ENCLOSURE 1

NRC Form 313 I (12-81) 10 CFR 30 — U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE
INDUSTRIAL

1. APPLICATION FOR: *(Check and/or complete as appropriate)*

- [ ] a. NEW LICENSE
- [ ] b. AMENDMENT TO: LICENSE NUMBER 10-06772-02
- [ ] c. RENEWAL OF: LICENSE NUMBER

See attached instructions for details.

Completed applications are filed in duplicate with the Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety, and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555 or applications may be filed in person at the Commission's office at 1717 H Street, NW, Washington, D. C. or 7915 Eastern Avenue, Silver Spring, Maryland.

2. APPLICANT'S NAME *(Institution, firm, person, etc.)*
Department of Health and Human Services
Public Health Service, Ctrs. for Disease Control
TELEPHONE NUMBER: AREA CODE – NUMBER EXTENSION
FTS 236-3883

3. NAME AND TITLE OF PERSON TO BE CONTACTED REGARDING THIS APPLICATION
Paul D. Simpson, Radiation Safety Officer
TELEPHONE NUMBER: AREA CODE – NUMBER EXTENSION
404-329-3883

4. APPLICANT'S MAILING ADDRESS *(Include Zip Code)*
(Address to which NRC correspondence, notices, bulletins, etc., should be sent.)
Building 4, Room 232
1600 Clifton Road, N.E.
Atlanta, GA 30333

5. STREET ADDRESS WHERE LICENSED MATERIAL WILL BE USED *(Include Zip Code)*
1600 Clifton Road, N.E.
Atlanta, GA 30333

(IF MORE SPACE IS NEEDED FOR ANY ITEM, USE ADDITIONAL PROPERLY KEYED PAGES.)

6. INDIVIDUAL(S) WHO WILL USE OR DIRECTLY SUPERVISE THE USE OF LICENSED MATERIAL
(See Items 16 and 17 for required training and experience of each individual named below)

	FULL NAME	TITLE
a.	Linda S. Martin, Ph.D.	Assistant Chief of Immunology Branch
b.		
c.		

7. RADIATION PROTECTION OFFICER
Paul D. Simpson

Attach a resume of person's training and experience as outlined in Items 16 and 17 and describe his responsibilities under Item 15.

8. LICENSED MATERIAL

LINE NO.	A ELEMENT AND MASS NUMBER	B CHEMICAL AND/OR PHYSICAL FORM	C NAME OF MANUFACTURER AND MODEL NUMBER *(If Sealed Source)*	D MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTIVITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME
(1)	Cesium-137	Sealed Source	Atomic Energy of Canada Limited	600 ± 20% curies
(2)			Radiochemical Company 413 March Road	
(3)			P.O. Box 13500 Kanata, Ontario	
(4)			Canada, K2K 1X8	

	E DESCRIBE USE OF LICENSED MATERIAL
(1)	Cesium-137 will be used to irradiate biological materials, especially blood
(2)	products. Applications include inactivation of viral antigens, inactivation
(3)	procedures during the production of vaccines, irradiations of blood cell
(4)	cultures, and other biomedical research projects.

NRC FORM 313 I (12-81)

9. STORAGE OF SEALED SOURCES

LINE NO.	CONTAINER AND/OR DEVICE IN WHICH EACH SEALED SOURCE WILL BE STORED OR USED. A.	NAME OF MANUFACTURER B.	MODEL NUMBER C.
(1)	Source housing (See attached sketch.)	Atomic Energy of Canada Limited	AECL-RCC
(2)			Gammacell 1000 Model A
(3)			
(4)			

10. RADIATION DETECTION INSTRUMENTS

LINE NO.	TYPE OF INSTRUMENT A	MANUFACTURER'S NAME B	MODEL NUMBER C	NUMBER AVAILABLE D	RADIATION DETECTED (alpha, beta, gamma, neutron) E	SENSITIVITY RANGE (milliroentgens/hour or counts/minute) F
(1)	Ion Chamber	Eberline	PIC-6A	1	Beta & Gamma	.2-50 mR/hr
(2)	Exposure Rate Meter	Searle	2593	1	Beta & Gamma	0-1000 mR/hr
(3)			2594	1	Beta & Gamma	0-1000 mR/hr
(4)						

11. CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10

☐ a. CALIBRATED BY SERVICE COMPANY

NAME, ADDRESS, AND FREQUENCY

Ridge, Inc.
4432 Bibb Boulevard
Tucker, GA 30084

☐ b. CALIBRATED BY APPLICANT

Attach a separate sheet describing method, frequency and standards used for calibrating instruments.

12. PERSONNEL MONITORING DEVICES

TYPE (Check and/or complete as appropriate.) A	SUPPLIER (Service Company) B	EXCHANGE FREQUENCY C
☐ (1) FILM BADGE ☒ (2) THERMOLUMINESCENCE DOSIMETER (TLD) ☐ (3) OTHER (Specify): _____	Radiation Detection Company P.O. Box 1414 Sunnyvale, CA 94088	☐ MONTHLY ☒ QUARTERLY ☐ OTHER (Specify): _____

13. FACILITIES AND EQUIPMENT (Check were appropriate and attach annotated sketch(es) and description(s).

☐ a. LABORATORY FACILITIES, PLANT FACILITIES, FUME HOODS (Include filtration, if any), ETC.
☐ b. STORAGE FACILITIES, CONTAINERS, SPECIAL SHIELDING (fixed and/or temporary), ETC.
☐ c. REMOTE HANDLING TOOLS OR EQUIPMENT, ETC.
☐ d. RESPIRATORY PROTECTIVE EQUIPMENT, ETC.

See attachments.

14. WASTE DISPOSAL

a. NAME OF COMMERCIAL WASTE DISPOSAL SERVICE EMPLOYED

b. IF COMMERCIAL WASTE DISPOSAL SERVICE IS NOT EMPLOYED, SUBMIT A DETAILED DESCRIPTION OF METHODS WHICH WILL BE USED FOR DISPOSING OF RADIOACTIVE WASTES AND ESTIMATES OF THE TYPE AND AMOUNT OF ACTIVITY INVOLVED. IF THE APPLICATION IS FOR SEALED SOURCES AND DEVICES AND THEY WILL BE RETURNED TO THE MANUFACTURER, SO STATE.

See attachments.

INFORMATION REQUIRED FOR ITEMS 15, 16 AND 17

Describe in detail the information required for Items 15, 16 and 17. Begin each item on a separate page and key to the application as follows:

15. RADIATION PROTECTION PROGRAM. Describe the radiation protection program as appropriate for the material to be used including the duties and responsibilities of the Radiation Protection Officer, control measures, bioassay procedures *(if needed)*, day-to-day general safety instruction to be followed, etc. If the application is for sealed source's also submit leak testing procedures, or if leak testing will be performed using a leak test kit, specify manufacturer and model number of the leak test kit.

Enclosures 3, 4, 5

16. FORMAL TRAINING IN RADIATION SAFETY. Attach a resume for each individual named in Items 6 and 7. Describe individual's formal training in the following areas where applicable. Include the name of person or institution providing the training, duration of training, when training was received, etc. Enclosure 7

    a. Principles and practices of radiation protection.

    b. Radioactivity measurement standardization and monitoring techniques and instruments.

    c. Mathematics and calculations basic to the use and measurement of radioactivity.

    d. Biological effects of radiation.

17. EXPERIENCE. Attach a resume for each individual named in Items 6 and 7. Describe individual's work experience with radiation, including where experience was obtained. Work experience or on-the-job training should be commensurate with the proposed use. Include list of radioisotopes and maximum activity of each used.

Enclosure 7

18. CERTIFICATE

(This item must be completed by applicant)

The applicant and any official executing this certificate on behalf of the applicant named in Item 2, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 30, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.

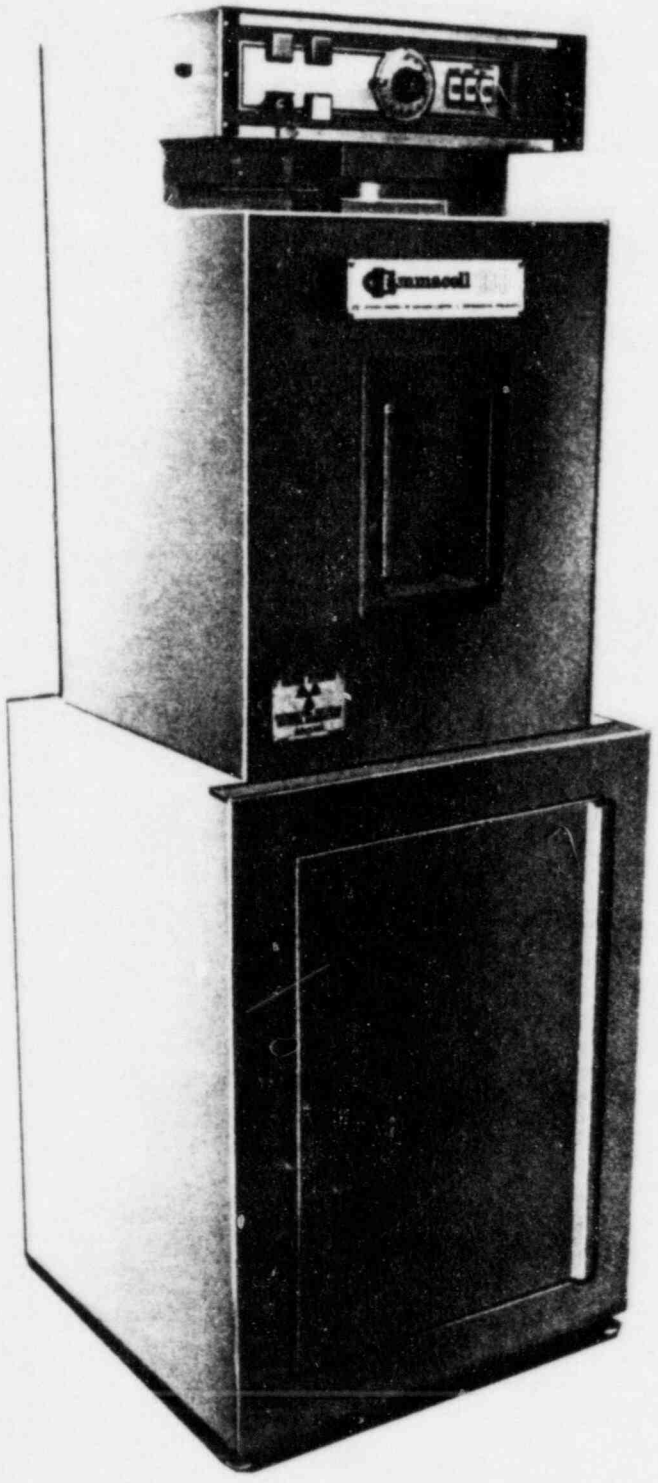
WARNING.–18 U.S.C., Section 1001; Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

a. LICENSE FEE REQUIRED *(See Section 170.31, 10 CFR 170)*	b. CERTIFYING OFFICIAL *(Signature)* Paul D. Simpson
	c. NAME *(Type or print)* Paul D. Simpson
(1) LICENSE FEE CATEGORY:	d. TITLE CDC Radiation Safety Officer
(2) LICENSE FEE ENCLOSED: $	e. DATE 1-25-85

AECL

Gammacell 1000 — Blood Irradiator

ENCLOSURE 2



The Gammacell 1000 irradiator is designed for the irradiation of blood and blood components to inactivate leukocytes. It is also well suited to irradiate biological or other samples.

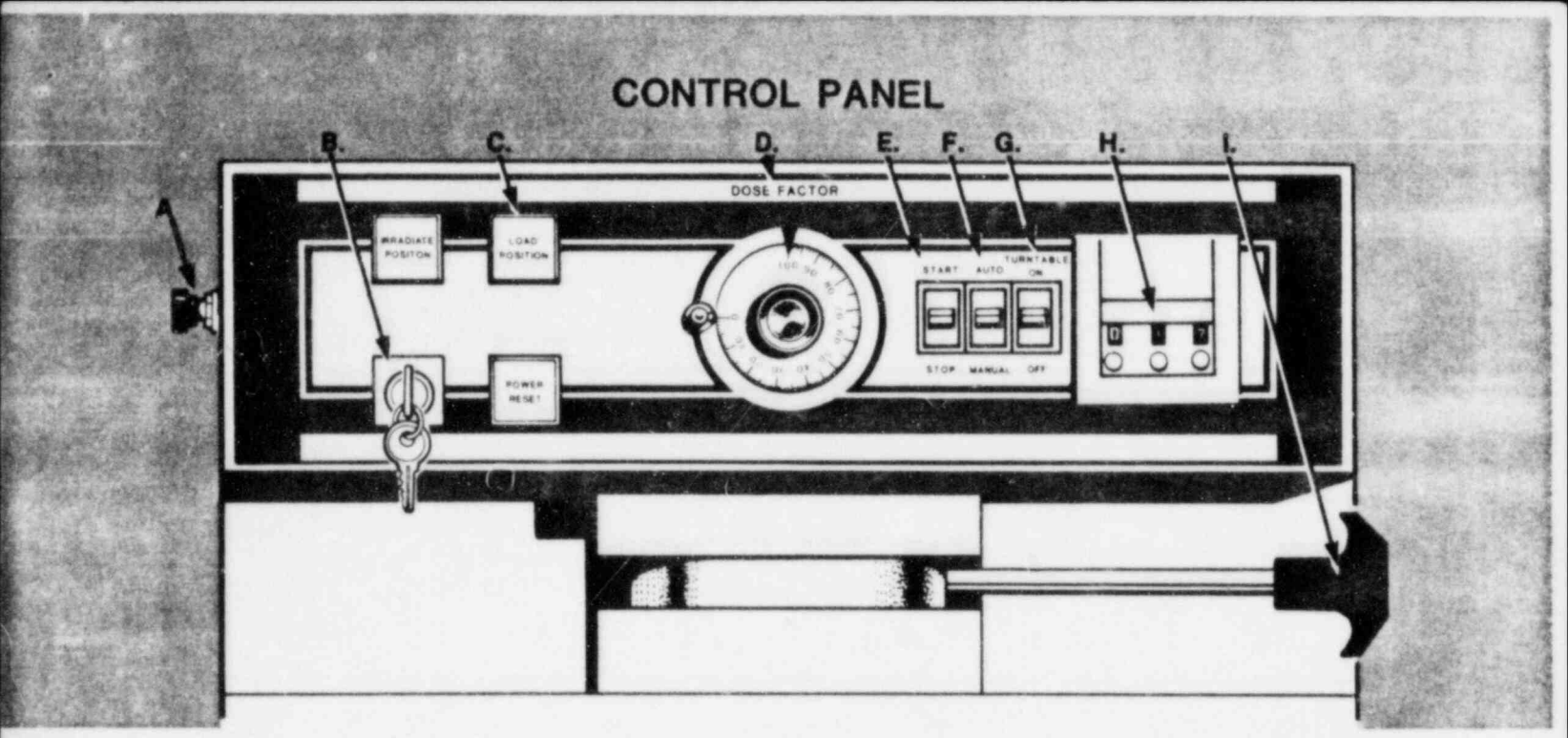
The Gammacell 1000 is self-shielded and can be safely operated in an existing laboratory environment. When fully loaded, the external radiation level of the Gammacell 1000 is less than 2.0 mrem/h at 1m from the source and 20 mrem/h at 5cm from the surface of the unit*

A 3000 rad dose can be delivered in 2-6 minutes depending on source size selected.

The gamma irradiation source is cesium 137, which has a half-life of 30.2 years. This source is permanently sealed in a stationary position within a lead shield. The sample chamber is rotated to and from the source by a shielded rotor. Within the sample chamber there is a turntable, with a removable beaker. Good dose uniformity is given when the turntable is rotating. A test tube holder can also be used in the sample chamber and is available as an optional accessory.

Three access tubes are provided for instrumentation. They enter the sample chamber from the storage cabinet.

CONTROL PANEL



A. Safety Switch Button
(see item F)

B. Key Operated Power Switch
Controls power to the irradiator

C. Indicator Lights
When illuminated, these lights indicate: — "POWER RESET" (White)
"LOAD POSITION" (Green)
Sample chamber in the "Load/Unload" position.
"IRRADIATE POSITION" (Red)
Sample chamber in the irradiate position.

D. Dose Factor
With this control it is possible to rotate the rotor so that the sample chamber is only partially exposed to the radioactive source, thus reducing the dose rate in the sample chamber. Determination of the Dose Rate distribution at any of the partial irradiate positions is left up to the customer to perform.

E. Stop/Start Switch
Controls movement of the rotor. The sample chamber can be rotated to the "Irradiate" position only when the "Safety Switch Button" (item A) is pressed and the "Stop/Start Switch is held in the "Start" position.
The sample chamber can be returned to the "Load/Unload" position only by holding the Stop/Start Switch in the "Stop" position and pressing the "Safety Switch Button" (item A)

F. Auto/Manual Switch
Determines mode of equipment operation. When the switch is in the "Auto" position the sample chamber will be automatically returned to the "Load/Unload" position by the expiration of the preset time of the digital timer. When the switch is in the "Manual" position, the digital timer will act as an elapsed time indicator only. The sample chamber can be returned to the "Load/Unload" position only by pressing the "Stop Button" and the "Safety Switch Button" (Item A) at the same time.

G. Turntable Switch
Controls power to the sample chamber turntable drive. When this switch is on, the turntable is rotating.

H. Digital Timer
In the automatic mode, a three digit readout timer controls the irradiation time. Readout range is 0.1 to 99.9 minutes. Timer accuracy is comparable to the accuracy of an electrical clock.

I. Emergency Lever
In the event of a power failure the sample chamber can be manually rotated from the "Irradiate" position to the "Load/Unload" position.

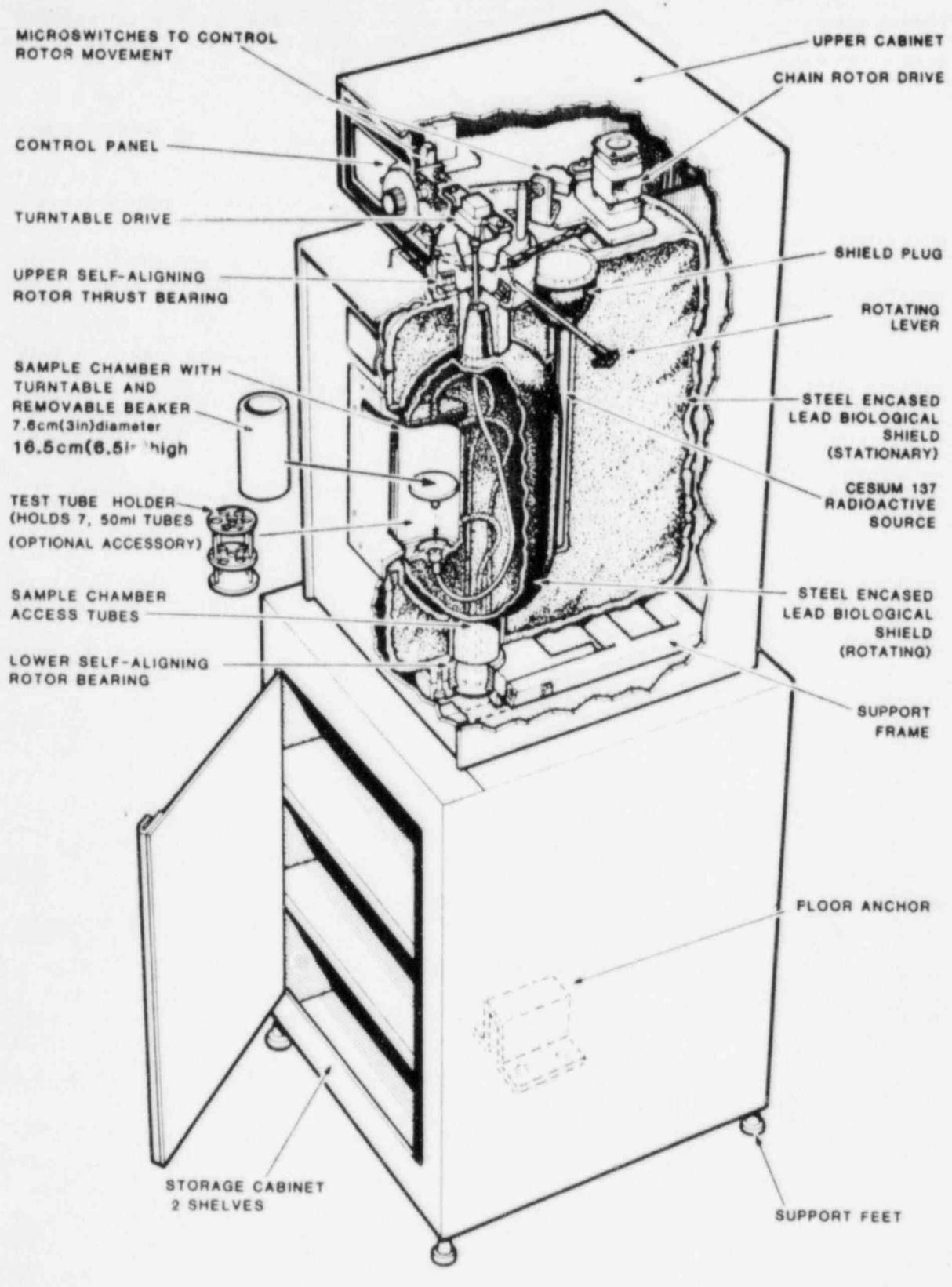
Electrical Power Requirements

Standard: 110/120V, 60Hz, standard North American wall outlet three prong plus

Optional: 220/230V, 50Hz, standard wall outlet three prong plug

Note: The type of power supply available (50Hz or 60Hz) is to be specified at the time of ordering.

Power Cable: A 3m (10 ft power cable is provided with the unit.



WEIGHTS

Total Weight:	1,134 kg (2,500 lbs.)
Floor Loading:	3,052 kg/m² (625 lbs/ft²)
Projected Floor area:	0.372 m² (4 ft²)

DIMENSIONS

Width:	61 cm (24 in)
Length:	61 cm (24 in)
Height:	165 cm (65 in)
Colour scheme:	beige and blue

AECL

Gammacell 1000 — Blood Irradiator

Radiation Specifications

The Cesium 137 sources are doubly encapsulated in stainless steel and are held in a source holder.

The source holder is permanently installed and sealed within the steel encased biological shield.

The curies contained in each Gammacell 1000 model and the corresponding Central Dose Rates are listed as follows:

Gammacell 1000 Model	No. of Sources	Nominal Curie Content ±20%	Central Dose Rate (CDR) ±10% rad/min/Ci	Nominal CDR rad/min± 20%
A	1	600	0.833	500
B	2	1,200	0.833	1,000
C	3	1,800	0.806	1,450
D	4	2,400	0.792	1,900

The central dose rates in the table represent measurements with the beaker in place and in an air medium. For a liquid, such as blood, the central dose rates should be decreased by 10%.

Fig. 1
Isodose Rate Curves Turntable Rotating

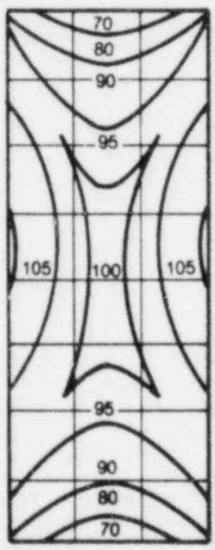
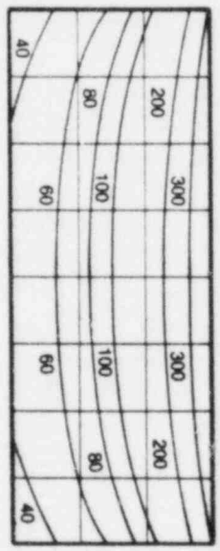


Fig. 2
Isodose Rate Curves Turntable Stationary



The approximate dose rate distribution in the sample chamber with the turntable rotating at 4.0 rpm is shown in Fig. 1. The approximate dose rate distribution with the turntable stationary is shown in Fig. 2.

Figures 1 and 2 represent typical Dose Rate Distribution in an air medium. These measurements are not carried out on each individual unit. Numbers shown in the Figures represent percentage of measured central dose rate.

Shipping

The Gammacell 1000 is shipped in two shipping packages. One contains the upper and lower cabinets, the other is a returnable overpack which contains the radiation shield assembly complete with cesium sources. A nominal charge is levied for rental of this overpack.

Shipping Weights and dimensions are as follows:

Active package
Weight: 1,270 kg (2800 lb)
Height: 142 cm (56 in)
Base: 92 cm X 92 cm (36 in X 36 in)
Volume: 1.2 m^3 (42 ft^3)

Non Active Package
Weight: 91 kg (200 lb)
Length: 152 cm (60 in)
Width: 76 cm (30 in)
Height: 102 cm (40 in)
Volume: 1.18 m^3 (41 ft^3)

The gammacell 1000 active shipping package meets the requirements of the USDOT, AECB, USNRC and complies with the IAEA Regulations for the Safe Transport of Radioactive materials (1979 edition).

Certification and Documentation

The cesium 137 sources are individually tested for leakage and contamination. A leak certificate is provided with each source.

Also provided are measurement certificates of curie content and central dose rate.

An operation and maintenance manual is shipped with each unit.

Customers in the United States and Canada when applying for their radioactive materials licence should apply for 20% more than the amount of curies of cesium 137 in the source ordered to allow for the ±20% source loading tolerance.

*These external radiation levels meet the requirement of the International Commission in Radiation Protection, Publication No. 15 (ICRP #15).

Atomic Energy of Canada Limited/ Radio Chemical Company **413 March Road, P.O. Box 13500, Kanata, Ontario, Canada, K2K 1X8**
Tel. (613) 592-2790, Cable Nemota Telex: 053-4162

APRIL 1983

ENCLOSURE 3

Item 3

OPERATING PROCEDURES FOR GAMMACELL 1000*

1. Obtain key to Gammacell room and Gammacell 1000 from the Immunology Branch Office, Building 1, Room 1202, Extension 3434.

2. Enter the following information in the log book:

    a. Date of operation

    b. Name of operator

    c. Biological agent irradiated

    d. Length of irradiation time

    e. Dose rate

    Note: Immediately after entry into the Gammacell 1000 room, the log book must be completed.

3. Insert the Gammacell key into the key-operated powered switch and turn on the power.

4. Retrieve the removable beaker from the sample chamber.

5. Insert the sample to be irradiated into the removable beaker and position it into the sample chamber.

    Note: A test tube holder can be used optionally in the sample chamber.

6. Set the Auto/Manual switch to the "Auto" position.

    Note: When the switch is in the "Auto" position, the sample chamber will be automatically returned to the "Load/Unload" position by the expiration of the preset time of the digital timer.

7. Set the desired dose on the Dose Factor switch.

8. Set the Turntable switch to the On or Off position.

    Note: When this switch is on, the turntable is rotating.

*Refer to the sketch of the Gammacell 1000 when reading these procedures.

Item 3 (continued)

9. Set the desired irradiation time on the Digital Timer by turning the appropriate knobs. The readout range is 0.1 to 99.9 minutes.

10. Lastly, depress the Stop/Start switch.

    Note: The sample chamber can be rotated to the "Irradiate" position only when the "Safety Switch Button" (located on the left side of the control panel is pressed and the Stop/Start switch is held in the "Start" position.

11. After irradiations are completed, remove the irradiated sample from the sample chamber and close the door to the chamber.

12. Power off the Gammacell and remove the key.

13. Return the key immediately to the Immunology Branch Office.

ENCLOSURE 4

Item 4 - EMERGENCY PROCEDURES

Emergency procedures for contamination on the floor, gamma exposure, spills with biological agents, and fire are listed as follows:

a. Contamination on the Floor

1. Do not walk through the contamination or spread the radioactive material by walking around.

2. Have someone who is not contaminated call the Office of Biosafety.

3. If your shoes are shoes are contaminated, do not walk around the laboratory without removing them. Once your shoes are removed, do not reenter the spill area.

4. Put on fresh gloves before attempting to clean up the spill with absorbent materials. Wipe inward toward the center of the spill to localize the contamination. Do not wipe back and forth or in a random fashion.

b. Gamma Exposure

1. If gamma exposure is the only danger in an accident, evacuate the area immediately.

2. Call the OBS, Extension 3883.

3. Confine all persons who may have been exposed to a safe area for medical examinations.

c. Spills with a Biological Agent

1. Cover the spill with absorbent material as quickly and as completely as possible to prevent spreading.

2. Soak the area with disinfectant or some other chemical to inactivate the agent.

3. Remove your gloves and laboratory coat, and segregate them as radioactive waste in the laboratory.

4. If the infectious agent remains a hazard:

a. Leave the area.

b. Wash your hands and arms thoroughly with soap or an appropriate disinfectant. Scrub your hands for at least three minutes, and rinse them thoroughly.

c. Call the OBS to report the incident and to obtain further advice on decontamination and disinfection.

5. If the infectious agent is no longer a biological hazard:

a. Wash your hands and arms thoroughly with soap or an appropriate disinfectant. Scrub your hands for at least three minutes and rinse them thoroughly.

b. Put on fresh gloves and protective clothing before attempting furher cleanup of the spill. Wipe inward toward the center of the spill to localize the contamination. Do not wipe back and forth or in a random fashion.

d. Emergency Procedures for Fire

1. Cut off the main power with the switch located on wall.

2. Five-pound CO_2 extinguisher located in room may be used at operator's discretion.

3. Leave room.

4. Activate manual fire alarms located in hallway.

5. Notify Safety Officer at Extension 3883.

Note: Emergency Procedures for the Gammacell 1000 Irradiator will be posted on the bulletin board in the Gammacell room. Notices from the NRC concerning Gammacell irradiators will be posted as appropriate.

ENCLOSURE 5

Item 5

LEAK TESTS AND DISPOSAL PROCEDURES

Leak testing will be performed bi-annually by the Phoenix Technology Corporation, 2256 Northlake Parkway, Tucker, Georgia 30084. Phoenix personnel will take smear samples from different locations inside the sample chamber and on the exterior surface of the irradiator. These samples will be counted and analyzed. Results will be reported to the Radiation Safety Officer. Contaminated smears will be disposed by the contractor. This test will be capable of detecting 0.05 microcuries of contamination. If this critical level of removable contamination is found, the Gammacell will be removed from operation immediately.

Discontinued sealed sources from the Gammacell 1000 will be returned to the vendor, Atomic Energy of Canada Limited.

LOCATION OF THE GAMMACELL 1000

The room housing the irradiator will be isolated and dedicated for irradiation research only and will be located in a room in the subbasement of Building No. 1 at CDC. The room will be locked at all times. Personnel monitoring will be accomplished by requiring personnel to wear a TLD when performing experiments using the Gammacell.

ENCLOSURE 6

Item 7 - TRAINING AND EXPERIENCE

Resumes of the supervisor of the Gammacell and the Radiation Safety Officer are enclosed. The supervisor has taken a 40-hour course in the principles and practices of radiation protection, radioactivity measurements and instruments, and has worked with a Gammacell at Emory University, with radioactive materials for over ten years. The supervisor will have the responsibility of training all personnel who use the Gammacell; untrained personnel will not be permitted to operate the Gammacell at any time. In addition, all Gammacell users will be required to take the CDC Radiation Safety course. The Radiation Safety Officer will monitor all Gammacell users to ensure that the basic training requirements are satisfied.

ENCLOSURE 7

CURRICULUM VITAE

Linda Spencer (Hall) Martin

Date of Birth: May 12, 1946

Sex: Female

Nationality: U.S. Citizen

Education: University of Alabama, B.S. (Bacteriology), 1968.
Georgia State University; Atlanta, Georgia M.S. 1972.
Emory University, Ph.D. October 1983.

Research Interest: Cellular Immunology

Title: Microbiologist, Immunology Branch
Division of Host Factors
Center for Infectious Diseases
Centers for Disease Control

Professional Experience:
Research Microbiologist in Parasitic Serology, CDC
Atlanta, Georgia - 1968-1973
Research Microbiologist in Immunology Branch, DHF, CDC
Atlanta, Georgia - 1973 to present

Professional Organizations:
Sigma Xi
Junior Member American Association for Immunology
S.E. Immunology Conference, Treasurer - 1978-1981

Certification: American Association of Microbiologists - Specialist Microbiologist

Honors: Who's Who In the South and Southwest - 1980-1981

BIBLIOGRAPHY

1. Walls, H.W., Hall, L.S., and Healy, G.R. Automated diagnostic complement fixation techniques in microbiology. I. Amebiasis. In Advances in Automated Analysis, 1969, Volume 1, Mediad, Inc., Tarrytown, NY, 1970.

2. Hall, L.S. and Walls, K.W. The standardization of complement in tests on the auto analyzer. Lab. Med. 41-44, 1971.

3. Hall, L.S. and Walls, K.W. Automation of the Pan American Health Organization analytical complement fixation test for antigen evaluation, In Advances in Automated Analysis 4:133-139, 1972, Mediad, Inc., Tarrytown, NY, 1973.

4. Hall, L.S. and Gordon, D.S. Reproducibility efficacy and methodology of mitogen induced lymphocyte transformations by the whole blood assay. J. Immunol. Met. 12:31, 1976.

5. Gordon, D.S., Barrett, S.N., Hall, L.S., Hubbard, M.R. Kinetic studies of T and B lymphocyte membrane markers in mitogen induced proliferation. In Leucocyte Membrane Determinants Regulating Immune Reactivity, Academic Press, 1976. Eijsvoogel, V.P., Roos, D., Zeijlemaker, W.P. eds. p. 245, (Proc. of the 10th Leucocyte Culture Conference).

6. Gordon, D.S., Hall, L.S., McDougal, J.S. Levamisole and cytoxan in a murine tumor model: in vivo and in vitro studies. Second conference on "Modulation of host resistance in the prevention or treatment of induced neoplasias." In Control of Neoplasia by Modulation of the Immune System, Raven Press, 1977. Chirigos, M.A. ed. p. 121.

7. Ades, E.W., Gordon, D.S., Phillips, D.J., LaVia, M.F., Martin, L.H., Black, C.M., and Reimer, C.B. Antisera specific for human T lymphocytes by immunofluorescence utilizing fluoresceinated staphylococcal protein A. I. Preparation and characterization. Am. J. Path. 92:619, 1978.

8. Martin, L.S. Cellular specificity and functional studies of monoclonal antibodies reactive with human polymorphonuclear leucocytes. Ph.D. Thesis, Emory University, 1983.

9. Martin, L.S., Gordon, D.S., Wilson, M.E., Browning, S.W., and Fritz, R.B. Monoclonal antibody to human granulocytes: cellular specificity and functional studies. J. Leukocyte Biology 35:265-279.

10. Martin, L.S., McDougal, J.S., Browning, S.W., and Gordon, D.S. Cellular Specificity and Functional Studies of G2, a Monoclonal Antibody to Human Polymorphonuclear Leukocytes. In Human Leukocyte Markers Detected by Monoclonal Antibodies, Springer-Verlag (Proc. of the First International Workshop on Human Leucocyte Differentiation Antigens). p. 438-441, 1984

Curriculum Vitae (Continued)

Martin, L.S. and McDougal, J.S. Brief Communication - Effect of commercial antibodies on human neutrophil function. Submitted for publication.

Martin, L.S., McDougal, J.S., Spira, T.J., and Loskoski, S. Abstract - Identification of surface antigens on immunoglobulin-secreting cells found in homosexual men with generalized lymphadenopathy. Accepted: The 16th International Leucocyte Culture Conference, Cambridge, England, August 19-25, 1984

ENCLOSURE 7

CURRICULUM VITAE - Paul David Simpson, Jr.

TITLE (CIVILIAN):

Computer Programmer Analyst Centers for Disease Control (CDC) Center for Environmental Health (CEH) Chronic Diseases Division (CDD) Agent Orange Project (AOP)	1983-1984 *

TITLE (MILITARY):

Nuclear Medical Science Officer (Captain), 818th Hospital Ctr, Ft. Gillem, Georgia	1981-1984

EDUCATION:

B.S.(physics) - Virginia State University	1963
M.S.(physics) - Howard University	1967
M.S.(health physics) - Georgia Institute of Technology	1977
Ph.D.(health physics) - Georgia Institute of Technology	1985 (Est)

MILITARY EDUCATION:

Basic Officer's Course - U.S. Army Air Defense School Ft. Bliss, Texas	1970
Advanced Officer's Course - U.S. Army Transportation School, Fort Eustis, Virginia	1979
Command and General Staff Officer Course Fort Leavenworth, Kansas	1982

HONORS:

Oak Ridge National Laboratory Best Paper Award ($500), American Nuclear Society Student Conference	1982
State of Georgia Regents Opportunity Fellowship	1979-1982
Ferst Foundation Grant ($5000)	1979
IBM Corp. 100% Club	1974-1975
Honor Graduate, IBM Marketing School	1973
National Bureau of Standards Research Fellow	1969-1970

COLLEGE HONORS:

Phi Beta Sigma (Scientific)
Sigma Pi Sigma (Physics)
Pi Mu Epsilon (Mathematics)
Alpha Gamma Mu (Foreign Language)
Who's Who in American Colleges and Universities

*Since November 1984, has been assigned as a Health Physicist and Radiation Safety Officer in the Office of Biosafety at CDC on a full-time basis.

Paul D, Simpson, Jr.

MEMBERSHIPS:

Washington Philosophical Society
Atlanta Chapter of the Health Physics Society
Health Physics Society
American Association of Physicists in Medicine
American Nuclear Society
American Physical Society

EXPERIENCE:

Computer Programmer, CDC, CEH, CDD, Birth Defects Branch	1983
Computer Programmer, CDC, Ofc. Dir., Center for Infections Diseases, Ofc. of Admin. Services	1982-1983
Health Physicist/Graduate Student, Neely Nuclear Research Center, Georgia Institute of Technology (See Publications and Research)	1977-1982
Medical Physicist, Walter Reed Medical Center, Washington, D.C.,	Military-1983
Radiological Safety Office, Dwight D. Eisenhower Hospital, Augusta, Georgia	Military-1982
Data Processing Project Manager, U.S. Army Forces Command	1975-1976
Marketing Representative, IBM	1972-1975
Physicist/Graduate Fellow, National Bureau of Standards	1969
Physicist, U.S. Naval Ordance Lab and Aberdeen Proving Grounds	1963&1965

PRESENTATIONS:

"The Update and Distribution of I-125 Labelled Estradiol in Mammary Tumors with Estogen Receptors," American Nuclear Society Conference, Washington, D.C., 1982

"The Distribution of I-125 labelled Estradiol in Mammary Tumors with Estrogen Receptors, American Nuclear Society Student Conference, Atlanta, Georgia, 1982

"Heating Patterns in Phantoms containing Simulated Bone and Muscle Components Exposed to 434-MHZ Electromagnetic Radiation", Eastern American Society Student Conference, University of Tennessee, Knoxville, 1980

"Computional Analysis and Dosimetric Evaluation of a Commercial Irregular Fields Computer Program," Southeast Regional Nuclear Science and Engineering Conference, University of Florida, Jacksonville, Florida, 1978

"Health Physics Hazard and Solutions Associated with the Nuclear Reactor, Hatch I, "Eastern American Nuclear Society Student Conference, North Carolina State University, Raleigh, North Carolina, 1977

"The Use of the Electronic Warfare Data Aquisition System," Sixteenth Annual Joint ECM Planning Conference, Monterey, California, 1970

"Electron Impact Spectroscopy for the Analysis of an Anomaly in the Nitrogen Molecule and the Strongly-Coupled Excited States of Formaldehyde, American Physical Society Meeting, Washington, D.C., 1970

PUBLICATIONS AND RESEARCH:

"The Uptake of I-125 Labelled Estradiol in Tumors with Estrogen Receptors," Transactions of the American Nuclear Society, 43 (Nov. 82)

Performed research on Ph.D. thesis entitled: Effects of Blood Flow Convection, Thermal Conductivity and Other Heat Transfer Phenomenon in Tumor Systems in Vivo Experiencing Hyperthermia due to Non-ionizing Electromagnetic Irradiation, Georgia Institute of Technology and Emory University Clinic, 1970-1984 (To be Published)

"Influence of Bone on Temperature Patterns Produced by 434 MHZ Electromagnetic Radiations," with J.R. McLaren and P.H. McGinley, Radiology, 141 (Dec. 81)

Worked on a research project: The Transport of Actinide Elements through Simulated Rock Formations by Suspended Matter, funded by the Environmental Protection Agency, 1979

Performed an internship as a Medical Physicist, Georgia Baptist Medical Center, Atlanta, Gerogia, 1977

Conducted research on the subject: "Ultrasonic Dosimetry in Simulated Tissue Materials," sponsored by the Department of Health, Education and Welfare, Georgia Insitute of Technology, 1977

Masters Thesis entitled "Adiabatic Motion of Charged Particles in Magnetic Fields," Howard University, 1966

RECOMMENDATIONS:

Will provide on request.