isotope Committee

NAME	SPECIALTY
Mr. Steve Aron	Research Administration
Dr. Richard Reba	Nuclear Medicine
Dr. Charles Murphy	Radiology
Dr. Frank Vieras	Nuclear Medicine
Mr. John O. Bowman	Health Physics
Ms. Fran Johnson	Nurse
Mr. Joe Cascio	Pharmacist

11 Training and Experience

The training and experience of the three users named has been submitted previously. We are not adding any new users.

12 Instrumentation

1. Survey Meters Available:

Victoreen 440 RF/A ionization survey meter;
Minimum Range : 0 - 3 mR/hour
Maxium Range : 0 - 300 mR/hour

Texas Nuclear 2652 GM survey meter;
Minimum Range : 0 - 0.1 mR/hour
Maximum Range : 0 - 100 mR/hour

Meters will be calibrated annually.

A Ludlum Model 9 ionization survey meter has been ordered.

Minimum Range: 0 - 5 mR/hour
Maximum Range: 0 - 5000 mR/hour

2. Beam On Monitor:

Manufacturer's Name: Victoreen
Model Number: 808D (VAMP)
Number of instruments availble: 2
Backup Battery Power Supply: Yes

3. Dosimeter System

a. Electrometer
Manufacturer's Name: Capintec (Victoreen)
Model Number: 192x 570

b. Probes

Manufacturer's Name: Capintec (Victoreen)
Model No.: PR06C & PS033 (154)
Number of Probes: 2
Ranges: 0 to 9999R

Manufacturer's Name: Victoreen
Model No.: 154
Number of Probes: 1
Ranges: 0 to 250R

17 Operating and Emergency Procedures

Normal Operation

Immediately before initiating beam, inspect therapy room to insure that only the patient is in the room.

Emergency Procedure for "Beam Off" Failure

1. A. Ambulatory patient:

   Instruct the patient to get off the table and immediately leave the room.

   B. Non-ambulatory patient:
   Enter the room, but avoid the primary beam. Pull the table from the beam. Remove the patient from the room.

2. Close and secure the door.

3. Turn off the key and main circuit breaker.

Immediately Contact :

Mr. Bowman, Radiation Safety Officer
Telephone No:
Work 7586, 8390
Home 277-9084

Dr. Patel, Radiation Therapy Physicist
Telephone No:
Home 249-7184

Dr. Lunzer, Chief of Radiation Therapy Service
Telephone No:
Home 554-5298

18 Instruction of Personnel

The training program and schedule in appendix H is followed.

19 A. Leak Test of Sealed Sources

The Radiation Safety Officer will perform the leak tests. Mr. Bowman's record of training and experience is already on file for this license.

A damp cotton swab is used to wipe surfaces of the head interior where one would expect to expect contamination to accumulate (around field light mirror mount, primary and secondary collimators, and trimmers).

Radioactivaty on the swab is determined by comparing the swab counts to counts obtained from a New England Nuclear 60Co reference source of nominal activity of 1 microCurie. The decay of the reference source is calculated to determine its present activity. The sample and the standard are counted on a NaI crystal and a multichannel analyzer system in the Nuclear Medicine Service of the Medical Center.

Leak Test Calculations

Instrument used: 2 inch NaI(Tl) crystal and multichannel analyzer. Standard used was a 60Co source assayed as 1.29microCi on July 6, 1979.

The 60Co standard is counted on the system. For this example, the sample was counted for one minute. The count was 76963. The background count for one minute was 27
Net standard count was 76941.

Standard Activity: 1.29 microCuries on July 6, 1979
Standard Activity: 0.62 microCuries on Mar 8, 1985

The system sensitivity is 124,870 counts per microCi.

Wipe Test Count: 27
Net Wipe Test Count: 5
Activity Removed = Sensitivity divided by Net Wipe Test Count
Activity Removed = 5/124870 = 0.00004 microCuries
When represented as microCuries, the results imply an greater than the actual accuracy of the system. But we can state with confidence that the activity removed is less than 0.005 microCurie.

0.005 microCurie would produce approximately 625 counts in one minute for the system we use.

Radiation Safety Procedures during smearing process and Handling and Disposing Procedures Smears

1. An individual from Radiation Therapy Service will accompany the individual who takes the smear test. The Panel Controls will be defeated by leaving the door open(the wipe tests are taken during alternate quarterly safety checks, so the performance of the door interlock will be confirmed before the wipe test is initiated.

2. A dampened swab is attached to a 24 inch metal stem. The smear is performed and the swab is inserted into a plastic vial. A cap is placed on the vial.

3. The swab is surveyed with a survey meter to assure that the smear is not dangerous to carry. If the meter survey shows contamination, the test is halted and Personal decontamination procedures are begun.

4. The swab is carried to the counting room by hand.

5. Smear samples with less than 0.005 microCuries are considered ordinary trash. Smear samples with 0.005 microCuries or more will be placed in the research radioisotope waste.

20 Qualified Expert

Dr. Indu Patel is the radiation physicist who will perform the calibration of the teletherapy unit. Dr. Patel is a qualified expert under 10 CFR 35.24(b).

21 Alara Program

The Medical Center Alara Policy Memorandum is attached.

VETERANS ADMINISTRATION MEDICAL CENTER
50 Irving Street, N.W.
Washington, DC 20422

MEDICAL CENTER POLICY MEMORANDUM NO. 11-34 August 14, 1984

PERSONNEL RADIATION MONITORING

1. PURPOSE: To prescribe policy, responsibility and procedures for monitoring personnel exposure to ionizing radiation.

2. POLICY: All persons who are occupationally exposed to ionizing radiation will be monitored for radiation exposure by appropriate means. Those persons who are occasionally exposed to ionizing radiation in the course of their work will be monitored for exposure if the Radiation Safety Officer (RSO) determines that they are likely to receive, in the course of their work, an annual exposure equal to or greater than ten percent of the maximum allowable annual occupational exposure.

3. RESPONSIBILITY:

a. Service chiefs are responsible for identifying employees who may be occupationally exposed to ionizing radiation. Service chiefs are responsible for selecting an individual to act as RSO liaison. Service chiefs are responsible for assuring that individuals who separate from this VAMC return their film badge and badge holder.

b. The Employee Health Physician will examine any employee who has an accidental exposure of 25 rem or more.

c. The RSO is responsible for maintaining the monitoring program.

d. Each individual employee is responsible for keeping his/her occupational radiation exposure as low as reasonably achievable consistent with the fulfillment of the service mission, and for complying with instructions issued by the RSO for the purpose of maintaining the monitoring program. Each individual employee is responsible for his/her personal dosimeter.

e. The RSO liaison is responsible for distributing and collecting monitors within their service and notifying the Radiation Safety Officer of staff changes in advance.

4. PROCEDURES:

a. Employees who have been identified for radiation monitoring will report to the RSO for a safety briefing and to be issued an exposure monitor.

(1) Individuals identified as occupationally exposed to ionizing radiation must request monitoring service before they begin work in a radiation area. Examples of occupationally exposed individuals are: Nuclear Medicine Technologists, Radiation Cardiologists, and Radiologists.

(2) Individuals who believe that they are occupationally exposed to ionizing radiation and those who believe their occasional exposure (in the course of their work) meets the requirements above should request the RSO to evaluate their exposure to ionizing radiation. Examples of occasionally exposed individuals who may need to be monitored: Allied Health Professionals who work in the room where a fluoroscopic procedure is performed (during the procedure), but whose duties are unrelated to the operation of the fluoroscope.

(3) When a service experiences a large change in affected individuals, the service chief may request a special briefing session for new employees.

b. Individual employees must maintain control of their personal monitors (film badges, ring dosimeters, etc.). If a monitor is lost or damaged, then the employee must report to the RSO for a replacement.

c. Basic guidance for individuals who are monitored is given in Appendix A.

d. Liaison personnel, appointed by service chiefs will receive new monitors from the RSO each month. They will then exchange the new monitors for the old ones and return the old monitors to the RSO. Old monitors should be hand delivered to GD-206 by the liaison. Liaisons should note the due date for returning old badges and make every effort to meet the due date.

5. REFERENCE: Hospital Police Momorandum No. 11-19 dated November 19, 1984; VA Manual MP-5, Part I, Chapter 792; M-2, Part XI, Chapter 2, 29 CFR 1910.96, 10 CFR 20.202, NCRP Report No. 48, "Radiation Protection for Medical and Allied Health Personnel."

6. RESCISSION: Hospital Policy Memorandum No. 05-24, dated December 8, 1980.

A. A. GAVAZZI
Medical Center Director

Distr: A & S
100 to 115

APPENDIX A to
Medical Center Policy Memo 11-34
dated August 14, 1984

GUIDANCE FOR INDIVIDUALS WHO ARE MONITORED FOR EXPOSURE TO IONIZING RADIATION

Whole Body Monitors:

1. Whole body monitors are used to determine your exposure to ionizing radiation. The monitors consist of a small piece of film encased in foil and held in a specially designed holder.

2. Radiation monitors are sensitive to light and heat. Do not expose your film badge to heat. Do not leave your film badge in a vehicle where there may be an extreme temperature. The film badge should be stored in the area near where you work, but away from any sources of radiation.

3. Do not wear your monitor when you have any kind of diagnostic procedure (that produces ionizing radiation) performed on you.

4. These monitors should be worn either at belt height, on the lapel or on the front pocket. Unless you are protected by a lead apron, thyroid shield and protective glasses, we assume that your radiation dose is equal to the radiation dose measured by your monitor. Individuals who wear only a lead apron should wear their monitor outside the apron at one of the positions described above.

5. If you lose a film badge, you should request a replacement immediately. There is no way to replace the information recorded in a lost monitor. The RSO maintains a supply of monitors for lost badge replacement. Do not borrow or loan a monitor.

6. The RSO maintains a record of your exposure history. You are allowed to review your radiation dosimetry record. If you wish to review your record, then make an appointment with the RSO.

7. Be sure to return your dosimeter and badge holder to your RSO liaison, should you decide to separate from this VAMC.

Extremity Dosimeters:

1. Some individuals may be required to wear extremity dosimeters (TLD ring). These dosimeters indicate the radiation exposure of the individual's hand. If you wear a ring dosimeter, do not take it home with you. Store it in a secure location near your work station, but away from any source of ionizing radiation.

2. If you are provided a ring dosimeter, you should wear the dosimeter during all times that you are working in a radiation area. You should develop a habit of accounting for your ring dosimeter at the beginning and at the end of each day.

3. Ring dosimeters can be replaced if they are lost, but the information recorded on the dosimeter will be lost forever if the dosimeter is lost.