MATERIALS LICENSE

Amendment No. 18

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, 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. Department of the Army Walter Reed Army Medical Center	In accordance with application dated October 13, 1989, 3. License number 08-01738-03 is amended in its entirety to read as follows:
2. Washington, D. C. 20307-5001	4. Expiration date May 31, 1991
	5. Docket or Reference No. 030-06895

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Cobalt 60	A. Sealed sources (AECL Models C-166, C-167 or C-198)	A. 2 sources not exceed 16,000 curies each
B. Cesium 137	B. Sealed sources (AECL Model C-161 Type 8)	B. 2 sources not to exceed 2,100 curies each
C. Cobalt 60	C. Sealed sources (AECL Model C-198)	C. 2 sources not to exceed 26,400 curies each
D. Cesium 137	D. Sealed sources (AECL Model C-161 Type-8)	D. 2 sources not to exceed 2,100 curies each
E. Cesium 137	E. Sealed sources	E.

9. Authorized use

A. To be used in AECL Gammacell 220 irradiator for medical research and development and radiation dosimetry.
B. To be used in AECL Gammacell 40 Irradiator for small animal irradiation, medical research, development and radiation dosimetry.
C. To be used in AECL Gammacell 220 Irradiator for medical research and development and radiation dosimetry.
D. To be used in AECL Gammacell 40 Irradiator for medical research and development and radiation dosimetry.
E. To be used in a irradiator to irradiate blood products.

CONDITIONS

10. Licensed material shall be used at WRAIR, Washington, D.C., and USAMRILD, Fort Detrick, Maryland.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number: 08-01738-03

Docket or Reference number: 030-06895

Amendment No. 18

(Continued) CONDITIONS

11. A. Licensed material shall be used by individuals designated by the individual approved by the Radiation Control Committee.

B. The Radiation Safety Officer for this license is Allen W. Anthony.

12. Sealed sources containing licensed material shall not be opened.

13. A. The sources specified in Items 7.A., 7.B., 7.C. 7.D. and 7.E. shall be tested for leakage and/or contamination at intervals not to exceed 6 months. Any source received from another person which is not accompanied by a certificate indicating that a test was performed within 6 months before the transfer shall not be put into use until tested.

B. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the source shall be removed from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region I, ATTN: Chief, Nuclear Materials Safety Branch, 475 Allendale Road, King of Prussia, Pennsylvania 19406. The report shall specify the source involved, the test results, and corrective action taken. Records of leak test results shall be kept in units of microcuries and shall be maintained for inspection by the Commission. Records may be disposed of following Commission inspection.

C. The licensee is authorized to collect leak test samples for analysis by individuals approved by the Radiation Control Committee, Walter Reed Army Medical Center or tests for leakage and/or contamination shall be performed by persons specifically licensed by the Commission or an Agreement State to perform such services.

14. The licensee shall not perform repairs or alterations of the irradiator involving removal of shielding or access to the licensed material. Removal, replacement, and disposal of sealed sources in the irradiator shall be performed by a person specifically licensed by the Commission or an Agreement State to perform such services.

15. Written instructions contained in application dated May 17, 1985 shall be followed and a copy of these instructions shall be made available to each individual using or having responsibility for use of licensed material. Any changes to these instructions shall have the prior approval of the U.S. Nuclear Regulatory Commission, Region I, ATTN: Chief, Nuclear Materials Safety Branch, 475 Allendale Road, King of Prussia, Pennsylvania 19406.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number 08-01738-03
Docket or Reference number 030-06895
Amendment No. 18

(Continued) CONDITIONS

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. 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 May 17, 1985
B. Letter dated April 8, 1986
C. Letter dated August 21, 1986
D. Application dated October 13, 1989
E. Letter dated November 22, 1989

Date DEC 07 1989

For the U.S. Nuclear Regulatory Commission
Original Signed By:
By Thomas K. Thompson
Nuclear Materials Safety Branch
Region I
King of Prussia, Pennsylvania 19406

DEC 07 1989

License No. 08-01738-03
Docket No. 030-06895
Control No. 111556

Department of the Army
Walter Reed Army Medical Center
Charles E. Day, III, LTC
ATTN: HSHL-HP
Washington, D.C. 20307-5001

Gentlemen:

Please find enclosed an amendment to your NRC Material License.

Please review the enclosed document carefully and be sure that you understand all conditions. If there are any errors or questions, please notify the Region I Material Licensing Section, (215) 337-5239, so that we can provide appropriate corrections and answers.

Please be advised that you must conduct your program involving licensed radioactive materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, please note the items in the enclosed, "Requirements for Materials Licensees."

Since serious consequences to employees and the public can result from failure to comply with NRC requirements, the NRC expects licensees to pay meticulous attention to detail and to achieve the high standard of compliance which the NRC expects of its licensees.

You will be periodically inspected by NRC. A fee may be charged for inspections in accordance with 10 CFR Part 170. Failure to conduct your program safely and in accordance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC will result in prompt and vigorous enforcement action against you. This could include issuance of a notice of violation, or in case of serious violations, an 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, 10 CFR Part 2, Appendix C.

OFFICIAL RECORD COPY ML 08-01738-03/LTR - 0001.0.0
12/06/89

ML 10

We wish you success in operating a safe and effective licensed program.

Sincerely,

Original Signed By:
Thomas K. Thompson

Thomas K. Thompson, Health Physicist
Nuclear Materials Safety Section C
Division of Radiation Safety
and Safeguards

Enclosures:
1. Amendment No. 18
2. Requirements for Materials Licensees

DRSS:RI
Thompson/tlm

12/ /89

OFFICIAL RECORD COPY ML 08-01738-03/LTR - 0002.0.0
12/06/89

ABOVE CLASS C SOURCE/DEVICE INVENTORY SURVEY

Licensee's (name and address) License #: 08-01738-03

Licensee Name: Department of Army
Contact Name: David Burton
Title: Chief RMC Branch
Department: Walter Reed Army Med Ctr.
Street:
City: Wash. DC State: __ Zip Code: 20307-5001
Phone Number: ( ) 427-5104 Ext.: _____

Provide accurate and complete responses to each question below:

1) How many sealed sources and/or devices do you have that are above Class C (i.e. Am-241 > 27 mCi, Pu-238 or -239 > 27 mCi, Cm-244 > 27 mCi, Cs-137 > 910 Ci, or any other transuranic > 27 mCi with a half-life greater than five years)? Identify each source or device on the attached inventory sheet.
4 Sources

2) How do you dispose of your sources and/or devices? (check appropriate box) None disposed of.

Manufacturer: ___
Transfer to another licensee: ___
Other: ___

If other, please elaborate: _____

3)a. Are you able to find and use an authorized recipient to purchase, dispose, or store any sources and/or devices that you no longer want? (check one) Yes ____ No ____

If no, please elaborate: _____

b. Are there any diffculties in using this authorized recipient? (check one) Yes ___ No ___

If yes, please elaborate: _____

4) Additional comments - check here ___ and use back of this sheet.

Surveyor: T K Thompson Date: 12/7/89

Note: Activity levels described in question 1 were derived from limits established in 10 CFR 61 section 61.55. The levels were based on typical size sources.

OFFICIAL RECORD COPY ML 10

License #: 08-01738-03

ABOVE CLASS C SOURCE/DEVICE INVENTORY SHEET

Manufacturer	Model #	TYPE	Isotope	Activity mCi or Ci	Use	Active	Inactive	Explanation
AECL	C-161	8	Cs-137	~~3600~~ <2100		✓		
"	"	8	"	~~3490~~ <2100		✓		
"	"	8	"	<2100		✓		
"	"	8	"	<2100		✓		

NOTE: List each source/device separately. If inactive or use is other, please explain.

CODES:

Isotope: Am-241, Cm-244, Cs-137, Pu-238, Pu-239

Inactive: D - Damaged; L - Lost; T - Wants to dispose or transfer; DT - Damaged and wants to dispose or transfer; X - Surplus; O - Other

Use: A - Well logging; B - Irradiator; C - Teletherapy; D - X-ray fluorescence; E - Portable gauges; F - Fixed gauges; G - Broad licenses; H - Pacemakers; I - Waste brokers; O - Other

MS-16
P-7

DEPARTMENT OF THE ARMY
WALTER REED ARMY MEDICAL CENTER
WASHINGTON, D.C. 20307-5001

REPLY TO ATTENTION OF:

22 NOV 1989

HSHL-H-HP (385-11m)

MEMORANDUM FOR US Nuclear Regulatory Commission, Region I, Nuclear Material Section B, Attn: Mr. Tom Thompson, 475 Allendale Road, King of Prussia, Pennsylvania 19406

SUBJECT: Additional information requested to amend NRC License No. 08-01738-03

1. The information referred to (from our Broad Scope License No. 08-01738-02) in our amendment dated 16 October 1989 is enclosed. The material on training from Tab C Chapter 2 is provided (enclosure 1). The material on Personnel Monitoring from Tab C Chapter 5 and Tab D Condition No. 1 is provided (enclosures 2 & 3). Lists of radiation detection instruments available at Walter Reed and calibration procedures for same listed in Tabs E & F are provided (enclosures 4 & 5).

2. In addition to the lock on the irradiator itself and the key control procedures outlined in enclosure 7 of the original amendment dated 16 October 1989, room [redacted] will be locked whenever not occupied or under the direct visual control of Blood Bank personnel. Ex 2

3. Lieutenant Anthony has recently spent 4-6 hours with Dr. Bill Bass (the principle user for the AECL Gammacell 40 and AECL Gammacell 220 irradiators at building 40) to familiarize himself with the use of sealed source irradiators. This includes personnel monitoring, instrumentation, and mechanical layout of sources, shielding and exposure chambers within the irradiators. In addition the contract with J. L. Shepherd for the new irradiator includes 8 hrs. of hands on training for approved users and Lieutenant Anthony and one or two other members of the Health Physics Office will attend.

4. If any other information is needed the point of contact is Mr. David W. Burton. We appreciate all your help in expediting this amendment as the program is ready to go, and the irradiator ready to ship.

David W. Burton

David W. Burton
Chief, RMC Branch
Health Physics Office

Ex 2

111556

OFFICIAL RECORD COPY ML1[redacted]

NOV 22 1989

CHAPTER 2
Training

2-1. GENERAL. The NRC requires that training be given to any employee who works in or frequents the vicinity of any area controlled by the licensee for protection of individuals from exposure to ionizing radiation. The Commander, WRAMC, has implemented training programs pertaining to the hazards of radiation and the methods for minimizing those hazards for radiation workers and other personnel.

2-2. PROGRAMS.

a. Initial Briefing.

(1) The Principal User is responsible for individuals who work under or are associated with work areas designated on his Authorization for the Use of Radioisotopes. He is required to give and document an initial and annual briefing to those individuals which covers, at a minimum, the following:

(a) WRAMC Notice to Employees

(b) Form NRC-3, Notice to Employees

(c) Title 10, Code of Federal Regulations, Parts 19, 20 and 21

(d) Information concerning the storage, transfer and use of radioisotopes allowed under his authorization

(e) Authorization to Use Radioisotopes (WRAMC Form 1661-R, Application for Authorization to Use Radioactive Material - Human Use and/or WRAMC Form 1662-R, Application for Authorization to Use Radioactive Material - Non-human Use)

(f) Hazards and protective measures associated with isotope usage

(g) Procedures for requesting a report of exposure to radiation

(2) This briefing will be given and acknowledged by signing WRAMC Form 538, Radiation Worker Briefing.

b. Introductory Principles of Radiation Protection Course: This two-day course, given by the staff of the HPO, is designed to complete and reinforce training given by the Principal User. It provides supplementary training, in an academic setting, required for the safe handling of

CHAPTER 5
Personnel Monitoring

5-1. GENERAL.

a. This chapter prescribes procedures and responsibilities for monitoring and recording occupational exposures to ionizing radiation from radiation producing devices and radioactive materials.

b. Each activity receiving personnel dosimetry service from HPO will designate a personnel dosimetry coordinator and alternate to assist HPO in the issue, exchange and collection of dosimetry devices.

c. Application for personnel dosimetry service must be initiated by the individual and submitted on a properly completed DD Form 1952, "Dosimeter Application and Record of Occupational Radiation Exposure", to the HPO. The HPO will evaluate the information on the application and issue appropriate dosimetry or provide written notification that dosimetry is not needed.

d. Assignment of a personnel dosimetry device to an individual does not automatically make him a radiation worker. Occasionally exposed individuals may be monitored to determine need for permanent issue of dosimetry devices.

5-2. FILM BADGES.

a. The whole body badge is the primary dosimetry device used at WRAMC and is the only device legally recognized for whole body dosimetry. Other devices such as TLD may be used to monitor portions of the body or as supplemental dosimeters.

b. A whole body badge will be worn only by the individual to whom it is issued.

c. WRAMC issued dosimetry will not be worn by personnel when occupationally exposed at other facilities.

d. Whole body badges will be worn on the front of the torso. In the event a protective garment, such as a lead apron, is worn the badge will be worn under the protective garment.

5-3. SUPPLEMENTAL MONITORING DEVICES. Additional personnel monitoring devices will be provided when necessary to monitor a portion of the body or to obtain more immediate data. These devices will be worn only by individuals to whom they are issued.

5-4. CARE OF MONITORING DEVICES. When not being worn, personnel monitoring devices will be stored in the designated place and turned in to the personnel dosimetry coordinator during designated exchange periods. Film badges are not

HEALTH PHYSICS
WALTER REED ARMY MEDICAL CENTER
Washington, D.C. 20307-5001

CONDITION NO. 1

For

RADIOACTIVE MATERIAL AUTHORIZATIONS

PERSONNEL DOSIMETRY

1. PERSONNEL DOSIMETRY ASSIGNMENT LEVELS

An appropriate personnel monitoring device or devices will be assigned to each individual as required by the Health Physics Officer. In addition, other personnel monitoring techniques (e.g., bioassay) will be utilized to evaluate personnel dosimetry as deemed necessary by the Health Physics Officer. Personnel monitoring devices will usually be assigned when individuals could potentially receive in excess of the following levels in a three (3) month period:

Whole Body, head and trunk, active blood forming organs, gonads or lens of the eye	63 millirems
Skin of the whole body (other than hands, wrists, feet or ankles), forearms, and cornea of the eye	375 millirems
Hands and wrists, or feet and ankles	938 millirems
Bone, thyroid, other organs, tissues and organ systems	250 millirems

2. APPLICATION FOR PERSONNEL DOSIMETRY SERVICE

a. Supervisors of individuals who are potentially exposed to occupational radiation doses in excess of the above values must require such individuals to submit an application for Personnel Dosimetry Service (DD Form 1952) to the Health Physics Office, WRAMC, prior to assignment to that work.

b. The procedure and responsibilities for processing the application are as follows:

(1) Individual Application for Personnel Dosimetry Service: The applicant has the responsibility to furnish:

(a) Individual data

(b) Previous occupational exposure history

LIST OF RADIATION DETECTION INSTRUMENTS

TYPE	NUMBERS AVAILABLE	RADIATION DETECTION	RANGE	WINDOW THICKNESS (mgm/cm^2)	USE
Eberline 6112	6	beta, gamma	0-1R/hr	30	Surveys
Eberline E 120	10	beta, gamma	0-50mR/hr	30	Lab Surveys
Eberline PAC-ISA	1	gamma	0-2000kcpm	1.5	Monitor
Eberline PAC-ISAGA	2	gama	0-2000kcpm	0.5	Monitor
Eberline PRM-5	1	beta/gamma	N/A	N/A	Monitor
Eberline 140	4	beta,gamma	0-60kcpm	N/A	Monitor
Eberline PRM-5-3	1	beta,gamma	N/A	N/A	Monitor
Eberline PRM-6	3	beta, gamma	0-500cpm	N/A	Survey
Eberline PRS-1 (Rascal)	14	beta, gamma	0-999,999cpm	N/A	Monitor
Eberline RM-16	10	gamma	10^2-10^6cpm	N/A	Monitor
Eberline MS-3	4	beta, gamma	N/A	N/A	Monitor
Eberline PRN-4	1	neutron	0-5kR/hr	N/A	Monitor
Gamma Industries 250B	20	beta, gamma	0-1000mR/hr	30	Survey
Gamma Industries 252B	10	beta, gamma	0-1000mR/hr	30	Survey

TYPE	NUMBERS AVAILABLE	RADIATION DETECTION	RANGE	WINDOW THICKNESS (mgm/cm^2)	USE
Ludlum 2	8	beta, gamma	0-50mR/hr	1.5	Survey
Ludlum 3	172	beta, gamma.	0-500mR/hr	30	Survey
Ludlum 3	7	alpha	0-500mR/hr	1.0	Survey
Ludlum 12S	1	gamma	N/A	N/A	Monitor
udlum 16S	1	gamma	0-500,000cpm	N/A	Monitor
Ludlum 28	31	gamma	N/A	30	Monitor
Ludlum 2000	1	gamma	N/A	N/A	Monitor
Ludlum 2200	1	gamma	N/A	N/A	Monitor
Victoreen 440	3	gamma	N/A	1.0	Measure
Victoreen 440RF	1	gamma	0-300mR/hr	N/A	Measure
Victoreen 471	10	alpha, beta, gamma	0-1R/hr	$500mg/Cm^2$	Measure
Victoreen 808B	3	gamma	.1mR/hr-100mR/hr	N/A	Measure
uclear Data ND660MCA	1	gamma	N/A	N/A	Measure
Nuclear Data ND66	1	gamma	N/A	N/A	Measure
Canberra 2201	1	alpha, beta	N/A	N/A	Measure
Beckman LS-9800	1	beta	N/A	N/A	Measure
Packard AG-5780	1	gamma	N/A	N/A	Measure
Keithly 36150	2	beta, gamma	0-20R/hr	$50mg/Cm^2$	Measure

CALIBRATION OF SURVEY INSTRUMENTS

1. Survey instruments will be calibrated at least annually and following repair.

2. Calibration will be performed at two points on each scale. The two points will be approximately 1/3 and 2/3 of full scale. A survey instrument may be considered properly calibrated when the instrument readings are within ± 10% of the calculated or known values for each point checked. Readings with ± 20 are considered acceptable if a calibration chart or graph is prepared and attached to the instrument.

3. Survey instruments will be calibrated by an annually contracted company, whose procedures and sources are approved by the agreement state/NRC.

to be worn during non-duty hours or when the individual is examined in medical or dental clinics.

5-5. BIOASSAY.

a. The HPO will designate individuals to participate in the bioassay program. Once so designated, individuals will participate until released, in writing, by the HPO.

b. Individual Responsibilities.

(1) Appearing for measurement at the time, place and frequency required.

(2) Providing required specimen for in-vitro counting.

(3) Informing HPO of changes in working conditions or other factors influencing the type or frequency of bioassay measurement.

5-6. RECORDS.

a. Records of individual radiation exposure are maintained on DD Form 1141, "Record of Occupational Exposure to Ionizing Radiation", or an Automated Dosimetry Report (ADR). The records are kept at the HPO until individuals depart WRAMC or are removed from dosimetry service. Records are then placed in the individual health record. Records may be reviewed at the HPO during normal duty hours.

b. Locator Cards.

(1) DD Forms 1141 or ADR are medical records. Locator cards identifying radiation workers will be furnished by HPO to the medical records section for placement in individual medical records.

(2) Individuals not maintaining medical records at the out-patient medical records section, WRAMC, must bring their records to the HPO to have the locator card inserted.

c. Personnel occupationally exposed at a facility outside the jurisdiction of WRAMC will furnish all exposure information to the HPO.

d. The DD Form 1141 or ADR is covered under the Privacy Act. Therefore a written authorization, signed by the individual must be forwarded to the HPO before occupational exposure information can be released.

5-7. TERMINATION OF PERSONNEL DOSIMETRY. Individuals who wish to terminate personnel dosimetry service for any reason will report to the HPO, Building 188, Forest Glen Section with their medical records during normal duty hours. The individual must provide HPO with the reason for termination and a forwarding address.

radioisotopes and protection of individuals from external and internal radiation hazards. It is required that all radiation workers attend this course, as soon as possible, after beginning work at WRAMC. An examination is given at the end of this course. If the student fails the exam it may be retaken, after additional preparation, or the student may elect to retake the course. Subsequent failure requires that the Principal User evaluate the advisability of retaining the individual in a position which requires the handling and use of radioisotopes.

c. Principal User Classes. The senior staff of the HPO conducts periodic classes on selected topics. These topics are based on the need to disseminate current information on license and regulation changes, to correct deficiencies which have been noted and to enhance the professional competency of individuals working in radiation environments. This is mandatory for Principal Users. Co-workers are encouraged to attend.

d. Nursing In-service: Briefings, designed for nursing and para-professional staff who come in contact with patients undergoing therapy with radioisotopes, are presented upon request to the HPO. Specific details on the types of therapy or other procedures are covered.

e. Briefing for Support Personnel: This class is designed for individuals whose duties take them into areas where radioisotopes are used. It familiarizes personnel with signs, placards and color schemes associated with radioactive material, gives a general outline of what radiation and contamination are and sets ground rules for what should and should not be done in these areas.

f. Briefing for Firefighters: This briefing covers methods of designating areas where radioactive materials are used, use of radiation detection instrumentation, notification procedures and procedures for ensuring protection from contamination and internal deposition.

g. Briefing for Military Police/Security Personnel: This class teaches the proper method for receiving, inspecting and storing incoming packages containing radioisotopes and addresses the procedures for dealing with problems such as a damaged container or leaking package.

111556

NRC FORM 218 (4-76) NRCM 0240

U.S. NUCLEAR REGULATORY COMMISSION

TELEPHONE OR VERBAL CONVERSATION RECORD

DATE 11/15/89

TIME 10:30 ☐ A.M. ☐ P.M.

☐ INCOMING CALL ☐ OUTGOING CALL ☐ VISIT

PERSON CALLING	OFFICE/ADDRESS	PHONE NUMBER	EXTENSION
TK Thompson	RI		5303

PERSON CALLED	OFFICE/ADDRESS	PHONE NUMBER	EXTENSION
David Burton	Almi 030-06895	427-5704	

CONVERSATION

SUBJECT: Amend Request dated 10/13/89

SUMMARY

1) Will new irradiator be kept in a locked area when unattended?

2) User Training, dosimetry, use of instruments refers to License 02. ~~We must~~ Please submitt these references or refer to references already submitted under the 03 license.

3) What ~~training~~ experience does the proposed RSO have with self shielded irradiators?

Mr. Burton aggreed to answer these questions & Fax to Regin.

REFERRED TO:

☐ ADVISE ME OF ACTION TAKEN.

ACTION REQUESTED

Fax to Regin

INITIALS

DATE

ACTION TAKEN

INITIALS

DATE

NRC FORM 218 (4-76) OFFICIAL RECORD COPY ML 10

111551

030-06895

DEPARTMENT OF THE ARMY
OFFICE OF THE SURGEON GENERAL
5109 LEESBURG PIKE
FALLS CHURCH, VA 22041-3258

REPLY TO
ATTENTION OF

November 2, 1989

Preventive and Military
Medicine Consultants Division

US Nuclear Regulatory Commission
Region I
475 Allendale
King of Prussia, Pennsylvania 19406

Dear Sir:

Enclosed are two copies of a request to amend Byproduct Material License Number 08-01738-03, Walter Reed Army Medical Center, Washington, District of Columbia.

Recommend approval.

Sincerely,

Charles E. Day, III
Lieutenant Colonel, U.S. Army
Radiological Hygiene Consultant

Enclosure

FEE EXEMP

111556

OFFICIAL RECORD COPY ML 10

NOV 06 1989

DEPARTMENT OF THE ARMY
WALTER REED ARMY MEDICAL CENTER
WASHINGTON, D.C. 20307-5001

REPLY TO
ATTENTION OF:

16 OCT 1989

HSHL-H-HP (385-11m)

MEMORANDUM THRU Commander, US Army Health Services Command, ATTN: HSCL-P, Fort Sam Houston, TX 78234-6000

FOR US Nuclear Regulatory Commission, Region I, Nuclear Material Section B, 475 Allendale Road, King of Prussia, PA 19406

SUBJECT: Amendment of US Nuclear Regulatory Commission License No. 08-01738-03

1. Request that NRC License No. 08-01738-03 for Walter Reed Army Medical Center be amended to include another Gamma Irradiator; an NRC Form 313 and other pertinent documents are provided (enclosure 3 thru 7).

2. This unit is a critical part of a new bone marrow transplant program coming on line at Walter Reed, we therefore request your assistance in the expeditious processing of this amendment.

3. Please be advised that Major General Richard D. Cameron is the new Commanding Officer of Walter Reed Army Medical Center and Colonel Russ Zajtchuk is the new Deputy Commander for Clinical Services and in that capacity is the new Chairman of the Radiation Control Committee of Walter Reed Army Medical Center. Copies of their curriculum vitae are provided (enclosure 1 & 2).

FOR THE COMMANDER:

7 Encls

LLEWELLYN E. PIPER
LTC, MS
Executive Officer

BIOGRAPHICAL INFORMATION

RICHARD D. CAMERON, M.D., MAJOR GENERAL, USA.

Education:	BA Degree, State University of Iowa	
	MD Degree, State University of Iowa	
	MHA Degree, Baylor University, Texas	
Internship:	Rotating Internship, Brooke Army Medical Center, San Antonio, Texas,	1965-66
Residency:	Psychiatric Residency, Letterman Army Medical Center, San Francisco, California, (with work at Center for Training in Community Psychiatry, Berkeley.	1966-69
Positions:	Commanding Officer, 93d (KO) Neuropsychiatric Team, RVN,	1969
	Division Psychiatrist, 1st Air Cavalry Divison, RVN,	1970
	Instructor, Behavioral Sciences Divison, Academy of Health Sciences, US Army, Fort Sam Houston, Texas,	1971
	Instructor, US Army Alcohol and Drug Prevention Program, Yale University, FRG	1972
	Project Officer, Deputy Chief of Staff for Professional Activities, HQ, US Army Health Services Command, San Antonio, Texas,	1974
	Chief, Inpatient Psychiatric Service, William Beaumont Army Medical Center, El Paso, Texas,	1974
	Chief, Department of Psychiatry, William Beaumont Army Medical Center, El Paso, Texas,	1974-75
	Chief, Department of Psychiatry, Landstuhl Army Medical Center, 2d General Hospital, FRG	1975-76

Ex 6

Positions (continued)	Divison Surgeon, 3d Armored Division, Frankfurt, FRG,	1976-77
	Commander, 56th General Hospital, Baumholder FRG	1977-79
	Medical Team Chief-Saudi Arabian National Guard Medical Modernization Program,	1980
	Deputy Chief of Staff, Operations, HQ, US Army Health Services Command, Fort Sam Houston, Texas,	1980-1983
	Commander, Darnall Army Community Hospital and III Corps Surgeon, Fort Hood, Texas,	1983-86
	Commanding General, William Beaumont Army Medical Center, El Paso, Texas,	1986-88
	Deputy Assistant Secretary of Defense for Health and Medicine, Washington, D. C.,	1988-89
Current Position:	Commanding General Walter Reed Army Medical Center Washington, D. C.,	1989-
Certificate of License:	Medicine and Surgery, Iowa,	1965
Professional Boards:	Diplomate, American Board of Psychiatry and Neurology,	1973
Professional Societies:	American College of Physician Executives American Psychiatric Associaton Association of Military Surgeons	
Awards:	Legion of Merit (2) Meritorious Service Medal Air Medal Army Commendation Medal (5) Expert Field Medical Badge Parachutist Badge US Army Order of Military Merit	
Military Schooling:	AMEDD Officers' Basic AMEDD Officers' Advanced Command and General Staff College US Army-Baylor Hospital Administration Course Industrial College of the Armed Forces.	

CURRICULUM VITAE

NAME: Russ Zajtchuk

CURRENT STATUS: Colonel, Medical Corps, U. S. Army (Active, Regular)
SSI#: 61K9A, 61J9B
Date of Rank: 7 June 1978
SSN: [redacted]

Deputy Commander for Clinical Services
Walter Reed Army Medical Center
Washington, DC 20307-5001

Professor and Chairman
Division of Cardiothoracic Surgery
Uniformed Services University of the Health Sciences
Bethesda, MD 20814

Consultant, Cardiothoracic Surgery
National Naval Medical Center
Bethesda, MD 20814

BOARD CERTIFICATION AND LICENSURE: American Board of Surgery, 1969
American Board of Thoracic Surgery, 1970
Licensed: Colorado and Illinois (current and fully active)

EDUCATION: College: University of Illinois, 1955-1958
University of Chicago, 1958-1959

Medical School: University of Chicago, 1959-1963
Degrees: BS [redacted] MD [redacted]

Internship: University of Chicago, 1963-1964

General Surgery Residency: University of Chicago, 1964-1968

Cardiothoracic Residency: University of Chicago, 1968-1970

PROFESSIONAL EXPERIENCE AND ASSIGNMENTS: University of Chicago, Assistant Professor of Surgery, Jan 1970 - Jul 1970

Chief, Thoracic Surgery, Fort Campbell, Kentucky, 1970-1971

Tour in Vietnam. Served as Chief, Professional Services at 24th Evac Hospital and 3rd Field Hospital. Also served as Consultant in Thoracic Surgery for Vietnam, Sep 1971 - Sep 1972

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PROFESSIONAL EXPERIENCE AND ASSIGNMENTS (CONT'D):

Assistant Chief, Thoracic-Cardiovascular Surgery Service, Fitzsimons Army Medical Center, Denver, CO, 1972-1977

Director of Surgical Research, Fitzsimons Army Medical Center, Denver, CO, 1972-1977

Assistant Professor of Surgery, University of Colorado School of Medicine, 1972-1976

Assistant Chief, Thoracic-Cardiovascular Surgery Service, Walter Reed Army Medical Center, Washington, DC, 1980-1981

Chairman and Program Director, National Naval Medical Center, Bethesda, MD, 1980-1981

Chairman and Program Director, Thoracic-Cardiovascular Surgery Service, Walter Reed Army Medical Center, Washington, DC, 1981-1984

Professor and Chairman, Division of Cardiothoracic Surgery, School of Medicine, Uniformed Services University of the Health Sciences, Bethesda, MD, 1981 - Present

Consultant to The Army Surgeon General in Cardiac and Thoracic Surgery, Washington, DC, 1980-1984

Commander, 41st Combat Support Hospital and JTF Surgeon for Honduras, Jul 1983 - Apr 1984

Department of Defense Readiness Review Member for Secretary of Defense, Apr 1984 - Jun 1984

United States Southern Command, Command Surgeon, Quarry Heights, Panama, Jul 1984 - Jul 1985

Student at National Defense University, Aug 1985 - Jun 1986

Surgical Consultant to The Surgeon General, Chief Consultants Division, Jul 1986 - Jul 1988

Deputy Director, Professional Services, Office of The Surgeon General, Jun 1988 - Jun 1989

Chief, Consultants Division, Office of The Surgeon General, Jun 1987 - Jun 1989

MILITARY SCHOOLS/COURSES:	AMEDD Officer Basic, 1970
	AMEDD Officer, Advanced, 1978
	Combat Casualty Course (AMEDD), 1982
	USA Command and General Staff College, 1983
	Baylor University Program in Health Care Administration, 1986
	Industrial College of the Armed Forces, 1986
SOCIETIES:	American College of Surgeons
	Association of Military Surgeons
	Society for Thoracic Surgeons
	Sigma Xi
	The Western Thoracic Surgical Society
	American Association for Thoracic Surgery
	American College of Cardiology
	Association of Training Program Directors
CIVILIAN AWARDS/HONORS:	NSF Fellowship, 1961 - 1962
	Chicago Surgical Society Award for Surgical Research, 1965 (1st Prize)
	Certificate of Merit from AMA for Exhibit on Hypercoagulability, 1976
	Won Second Place at Southeastern Surgical Congress, Exhibit on Hypercoagulability, 1977
	Dominique Larey Award for Excellence in Military Surgery, Awarded by USUHS, 1989
MILITARY AWARDS - U.S.:	Department of Defense Superior Service Medal
	Legion of Merit with Oak Leaf Cluster (One from the Air Force)
	Bronze Star
	Deparment of Defense Meritorious Service Medal

MILITARY AWARDS - U.S.: (CONT'D)	Meritorious Service Medal with Two Oak Leaf Clusters (One from the Navy)
	Department of Defense Commendation Medal
	Army Commendation Medal with Oak Leaf Cluster
	Army Achievement Medal
	Humanitarian Assistance Medal
MILITARY AWARDS - FOREIGN	Vietnamese Cross of Gallantry
	Vietnamese Civic Action Medal
	Honduran Merit Medal, First Class
MILITARY PROFESSIONAL AWARD:	Awarded 'A Prefix' by The Surgeon General for Outstanding Performance in Cardiothoracic Surgery
PUBLICATIONS:	Dawson, D., Allen, J.G., and Zajtchuk, R.: Monoalkylating Agents as therapeutic agents in plasma sterilization and plasma protein stabilization. J. Surg Res., 2:31-35, 1962.
	Dawson, D., Zajtchuk, R., and Allen, J.G.: Use of chemotherapeutic agents for possible bacterial and viral contamination of blood. J. Surg. Res., 3:97-100, 1963.
	Dawson, D. and Zajtchuk, R.: Effect of rapid rewarming on tissue survival after deep freezing injury. Research and proceedings of the Institute of Medicine Bulletin (Chicago), Mar, 1963.
	Dawson, D., Zajtchuk, R., and Allen, J.G.: Infectious hepatitis and the role of chemotherapeutics in viral disease transmitted by blood transfusions. J. Surg. Res., 4:47-53, 1964.
	Dawson, D. and Zajtchuk, R.: Use of chloracetate and formaldehyde as plasma additives in instability heat denaturation of plasma proteins. J. Clin. Chem., 10:793-799, 1964.
	Kahan, B.D., Zajtchuk, R., Dawson, D., and Adams, W.G.: The kinetics of sensitization with whole and fractioned mouse spleen cells. Dis. Chest, 46:452-456, 1964.

PUBLICATIONS:
(CONT'D)

Gago, O., Zajtchuk, R., Nigro, S., and Adams, W.E.: Canine pulmonary homografts with uncontrolled cross-circulation. J. Thor. Cardiovasc. Surg., 50:775-780, 1965.

Adams, W.G., Gago, O., and Zajtchuk, R.: Use of azathioprine in homotransplantation of pulmonary tissue. Bull. Soc. Int. Chi., 25:631-638, 1966.

Block, G.E., Evans, R., and Zajtchuk, R.: Splenectomy for idiopathic thrombocytopenic purpura. Arch. Surg., 92:434-489, 1966.

Zajtchuk, R., Ake, V., Hamouda, I., Moulder, P.V., and Adams, W.E.: Maintenance of the circulation in cardiac asystole by the mechanical pulsator. Trans. Amer. Soc. Artif. Intern Organs, Vol. XII, 1966.

Zajtchuk, R., Kahan, B.D., and Adams, W.E.: The tissue distribution of a water soluble transplantation antigen. Dis. Chest, 50:368-371, 1966.

Evans, R., Zajtchuk, R., and Menguy, R.: Role of vagotomy and gastric drainage in the surgical treatment of duodenal ulcer (Result of 10-year experience at the University of Chicago Hospitals). Surg. Clin. N. Amer., 47:141-146, 1967.

Zajtchuk, R., Gago, O., and Adams, W.E.: Homotransplantation of the lung (influence of quantity of antigen on the survival of the graft). J. Thor. Cardiovasc. Surg., 53:109-115, 1967.

Zajtchuk, R., Amato, J., Paloyan, E., and Baker, R.: Inhibition of external pancreatic secretion by glucagon. Surg. Forum, 18:410-411, 1967.

Zajtchuk, R., Mamouda, F., Moulder, P.V., and Adams, W.E.: Maintenance of Circulation in cardiac asystole by the mechanical pulsator. Dis Chest, 1967.

Bauer, R.J., Bass, R.T., Zajtchuk, R., and Strohl, E.L.: External pancreatic fistula following abdominal injury. Arch. Surg., 95:556-566, 1967.

Zajtchuk, R. and Baker, R.: Effects of hypoglycemia on external pancreatic secretion. J. Trauma, 9:629-637, 1969.

PUBLICATIONS: (CONT'D)

Menguy, R., Gadacz, R., and Zajtchuk, R.: Surgical management of acute gastric mucosal bleeding. Arch. Surg., 99:198-208, 1969.

Zajtchuk, R., Yacoub, M.H., and Kittle, C.F.: Spontaneous A-V fistula between common iliac vessels. Surgery, 69:194-200, Feb 1971.

Geis, P., Johnson, C.F., Zajtchuk, R., and Kittle, C.F.: Extrapericardial (mediastinal) cardiac tamponade. Arch. Surg., 100:305-306, 1970.

Daily, R., Ranniger, K., Zajtchuk, R., Evans, R., and Moulder, P.V.: Serum and plasma infusion in human pulmonary artery: Embolic implications. Arch. Surg., 101:26-31, Jul, 1970.

Baker, R.J., Zajtchuk, R., and Shoemaker, W.C., et al: Physiologic studies on external pancreatic secretion in man. Bull. Soc. Int. Chir., 27:81-88, 1968.

Zajtchuk, R., Resnekor, L., Ranniger, K., and Gonzales-Lavin, L.: Traumatic aorta to pulmonary artery fistula. Thoracic, 26(2):219, 1971.

Gonzales-Lavin, L. and Zajtchuk, R.: Surgical considerations in the treatment of acute acquired ventricular septal defect. Thorax, 26:610-614, Sep 1971.

Zajtchuk, R., Gonzales-Lavin, L., and Replogle, R.: Pulmonary artery aneurysm associated with ASD and absent pulmonary valve. J. Thorac. Cardiovasc. Surg. 65:699-701, May 1973.

Zajtchuk, R., Strevey, T., Heydorn, W., and Treasure, R.: Mediastinal histoplasmosis: Surgical considerations. J. Thorac. Cardiovasc. Surg., 66:300-304, Aug 1973.

Zajtchuk, R., Guiton, C.R., Sadler, T.R., Heydorn, W.H., and Strevey, T.E.: Surgical treatment of pulmonary melioidosis. J. Thorac. Cardiovasc. Surg., 66:838, Nov 1973.

Heydorn, W.H., Barry, M.J., Zajtchuk, R., and Strevey, T.W.: Tumor embolus death during pneumonectomy. J. Thorac. Cardiovasc. Surg., 67:308-309, Feb 1974.

PUBLICATIONS:
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Zajtchuk, R., Fitterer, J., Strevey, T.E., and Nelson, W.P.: Bilateral atrial myxoma (Preoperative diagnosis and successful removal). J. Thorac. Cardiovasc. Surg., 69:291-294, Feb 1975.

Zajtchuk, R., Seyfer, A.E., and Strevey, T.E.: Use of intercostal muscle in primary repair of esophageal atresia with tracheoesophageal fistula. Ann. Thorac. Surg., 19:239-241, Mar 1975.

Zajtchuk, R., Corby, D.B., Miller, J.G., and O'Barr, T.P.: Treatment of digoxin toxicity with activated charcoal. Am. J. Cardiol. 35:178, Jan 1975.

Collins, G.J. and Zajtchuk, R.: Hypercoagulability in mesenteric venous occlusion: Report of two cases. Am. J. of Surg., 132(3):390-391, Sep 1976.

Collins, G.J., and Zajtchuk, R.: Hypercoagulability in patients with peripheral vascular disease. Am. J. Surg., 13c(1):2-6, Jul 1975.

Zajtchuk, R., et al: Revascularization of the heart through coronary veins, Ann. Thorac. Surg., 21(4):318-321, Apr 1976.

Heydorn, W.H., and Zajtchuk, R., et al: Surgical management of pectus deformity. Ann. Thorac. Surg., 23(5):417-420, May 1977.

Zajtchuk, R., and Collins, G.J., et al: Coagulation factors influencing thrombosis of aortocoronary bypass grafts. J. Thor. Cardiovasc. Surg., 73:309, 1977.

Collins, G.J. and Zajtchuk, R., et al: The effects of operative stress on the coagulation profile. Am. J. of Surg., 133:612, May 1977.

Seyfer, A.E. and Zajtchuk, R.: A clinical analysis of Ewing's sarcoma of the chest wall. Military Medicine, 142(10):778-779, Oct 1977.

Heydorn, W.H. and Zajtchuk, R., et al: Gore-Tex grafts for replacement of the superior vena cava. Ann. Thorac. Surg., 23(6):539-544, Jun 1977.

Bode, R. and Zajtchuk, R.: Evaluation of saphenous vein bypass surgery using multistage treadmill test and ventricular function studies. J. Thorac. Cardiovasc. Surg., 74:44, 1977.

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Seyfer, A.E. and Zajtchuk, R.: Systemic vascular performance in endotoxic shock. Surg. Gynec. and Obst., 245:401, Aug 1977.

Zajtchuk, R. and Collins, G.J.: Coagulation abnormalities in patients undergoing myocardial revascularization. J. Thorac. Cardiovasc. Surg., 75:168, 1978.

Bowen, T.E., Brott, W.H., and Zajtchuk, R., et al: Thoracic traction for median sternotomy dehiscence. Ann. Thorac. Surg., 25, 1978.

Bowen, T.E., Zajtchuk, R., Green, D.C., and Brott, W.H.: Value of anterior mediastinotomy in bronchogenic carcinoma of the left upper lobe. J. Thorac. Cardiovasc. Surg., 76:269, 1978.

Zajtchuk, R., Seyfer, A.E., et al: Intrathoracic ganglioneuroblastoma. J. Thorac. Cardiovasc. Surg., 80(4):605-612, Oct 1980.

Chun, P., Leeburg, W.T., Coggin, J.T., and Zajtchuk, R.: Primary pericardial malignant epithelioid mesothelioma. Chest, 77, 558-561, Apr 1980.

Zajtchuk, R., Bowen, T.E., Albus, R.A., and Brott, W.H.: Surgical treatment of left main equivalent coronary artery disease. J. Thorac. Cardiovasc. Surg., 78(3):452-454, Sep 1979.

Bowen, T.E. and Zajtchuk, R.: Isolated mitral valve replacement with Kay Shiley disc valve (long-term followup). J. Thorac. Cardiovasc. Surg., 80(1):45-49, Jul 1980.

Graeber, G.M., Synder, T.R., Zajtchuk, R., and Brott, W.H.: A comparison of serum isoenzyme levels of creatinine phosphokinase and lactic dehydrogenase in patients undergoing thoracic operations and patients admitted to coronary care unit. Ann. of Thorac. Surg., 30(4):364-369, Oct 1980.

Bowen, T.E., Brott, W.H., Green, D., Zajtchuk, R.: Coarctation of the aorta with left aortic arch and right descending aorta: Case report. Military Medicine, 145(2), Feb 1980.

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Graeber, G.M., Zajtchuk, R., et al: An analysis of the isoenzymes of creatinine phosphokinase and lactic dehydrogenase in the esophagus. Ann. of Thorac. Surg., 32(3), 230-234, Sep 1981.

Brott, W.H., Zajtchuk, R., et al: Incidence of thromboembolism in patients with Bjork-Shiley prosthesis on aspirindipyridamole treatment. J. of Thorac. Cardiovasc. Surg., 81(4):632-635, Apr 1981.

Gibelly, G., and Zajtchuk, R.: Diagnosis and treatment of desmoid tumors: A review. Military Medicine, 147(4):278-284, Apr 1982.

Bowen, T. and Zajtchuk, R.: Diaphragmatic paralysis managed by diaphragmatic replacement. Ann. of Thorac. Surg., 33:184-185, Feb 1982.

Zajtchuk, R., Nelson, W.P., and Collins, G.J.: Ischemic heart disease and coronary thrombosis, Chapter 7, pp. 215-240, in Vascular Occlusive Disorders, Futura Publishing Company, Inc., Mount Kisco, New York, 1981.

Zajtchuk, R. and Zajtchuk, J.: Relationship of triglyceride levels to thrombosis in patients with coronary artery disease. Published in the Ann. Thorac. Surg. 1980.

Graeber, G., Grishkin, B., Cohen, D.J., and Zajtchuk, R.: A technique for successful replacement of the esophagus with an interposed substernal colon segment. Contemporary Surgery, pp. 17-26, Apr 1983.

Sherrill, P.J., Grishkin, B.A., Galal, F.S., Zajtchuk, R., and Graeber, G.M.: Radiation association malignancies of the esophagus. Cancer, 54:726, 1984.

Cohen, D.J., Ronningen, L.D., Graeber, G.M., Deshong, J.L., Jaffin, J. and Zajtchuk, R.: Management of patients with malignant thymoma. J. Thorac. Cardiovasc. Surg., 87(2):301-307, Feb 1984.

Graeber, G.M., Cafferty, P.J., Wolf, R.E., Cohen, D.J., and Zajtchuk, R.: Creatine kinase (CK) and lactic dehydrogenase (LD) in the muscles encountered during median sternotomy and in the myocardium of the cardiac chambers. J. Thorac. Cardiovasc. Surg., 89(5):700-705, May 1985.

PUBLICATIONS: (CONT'D)

Graeber, G.M. Thompson, L.D., Cohen, D.J., Ronnigen, L.D., Jaffin, J. and Zajtchuk, R.: Cystic lesions of the thymus: An occasionally malignant cervical and/or anterior mediastinal mass. J. Thorac. Cardiovasc. Surg., 87(2):295-300, Feb 1984.

Watkins, M.T., Sharefkin, J.B., Zajtchuk, R., Maciag, T.M., D'Amore, P.A., Ryan, U.S., Wart, H.V., Rich, N.M.: Adult human saphenous vein endothelial cells: Assessment of their reproductive capacity for use in endothelial seeding of vascular prostheses. J. Surg. Research 36:588-596, 1984.

Zajtchuk, R., Antopol, M.R., Graeber, G.M.: Thoracic Trauma, Medical Bulletin, 41(12):3-7, 1984.

Graeber, G.M., Cohen, D.J., Patrick, D.H., Wolf, R.E., Hotard, M.C., and Zajtchuk, R.: Rib fracture healing in experimental flail chest. Journal of Trauma 25:903-908, 1985.

Cohen, D.J., Benjamin, S.B., Graeber, G.M., Zajtchuk, R., Castell, D.O., and Patrick, D.H.: Evaluation of the Agelchik Antireflux prosthesis using a model for esophageal reflux in rhesus monkeys. Ann. Thorac. Surg. 41:135-142, 1986.

Graeber, G.M. and Zajtchuk, R.: Changes in serum creatine kinase and lactic dehydrogenase caused by acute perioperative myocardial infarction and by transatrial cardiac surgical procedures. J. Thorac. Cardiovasc. Surg., 92:63-72, Jul 1986.

Fall, S.M., Burton, N.A., Graeber, G.M., Mead, M.D., Lough, F.C., Albus, R.A., Zajtchuk, R.: Prevention of ventricular fibrillation after myocardial revascularization. Ann. Thorac. Surg. 43:182-184, Feb 1987.

Graeber, G.M. and Zajtchuk, R.: Serum creatine kinase and lactic dehydrogenase isoenzyme levels in patients after major esophageal surgery, esophageal dilatation, and acute myocardial infarction. Ann. Thorac. Surg., 43:279-284, Mar 1987.

Graeber, G.M. and Zajtchuk, R.: A comparison of patients with endoscopic esophageal perforations and patients with Boerhaave's Syndrome. Chest, 92:995-998, Dec 1987.

PUBLICATIONS: (CONT'D)

Edwards, F.H., Zajtchuk, R.: Use of a Bayesian statistical model for risk assessment in coronary artery surgery. Ann. Thorac. Surg.

Burton, W.A., Graeber, G.M., Zajtchuk, R.: An alternative method of ventricular venting. The pulmonary artery pump. Chest 85:814, 1984.

Edwards, F.M. and Zajtchuk, R.: A Quality Assurance Model of Operation Mortality for coronary artery surgery. Ann. Thorac. Surg.

Zajtchuk, R., Brown, F., Rumbaugh, J.: Medical Success in El Salvador, Military Medicine, Feb 1989.

PRESENTATIONS:

Soluble Transplantation Antigen. Presented at Chicago Surgical Society Meeting in 1965. (Awarded prize for best surgical research in 1965.)

Maintenance of Circulation with a Mechanical Cardiac Pulsator. Presented at the Meeting of the American Society for Artificial Organs in 1966.

Maintenance of Circulation with a Mechanical Cardiac Pulsator. Presented at 32nd Annual Meeting of American College of Chest Physicians, June 1966. (Received certificate of merit)

Inhibition of External Pancreatic Secretion by Glucagon. Presented at Surgical Forum in 1967.

Treatment of Digoxin Toxicity with Activated Charcoal. Presented at the 24th Annual Scientific Session of American College of Cardiology, 1974.

Measurement of Heart Valve Cross Section Area by Electrical Impedance. Presented at Biomedical Engineering Society, Apr 1975.

Coagulation Abnormalities in Patients Undergoing Myocardial Revascularization. Presented at Seminar on Thrombosis Research, May 1977, Walter Reed Army Medical Center.

Coagulation Abnormalities in Patients Undergoing Myocardial Revascularization. Presented at Samson Thoracic Society, Jun 1977.

Use of Intra-Aortic Balloon in Left Main Coronary Artery Lesions. Presented at the Army Cardiology Meeting, May 1978.

PRESENTATIONS: (CONT'D)

Surgical Treatment of Left Main and Left Main Equivalent Coronary Artery Disease. Presented at University of Chicago, Jun 1978.

Left Ventricular to Aortic Stenosis. Presented at Cardiology Symposium, Madigan Army Medical Center, May 1979.

Asymptomatic Left Main Coronary Artery Disease (Clinical Profile). Presented at Military Cardiology Meeting, San Francisco, May 1980.

A Comparison of Serum Isoenzyme Levels of CPK and LDH in Patients Undergoing Thoracic Operations and Patients Admitted to Coronary Care Unit. Presented at Thoracic Surgery Society Meeting, Jan 1980.

Symposium Director for "The First Annual USUHS Cardiothoracic Surgery Symposium". Presented at Uniformed Services University of the Health Sciences, Bethesda, MD, Oct 1982.

Cardiac Trauma. Presented at the Hospital of the University of Pennsylvania, Nov 1982.

Evaluation of the Angelchik Antireflux Prosthesis using a Model for Esophageal Reflux in Rhesus Monkeys. Presented at the Southwestern Surgical Congress, 36th Annual Meeting, Hawaii, Apr 1984.

Preventing Ventricular Fibrillation after Aortic Cross Clamping. Presented at the Army Cardiology Meeting, Apr 1984.

The Use of Computerized Tomography (CT) in the Evaluation of Mediastinal Masses. Presented at the Western Thoracic Surgical Association, Jun 1985.

Results of Coronary Artery Bypass Grafting in Young Patients. Presented at the American College of Chest Physicians, 1985.

Central America - An Overview with Emphasis on Honduras. Presented at 22nd Medical Symposium of the 94th U.S. Army Reserve Command, October 1988.

MOVIES:

Apical Left Ventricular Aortic Bypass - A Method for Relief of Left Ventricular Outflow Obstruction (Presented at the Annual Meeting of the Society of Thoracic Surgeons, Los Angeles, CA, Jan 1981.

MOVIES: (CONT'D)

Resection of Giant Cell Tumor Involving the Clavicle and Chest Wall. (Presented at the Annual Meeting of the Society of Thoracic Surgeons, San Francisco, CA, Jan 1983).

Surgical Management of Sinus of Valsalva Fistula. Presented at American College of Surgery, 1984.

SCIENTIFIC EXHIBITS:

Hyercoagulability - Importance in Surgical Practice. (Won Second Place at Southeastern Surgical Congress, Apr 1977).

Different Techniques for Replacing the Esophagus with Interposed Colon. (Presented at the 68th Annual Clinical Congress of the American College of Surgeons, Chicago, IL, Oct 1982.

The Use of Muscle and Musculo-Cutaneous Flaps for Reconstruction of Thoracic Defects. (Presented at the 68th Annual Clinical Congress of the American College of Surgeons, Chicago, IL, Oct 1982).

Medicine in Low Intensity Conflict (Presented at AMSUS, 1987).

Surgical Treatment of Snake Bites (Presented at AMSUS, 1987).

Management of Primary Cardiac Tumors. Displayed at The 69th Clinical Congress of the American College of Surgeons, 1983 and the 33rd Scientific Session of American College of Cardiology, 1984.

BOOKS:

Senior Editor of 18 Volume Series on Military Medicine.

NRC FORM 3
1-84
0 CFR 30, 3 33, 34,
5 and 40

APPLICATION FOR MATERIAL LICENSE

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED BY OMB
3150-0120
Expires: 8-31-87

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

FEDERAL AGENCIES FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS
WASHINGTON, DC 20555

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

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIAL SECTION B
631 PARK AVENUE
KING OF PRUSSIA, PA 19406

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION II
MATERIAL RADIATION PROTECTION SECTION
101 MARIETTA STREET, SUITE 2900
ATLANTA, GA 30323

IF YOU ARE LOCATED IN:

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

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

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

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

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

U.S. NUCLEAR REGULATORY COMMISSION, REGION V
MATERIAL RADIATION PROTECTION SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTION.

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

- [ ] A. NEW LICENSE
- [X] B. AMENDMENT TO LICENSE NUMBER 08-01738-03
- [ ] C. RENEWAL OF LICENSE NUMBER _____

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

Department of the Army
Walter Reed Army Medical Center
ATTN: HSHL-H-HP
Washington, DC 20307-5001

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

No Change

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

PETER H. MYERS, LTC, MS, Health Physics Officer, WRAMC

TELEPHONE NUMBER: (301) 427-5104

SUBMIT ITEMS 5 THROUGH 11 ON 8½ x 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL a. Element and mass number, b. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.	6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.
7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.	8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.
9. FACILITIES AND EQUIPMENT.	10. RADIATION SAFETY PROGRAM.
11. WASTE MANAGEMENT.	12. LICENSEE FEES *(See 10 CFR 170 and Section 170.31)* FEE CATEGORY 7B AMOUNT ENCLOSED Exception(10CFR $ 170.11(a)(5)

13. CERTIFICATION. *(Must be completed by applicant)* THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, AND 40 AND THAT ALL INFORMATION CONTAINED HEREIN, IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948, 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

SIGNATURE—CERTIFYING OFFICER	TYPED/PRINTED NAME	TITLE	DATE
	LLEWELLYN E. PIPER, LTC,MS	Executive Officer	13OCT89

14. VOLUNTARY ECONOMIC DATA

a. ANNUAL RECEIPTS

- [ ] <$250K
- [ ] $250K–500K
- [ ] $500K–750K
- [ ] $750K–1M
- [ ] $1M–3.5M
- [ ] $3.5M–7M
- [ ] $7M–10M
- [ ] >$10M

b. NUMBER OF EMPLOYEES *(Total for entire facility excluding outside contractors)*

c. NUMBER OF BEDS

d. WOULD YOU BE WILLING TO FURNISH COST INFORMATION *(dollar and/or staff hours)* ON THE ECONOMIC IMPACT OF CURRENT NRC REGULATIONS OR ANY FUTURE PROPOSED NRC REGULATIONS THAT MAY AFFECT YOU? *(NRC regulations permit it to protect confidential commercial or financial—proprietary—information furnished to the agency in confidence)*

- [ ] YES
- [ ] NO

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	COMMENTS	APPROVED BY
AMOUNT RECEIVED	CHECK NUMBER			DATE

EXEMPT

CONTINUATION OF NRC FORM 313 (Items 5 - 11)

5. Radioactive material:

a. Cesium 137

b. Sealed source

c. maximum total curie amount: curies.

6. Purpose: Irradiation of blood products for transfusion, to kill lymphocytes in blood products and to prevent Graft versus Host disease.

7. Please add Lieutenant Allen W. Anthony to the license as the Radiation Protection Officer. Lieutenant Anthony has served at Walter Reed as the Assistant Health Physics Officer since January 1988. Lieutenant Anthony will replace Major Gerald M. Connock as the RPO on the License on 28 September 1989 as Major Connock is being transferred. A copy of his curriculum vitae is provided (enclosure 4) also reference amendment of NRC Materials License - Medical, No. 08-01738-02, 27 July 1989 and 17 September 1989.

8. Training: No Change - reference application for renewal of NRC Material License - Medical, No. 08-01738-02, 8 May 1987, Tab C chapter 2.

9. Facilities and equipment:

a. The irradiator will be located on the in of building 2, Walter Reed Army Medical Center. The room is bordered on one side by a corridor with no direct access to the room, on two sides by controlled access storage rooms), and on the fourth side by an infrequently used controlled access hallway. The storage rooms will have intermittent occupancy by no more than two (2) employees per room. The overhead area is a controlled access interstitial space for piping and ventilation systems and would be occupied in case of repairs. A diagram of room and surrounding areas is attached (enclosures 5 & 6). Room is equipped with an automatically operated fire detection and control system (sprinkler) that is adequate to ensure the integrity of the irradiator and source in a fire.

10. Radiation safety program:

a. Personnel monitoring equipment - No Change, reference application for renewal of NRC Materials License - Medical, No. 08-01738-02, 8 May 1987, Tab C chapter 5 and Tab D condition number 1.

b. Radiation detection instruments - No Change, reference application for renewal of NRC Materials License, No. 08-01738-02, 8 May 1987, Tabs E and F.

c. Operating and emergency procedures - see enclosure 7.

d. Plans for installation and certain repairs - these tasks are to be performed by the supplier.

11. Waste management: No Change. Ex 2

CURRICULUM VITAE

for

ALLEN W. ANTHONY

Date & Place of Birth:

Home Address:

Home Telephone Number:

Office Address: Health Physics Office
Walter Reed Army Medical Center
Washington, DC 20307-5001

Office Telephone Number: (301) 427-5104

Degrees:

B.S. - Education (Biology)
University of Nebraska
Lincoln, NE 68508

A.S. - X-ray Technology
St. Philip's College
San Antonio, TX

A.S. - Nuclear Medicine Technology
George Washington University
Washington, DC 20037

Certification: American Registry of Radiologic Technologists
(X-Ray and Nuclear Medicine)

Other Education and Training:

1989 Laser and Microwave Hazards Workshop
US Army Environmental Hygiene Agency
Aberdeen Proving Ground, MD

1988 Introduction to Nuclear Medicine and
Radiation Therapy Course
George Washington University
Washington, DC 20037

Ex 6

ANTHONY, Allen W. (Continuation of Curriculum Vitae)

1988	AMEDD Radiation Protection Officers Workshop US Army Environmental Hygiene Agency Aberdeen Proving Ground, MD
1988	Radiation Service Organization, Inc. Course US Army Environmental Hygiene Agency Aberdeen Proving Ground, MD
1988	Medical Effects of Nuclear Weapons Course Armed Forces Radiobiology Research Institute Bethesda, MD
1988	US Army Medical X-Ray Survey Techniques Course Academy of Health Sciences, US Army Fort Sam Houston, TX
1988	AMEDD Officer Basic Course Academy of Health Sciences, US Army Fort Sam Houston, TX

Chronological Experience:

Feb 1988 - Present	Walter Reed Army Med. Ctr. Washington, DC 20307 Assistant Health Physics Officer Health Physics Office Supervise personnel in conduct of radiation protection surveys for radioisotope laboratories x-ray units, radiotherapy procedures, emergency response, and shielding evaluations.
Oct 1987 - Jan 1988	Academy of Health Sciences, US Army Fort Sam Houston, TX Student AMEDD Officer Basic Course
Sep 1986 - Sep 1987	USA MEDDAC Fort Bragg, NC Nuclear Medicine Technologist Nuclear Medicine Service
Nov 1985 - July 1986	Madigan Army Medical Center Fort Lewis, WA Student (Phase II) Nuclear Medicine Service

ANTHONY, Allen W. (Continuation of Curriculum Vitae)

Jun 1985 - Oct 1985	Naval School of Health Sciences Bethesda, MD Student (Phase I) Nuclear Medicine Technology Course
Jan 1983 - May 1985	97th General Hospital Frankfurt, West Germany X-Ray & C.T. Technologist Radiology Department
Oct 1982 - Nov 1982	Walter Reed Army Medical Center Washington, DC 20307 Student (Phase II) Radiology Department
Jun 1982 - Oct 1982	Academy of Health Sciences, US Army Fort Sam Houston, TX Student (Phase I) X-Ray Technology Branch

SPECIAL PRODUCTS LAB
BLOOD BANK SECTION
CLINICAL PATHOLOGY SERVICE
DEPARTMENT OF PATHOLOGY AND AREA LABORATORY SERVICES
WALTER REED ARMY MEDICAL CENTER
WASHINGTON, D.C. 20307-5001

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25 Sept 89
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Revised_____
Under Revision_____

CHAPTER II. TECHNICAL PROCEDURES

C.1. IRRADIATED BLOOD PRODUCTS - POLICIES AND PERSONNEL RESPONSIBILITIES

1. PURPOSE:

The only purpose of this instrument is the irradiating of blood products for transfusion to prevent post-transfusion graft vs host disease (GVHD) in immuno-compromised patients. This form of GVHD, although fairly rare, is usually fatal due to generalized infection. This condition does not usually respond to forms of treatment normally effective in the GVHD which follows marrow transplantation. It is known that Ionizing radiation at doses of 2000 rads or more destroys the lymphocyte's ability to proliferate without damaging other elements of the blood product.

2. PATIENTS TO RECEIVE IRRADIATED BLOOD PRODUCTS:

Patients at risk for post-transfusion GVHD are those with some types of congenital or acquired cell-mediated immune deficiencies, such as:

- Bone Marrow transplant recipients (Autologous, Allogeneic & Syngeneic)
- Children and adults receiving cytotoxic therapy for:
leukemias, lymphomas and some solid tumors (i.e. glioma & neuroblastoma)
- Patients with genetic immunodeficiencies:
severe combined immunodeficiency (SCID), Wiscott-Aldrich syndrome, other T-cell defects
- Recipients of intrauterine transfusions
- Neonates receiving exchange transfusions and/or who have received intrauterine transfusions.

Patients will receive irradiated blood products only if the patient is so restricted; i.e. the Medical Director or his/her authorized representative must restrict the patient to irradiated blood products by noting on the patient's "CAUTION CARD" ..."Transfuse Irradiated Blood Products ONLY - (Date and Initial)". The "CAUTION CARD" must be conspicuously displayed as the top card of the patient's file. All orders from the ward for irradiated blood products must list the patient's diagnosis. Evaluation and approval will be at the discretion of the Blood Bank Medical Director.

C 1 - 7

3. BLOOD PRODUCTS TO BE IRRADIATED:

All blood products except fresh frozen plasma and cryoprecipitate theoretically contain sufficient immunocompetent lymphocytes to initiate the GVHD reaction. Therefore, the following blood products must be irradiated just prior to issue to the ward when prescribed for patients at risk for post-transfusion GVHD:

- Whole blood
- Red Blood Cells (including washed, leukocyte-poor, frozen/deglycerolized and washed/prefiltered aliquots)
- Platelets (including leukotrapped, random donor, single donor, and HLA-matched)
- Fresh single donor plasma
- Granulocyte concentrates

Irradiated blood products are not themselves radioactive and present no danger to the persons handling them or to the patients receiving them. Cellular elements other than lymphocytes are relatively unaffected by less than 5000 rads of gamma radiation. Therefore, irradiated products returned to the general inventory may be used for routine transfusions to other patients who do not require irradiated products.

4. DOSE:

The standard dose at WRAMC is 2500 rads which can be administered in approximately 1.6 minutes (96 seconds). All units, once irradiated, will be conspicuously labeled as per S.O.P.

5. PERSONNEL RESPONSIBILITIES:

a. Authorized Principal User (APU): This is the person designated and approved by the WRAMC Radiation Control Committee for use of the [redacted]. The Blood Bank APU is the Special Products Laboratory Team Leader. This person is directly responsible for the control & safe use of the [redacted] irradiator and will designate individuals to operate the [redacted] as approved by the WRAMC Radiation Control Committee. The APU will have the following specific responsibilities:

1. Ensure that the [redacted] is operated only by individuals authorized to do so by the WRAMC Radiation Control Committee, and in accordance with the conditions of the WRAMC Radiation Material authorization.
2. Instruction of individuals in safe operating procedures in accordance with the S.O.P.'s in this Manual pertaining to Irradiated Blood Products.
3. Ensuring that these instructions and references are available at all times.
4. Promptly reporting any source malfunction, accident, or other unplanned occurrence that could result in an unsafe condition or exposure to personnel to the WRAMC Health Physics Officer at (301)427-5107.
5. Assuring that all personnel operating the unit are monitored by appropriate personnel monitoring devices.
6. Ensuring that personnel operating the irradiator have been instructed in the hazards and nature of injuries resulting from over-exposure to ionizing radiation.
7. Maintain the operating log for the [redacted]

Ex 2

b. WRAMC Health Physics Department:

1. Conducting routine radiation protection surveys and inspections.

2. Providing technical assistance as required.

3. Providing calibration and routine maintenance services for radiation detection and measuring instruments.

c. Individual Operators:

1. Operating the [redacted] in accordance with the operation and safety procedures delineated in the Special Products Lab S.O.P.

2. Recording all pertinent information in the operating log maintained by the APU.

3. Being familiar with the content of these instructions, requirements of the WRAMC authorization, and other regulations as may be prescribed by the APU.

4. Locking the [redacted] irradiator upon completion of use.

5. Ensuring that the key to the [redacted] is properly returned/signed back in to prevent unauthorized use.

6. Reporting all malfunctions, accidents, and any other unplanned occurrence that could result in an unsafe condition or exposure of personnel promptly to the APU.

6. REFERENCES:

a. Areman, E: Georgetown University Hospital - DLM, BB. S.O.P. - Irradiation of Blood Products. 1987.

b. Connock, G: Walter Reed Army Institute of Research S.O.P. - Operating and Safety Procedures for AECL Gammacell 40 Irradiator. 1989.

Prepared by: David B. Drothler MT(ASCP)SBB

Ex 2

SPECIAL PRODUCTS LAB
BLOOD BANK SECTION
CLINICAL PATHOLOGY SERVICE
DEPARTMENT OF PATHOLOGY AND AREA LABORATORY SERVICES
WALTER REED ARMY MEDICAL CENTER
WASHINGTON, D.C. 20307-5001

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Reviewed N. Dow MD. 30 Oct 89
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Under Revision_____

CHAPTER II. TECHNICAL PROCEDURES.

C.2. IRRADIATED BLOOD PRODUCTS - USE OF THE [ ] BLOOD IRRADIATOR

1. PRINCIPLE:

Any immunosuppressed patient receiving blood products containing immunocompetent lymphocytes may theoretically develop Graft vs Host disease. The most effective method of eliminating viable lymphocytes from blood products is to use ionizing radiation. The optimal dose of radiation that will prevent GVHD and yet not damage the other cellular elements in blood products is about 2000 to 2500 rads. The [ ] is a self-contained unit consisting of a stationary Cesium-137 doubly encapsulated [ ] curie radiation source permanently secured within a biological shield. By placing the sample can in the sample drawer and lowering the drawer into the machine, the blood product is either exposed to or, by raising the drawer, removed from the radiation field.

2. PROTECTIVE FEATURES / CAUTIONS:

a. The [ ] has been designed for safe and efficient operation. The control system contains interlocks that prevent start-up if the correct procedure is not followed. To trouble-shoot the machine, see the following appropriate S.O.P. Faults that occur during operation cause the sample to return to the SAFE position.

b. Radiation Protection: The shield is designed to reduce the radiation to the outside surface, from a fully loaded [ ] to levels less than those specified by ANSI N433.1.

c. Interlock System: The sample drawer is interlocked with two switches that, unless pushed at the same time, prevent the drawer from moving so that potential injury to hands is avoided. DO NOT try to override the interlock system. Any attempt to disable the interlock system will violate licensing requirements.

d. AC Power Failure: In case of a power failure during operation, the [ ] will complete the irradiation cycle in progress. However, a new cycle will not start until the AC power has been restored.

e. Anchor Brackets: For stability, the [ ] is secured to the floor by two anchor brackets. It weights approximately 3000 lbs. and comes with an attached dolly. To prevent movement of the machine and to be in accordance with

WRAMC Health Physics Department regulations, the dolly has been removed and it must be anchored to the floor at all times. DO NOT move the [redacted] without proper authorization from the pertinent authority.

f. CAUTION: ONLY TRAINED BLOOD BANK STAFF will be permitted to operate the [redacted] Other persons or departments needing samples or blood products irradiated will contact the Special Products Lab Team Leader to arrange for this service. Failure to comply may result in loss of licensure to use radioactive materials.

g. CAUTION: Materials which are basically unstable, explosive, or highly exothermic WILL NOT BE IRRADIATED IN THIS UNIT.

h. CAUTION: All operators will.....

- fill out and sign the operator's log when using the machine
- obtain a personnel monitoring device and the machine key when the log has been signed. Personnel monitoring devices will be worn when working around (i.e. working in the [redacted] room [redacted] and/or operating the [redacted]
- return the machine key and personnel monitoring device, and sign the log when finished using the machine.

3. SPECIMEN REQUIREMENTS:

a. Blood products that must be irradiated are.....

- Whole blood
- Red Blood Cells (including washed, leukocyte-poor, frozen/deglycerolized and washed/prefiltered aliquots - i.e. neonate syringes)
- Platelets (including leukotrapped, random donor, single donor, and HLA-matched)
- Fresh single donor plasma (NOT FRESH FROZEN PLASMA)
- Granulocyte concentrates

b. DO NOT irradiate more than one unit/syringe/type of product at a time. Placing multiple units on the specimen turntable together can cause the mechanism to overload, jam-up or possibly rupture a unit of blood.

c. Blood Products to be irradiated should not be pre-irradiated hours prior to issue. Irradiate all blood products at the time of issue.

4. INSTRUMENTATION: [redacted] Blood Irradiator.

5. PROCEDURE:

a. Obtain a personnel monitoring device and the machine operation key from the [redacted] Team Leader or the authorized designee & "sign them out" on the operator's log. For an example of the log see the "Results Reporting / Unit Labeling" section of this S.O.P.

b. Insert the machine key into the power keyswitch. DO NOT turn the key-switch to the "ON" position at this time.

c. Insert the sample/blood bag into the stainless steel sample can provided. Ensure that no parts of the sample protrude over the edge of the sample can. Place the sample can into the cavity, carefully centering it on the turntable and making sure no part of the can / contents extends past the opening of the cavity tube.

Ex 2

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d. Turn the power switch to the "ON" position. The indicator light will be illuminated at this point and the turntable will rotate. Observe that the sample can is rotating freely.

e. Press the red IRRADIATE buttons (one on the control panel and one on the left side of the irradiator) at the same time to begin the cycle.

f. Routinely, at WRAMC, blood products will receive a dose of 2500 rads which can be delivered in 1.6 minutes (96 seconds) with this irradiator (See section 6 "Calculations" for clarification). The timer should remain set at 1.6 minutes. At the end of each cycle the timer will automatically reset - DO NOT CHANGE SETTING!

g. When the sample drawer has reached the irradiate position, the irradiate light on the control panel will be illuminated. If this light is not illuminated, the preset timer will not function.

NOTE: If this occurs, time the irradiation cycle with an independent timer for approximately 96 seconds. Then push the LOAD button to return the sample drawer to the load position. The LOAD switch will override the preset irradiator timer and return the sample drawer to the load position. This switch is to be used to end a preset irradiation cycle prior to the time preset, or to release a sample if the machine's timer malfunctions.

h. At the end of the irradiation cycle (when the timer count reaches 1.6 minutes), the sample drawer will return to the load position and the timer will automatically reset to 1.6 minutes (DO NOT CHANGE SETTING!).

NOTE: In case of a power failure, the irradiation cycle in progress will be completed. However, AC power will have to be restored to start a new cycle.

i. Remove the sample can from the sample cavity and remove the irradiated blood. Label the blood product, data control card and patient record card as indicated in the "Result Reporting/Unit Labeling" section below.

j. Turn the POWER keyswitch to the OFF position. Remove the key and return it to the key-box. Return your personnel monitoring device and sign them back "in" on the operators log. Issue the irradiated blood product as soon as possible.

6. CALCULATIONS:

The time interval necessary to provide a dose of approximately 2500 rads is a function of the CENTRAL DOSE RATE. For each machine, the actual radioactive contents may vary +/- 20% from the nominal values associated with each model, hence the CDR will vary accordingly & will need to be recalculated when installed & on a periodic basis. The CDR is provided by J. L. Shepherd on a Measurement Certificate. The measurement is in air and requires conversion to liquids, which is assumed to be evenly distributed in the beaker, giving an Average Dose Rate. The CDR is measured in rads/hr, the ADR must be rads/min. The following calculation is used:

ADR (rads/min) = 0.89 x (CDR (rads/hr) x 60) (For this machine, assume [redacted]

Time interval for required dose = required DOSE / ADR

Ex 2

7. RESULTS REPORTING/UNIT LABELING:

When t irradiator is used to irradiate blood products, there are 4 logs/cards etc. that must be filled out: operator's log, the unit label, the unit data control card (IBM card), and the patient's transfusion record card.

a. **Operator's Log:** This log will be kept in the and is to be filled out by the operator each time the machine is used. The entries are:

- Date Used, in designated format listed at top of log
- Operator Name, print full name
- Time - Key Out, time the key is signed out
- Dosimeter Reading, record the reading from the dosimeter both signing out and signing in
- # of Prod. Irrad., record how many products you irradiated
- Time - Key Returned, time the key is signed back in
- Tech. Initials, initials of the operator
- APU, initials of the authorized principal user. On day shift, the SPL Team Leader, on other shifts, the shift leader
- Workl'd, this is for workload, to be left blank until results are captured.

b. **Unit Label:** When a blood product is irradiated, it must be conspicuously labeled. Apply one of the following supplied labels to the face label of the blood product being careful to not cover any other information required by standards.

c. **Unit Data Control Card:** When the blood product is irradiated, it must be documented on the "IBM" card. Place one of the "IRRADIATED" labels on the "IBM" card on the next line under the patient's name and write the date and your initials next to the label.

d. **Patient Transfusion Record Card:** When the blood product is irradiated, it must be documented on the patient's transfusion record card ("white" card). Write "IRRAD." in the margin beside the particular blood product irradiated.

For examples of each, see Figures 1 and 2, below and on the next page.

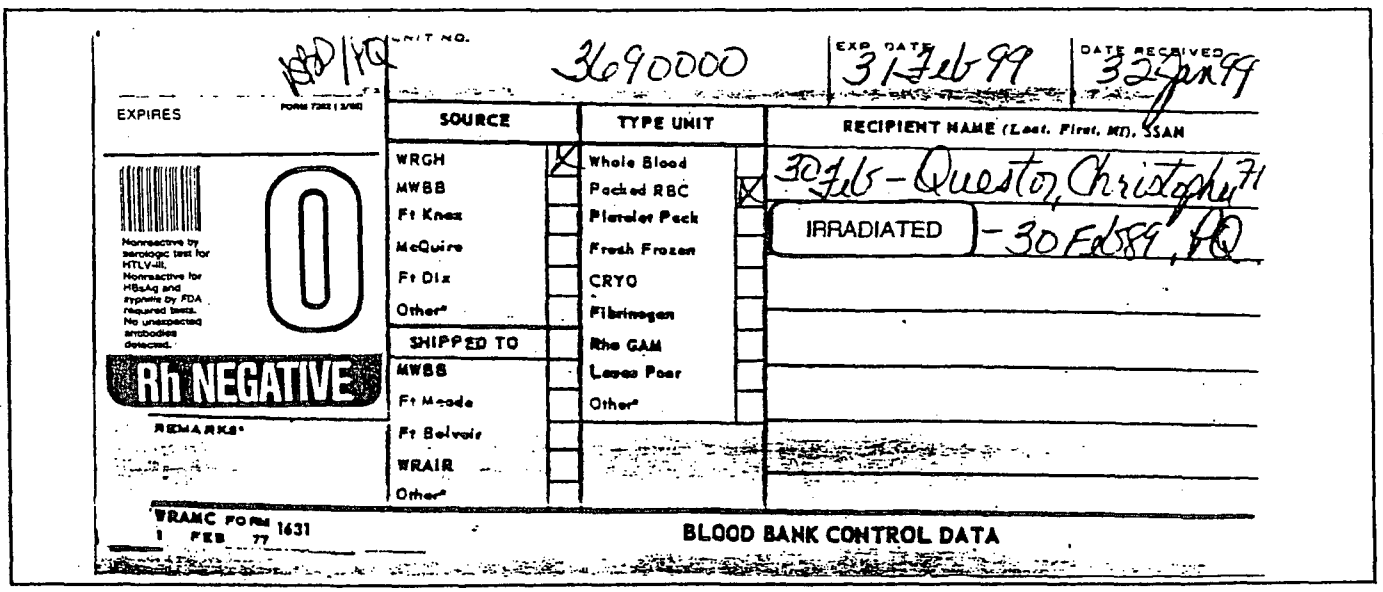

Figure 1 - EXAMPLE OF UNIT DATA CONTROL CARD WITH THE APPROPRIATE CHANGES/LABELS.

Ex 2

BLOOD IRRADIATOR OPERATOR'S LOG

DATE USED (DD/MM/YR)	OPERATOR NAME - PRINT	TIME - KEY OUT (HOUR)	DOSIMETER READING out	DOSIMETER READING in	# OF PROD. IRRA.	TIME - KEY BACK (HOUR)	TECH. INIT.	A.P.U.	WORKL'D
30/2/99	Questor, Peter	1430	001	001	2	1434	PQ	BBD	

PATIENT'S NAME: Questor, Christopher | ID NO.: 02-184846285 | GROUP & RH: O neg

REMARKS:

SHIFT	DAY	MONTH	YEAR	UNIT NO.	GROUP & RH	COMPONENT	EXP. DATE	SPECIMEN IDENT.	COMPATIBILITY IS.	COMPATIBILITY ALB. 37°	COMPATIBILITY IDC	COMPATIBILITY INT.	TECH	RELEASE	TRANS.
1	30	2	99	3A0000	O neg	PRBC	31 Feb	30 Feb 99	O	LT	WT	C	BBD		

I Trad.

Figure 2 - EXAMPLES OF OPERATOR'S LOG AND PATIENT TRANSFUSION RECORD CARD WITH THE APPROPRIATE CHANGES/UPDATES.

8. LIMITATIONS OF PROCEDURE:

This S.O.P. is intended to address how to use the Blood Irradiator to irradiate blood products for transfusion. Specifically, it addresses: what products, when to irradiate, who may use the irradiator, how to operate it, limited problem solving and documentation or labeling necessary. Consult the appropriate S.O.P., the machine Operator's Manual or the Special Products Lab Team Leader for procedures that fall outside the scope of this S.O.P.

9. REFERENCES:

a. Operator's Manual.

b. Areman, E: Georgetown University Hospital - DLM, BB. S.O.P. - Procedure: Irradiation of Blood Products. 1987.

c. Connock, G: Walter Reed Army Institute of Résearch S.O.P. - Operating and Safety Procedures for AECL Gammacell 40 Irradiator. 1989.

Prepared by: David B. Drothler MT(AS P)SBB

Ex 2

SPECIAL PRODUCTS LAB
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CHAPTER II. TECHNICAL PROCEDURES.

C.3. IRRADIATED BLOOD PRODUCTS - TROUBLE-SHOOTING THE [ ] BLOOD IRRADIATOR

1. PRINCIPLE:

The [ ] is a self-contained unit consisting of a stationary Cesium-137 doubly encapsulated [ ] curie radiation source permanently secured within a biological shield. By placing the sample can in the sample drawer and lowering the drawer into the machine, the blood product is either exposed to or, by raising the drawer, removed from the radiation field.

Because of the importance of the machine's application in the Blood Bank, it is essential that the "down time" is minimal. Occasionally, parts of the equipment may break down. Should this occur, simple trouble-shooting with corrective action would be immediately necessary. The following S.O.P. lists potential problems with corrective action necessary.

2. CAUTIONS:

a. DO NOT attempt any corrective action requiring new parts beyond a fuse.

b. DO NOT undertake any repair beyond changing a fuse, perform any maintenance, remove any interlock and/or safety device, or make any changes in and/or on the [ ] without prior approval of the Authorized Principal User or higher authority. Failure to comply may result in loss of licensure to use radioactive materials.

3. PROCEDURE:

a. If the [ ] or any of its components malfunction, follow the Trouble-shooting Charts in Figures 2 and 3. These charts will help identify the problem and suggest corrective action and Figure 1 is a diagram of the locations of the parts.

b. If the corrective action suggested is to change the fuse, record the problem, corrective action taken, date and initials on the Equipment Maintenance Worksheet (Med Lab Form 110) kept in the front of the [ ] Operator's Manual.

Ex 2

c. To change the fuse: refer to the operator's manual for location of and procedure for changing the fuse. (NOTE: this procedure with diagram for Figure 1 is to be supplied by the manufacturer upon delivery of the machine and placed in this S.O.P.)

d. Should the problem remain unsolved, or be more complex than any of the possibilities listed, contact the APU for further action and DO NOT attempt to use the irradiator. Refer to the S.O.P. - "Emergency Procedures..." for steps to follow in the event of complete or non-correctable equipment failure. Further, before proceeding, ensure that the correct operating procedure has been followed and the unit is plugged in.

4. LIMITATIONS OF PROCEDURE:

This S.O.P. is intended to address how to perform simple troubleshooting on the Blood Irradiator. If the problem is too complicated or requires new parts to repair at this time, consult the machine Operator's Manual and the Special Products Lab Team Leader for additional instructions.

5. REFERENCES:

a. Operator's Manual.

b. Connock, G: Walter Reed Army Institute of Research S.O.P. - Operating and Safety Procedures for AECL Gammacell 40 Irradiator. 1989.

Prepared by: David B. Drothler MT(ASCP)SBB

NOTE: THIS DIAGRAM IS UNDER PRODUCTION AND IS TO BE PROVIDED BY THE MANUFACTURER UPON DELIVERY OF THE IRRADIATOR.

Figure 1 - COMPONENT LOCATION FOR TROUBLE-SHOOTING THE

Ex 2

NOTE: THIS CHART IS UNDER PRODUCTION AND IS TO BE PROVIDED BY THE MANUFACTURER UPON DELIVERY OF THE IRRADIATOR.

Figure 2 - TROUBLE-SHOOTING CHART FOR THE

PAGE:_____

Ex 2

NOTE: THIS CHART IS UNDER PRODUCTION AND IS TO BE PROVIDED BY THE MANUFACTURER UPON DELIVERY OF THE IRRADIATOR.

Figure 3 - TROUBLE-SHOOTING CHART FOR THE - CONT'D

Ex 2

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30 Oct 89
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Under Revision_____

CHAPTER II TECHNICAL PROCEDURES.

C.4. IRRADIATED BLOOD PRODUCTS - EMERGENCY PROCEDURES FOR THE [redacted] IRRADIATOR FAILURE

1. POWER FAILURE:

a. In case of an AC power failure, the irradiation cycle in progress at the time will be completed and the sample drawer will return to the safe "LOAD" position powered by the DC power back-up.

b. However, the AC power will have to be restored to start a new irradiation cycle. When the hospital Emergency Power starts, normal operation may resume.

2. EQUIPMENT FAILURE:

Should there be any mechanical difficulties with this instrument, see the preceding S.O.P. on trouble-shooting the machine. If the troubleshooting procedure does not correct the problem, or the problem is too complicated to correct at this time, arrange to have the products irradiated by another means* and contact the following:

a. Authorized Principal User - [redacted] Team Leader, Blood Bank, WRAMC, 6-1989/1990/1993.
b. Health Physics Officer - WRAMC, (301)427-5107.
c. Safety Officer - WRAMC, 6-1042/1044.

After duty hours, contact in order:

a. Authorized Principal User - [redacted] Team Leader, Blood Bank, WRAMC, at home. If unable to contact, call the Technical Support Staff member on call.
b. Staff Duty NCO - WRAMC (after duty hours), 6-1233.

If serious, the senior individual at the site shall clear the area (i.e. the [redacted] room) of personnel and restrict access to the area until relieved by competent authority.

(*Alternative sources for irradiating blood products: see the following page)

Ex 2

*Alternative sources for irradiating blood products:

1.	N.I.H. Dept. of Transfusion Medicine	496-4506
2.	Children's Hospital Blood Bank	745-5347
3.	Georgetown University Hospital Blood Bank	784-3511

3. UNSAFE READING ON RADIATION MONITOR:

The senior individual at the site must clear the area (i.e. the room) of all personnel and restrict access to the area. Immediately contact the personnel listed in #2 above.

4. IN THE EVENT OF FIRE:

The following individuals shall be notified:

ALWAYS FIRST:

a. Fire Department, WRAMC, 6-3317.

THEN:

b. Authorized Principal User - Team Leader, Blood Bank, WRAMC, 6-1989/1990/1993.

c. Health Physics Officer - WRAMC, (301)427-5107.

d. Safety Officer - WRAMC, 6-1042/1044.

After duty hours, contact the fire department **FIRST**, then contact in order:

a. Authorized Principal User - Team Leader, Blood Bank, WRAMC, at home. If unable to contact, call the Technical Support Staff member on call.

b. Staff Duty NCO - WRAMC (after duty hours), 6-1233.

The senior individual at the site shall clear the area (i.e. room) of personnel and restrict access to the area until relieved by competent authority. Fire fighters may enter the area after the radiation hazard has been determined. There is little likelihood of radiation hazard unless the temperature of the source shield reaches the melting point of lead (621 F). Water should be sprayed on the source shield if there is any possibility of the temperature approaching this value.

Following an emergency, the shall not be operated until an inspection and a radiation protection survey have been conducted by WRAMC Health Physics.

5. REFERENCES:

a. Operator's Manual.

b. Areman, E: Georgetown University Hospital - DLM, BB. S.O.P. - Emergency Procedures, Gammacell-1000 Blood Irradiator. 1987.

c. Connock, G: Walter Reed Army Institute of Research S.O.P. - Operating and Safety Procedures for AECL Gammacell 40 Irradiator. 1989.

Prepared by: David B. Drothler MT(ASCP)SBB.

SPECIAL PRODUCTS LAB
BLOOD BANK SECTION
CLINICAL PATHOLOGY SERVICE
DEPARTMENT OF PATHOLOGY AND AREA LABORATORY SERVICES
WALTER REED ARMY MEDICAL CENTER
WASHINGTON, D.C. 20307-5001

Effective_____
Replaces Method of_____
Reviewed M. Dow, M.D. 30 Oct 89
_____
Revised_____
Under Revision_____

CHAPTER IV. QUALITY CONTROL / PREVENTIVE MAINTENANCE.

D.2. PREVENTIVE MAINTENANCE - FOR THE BLOOD IRRADIATOR

1. PRINCIPLE:

The is a self-contained unit consisting of a stationary Cesium-137 doubly encapsulated curie radiation source permanently secured within a biological shield. By placing the sample can in the sample drawer and lowering the drawer into the machine, the blood product is either exposed to or, by raising the drawer, removed from the radiation field.

Because of the importance of the machine's application in the Blood Bank, it is essential that the "down time" is minimal. Periodically, parts of the will require maintenance to prevent this "down time". The following S.O.P. lists the specific maintenance recommended to keep the machine functioning properly.

2. CAUTIONS:

a. DO NOT undertake or perform any maintenance, remove any interlock and/or safety device, or make any changes in and/or on the without prior approval of the Authorized Principal User and the WRAMC Health Physics Officer. Failure to comply may result in loss of licensure to use radioactive materials.

b. Spills of materials inside the sample cavity could result in seizing of the turntable with subsequent loss of the uniformity of exposure to samples. NEVER place a unit of blood into the machine without placing the unit in the sample can first!

c. Disconnect the AC and DC power prior to any maintenance work.

3. GENERAL:

The will require minimum maintenance when operated in normal room conditions. The irradiator should be kept in clean condition, and any spills of liquids or powders inside the sample cavity should be thoroughly cleaned immediately.

Ex 2

4. PERIODIC INSPECTION AND ADJUSTMENT:

a. The roller chain may require adjustment in the drive system. Electrical connections will require inspection and electrical switches may require adjustment or replacement.

b. This is to be performed on a yearly basis by a **FACTORY REPRESENTATIVE ONLY**. Prior to having this done, notify the Health Physics department to have a representative present when the machine cover panel is removed.

c. The FACTORY REPRESENTATIVE WILL:

- Unplug the [ ] from the wall outlet. Remove the control and cover panels as per manufacturer's directions and as indicated in the drawing in Figure 1, next page.
- Inspect all electrical connections for looseness.
- Replace the panels and reconnect the control wires.

d. Due to the decay of Cesium, to ensure a consistent administration of a dose between 2000 and 2500 rads, the exposure time setting must be re-calculated and, if necessary, the timer reset. This is to be performed on a yearly basis at the same time as the periodic inspection and adjustment. The Authorized Principle User will be responsible for the re-calculation and possible resetting of the timer. The re-calculation will be based on the Cesium-137 decay curve in the operator's manual. If the result of the calculation differs from the current exposure setting by 0.1 minutes, reset the timer per manufacturer's instructions in the operator's manual and indicate the change in the S.O.P. - Chapter II, C.2. Use the following calculation:

(Fraction of Activity Remaining: from decay curve) x (Original CDR) = Central Dose Rate (rads/hr.) now being delivered

ADR (rads/min) = 0.89 x (CDR "now" x 60) New Time Interval = $\frac{\text{required DOSE}}{\text{ADR}}$

5. AC FUSE REPLACEMENT:

If it is necessary to replace an AC fuse, see the preceding S.O.P. - Chapter II, C.3. TROUBLE-SHOOTING THE [ ] BLOOD IRRADIATOR.

6. LIMITATIONS OF PROCEDURE:

This S.O.P. is intended to address how to perform preventive maintenance on the [ ]

7. REFERENCES:

a. [ ] Operator's Manual.

b. Areman E: Georgetown University Hospital - DLM, BB. S.O.P. - Procedure: Irradiation of Blood Products. 1987.

Prepared by: David B. Drothler MT(ASCP)SBB

Ex 2

NOTE: THIS DIAGRAM IS UNDER PRODUCTION AND IS TO BE PROVIDED BY THE MANUFACTURER UPON DELIVERY OF THE [ ] IRRADIATOR.

Figure 1 - COMPONENT LOCATION FOR MAINTENANCE OF THE [ ] IRRADIATOR

Ex 2

AWARD / CONTRACT

1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350) ▷ RATING: C9B | PAGE OF PAGES: 1 | 04

2. CONTRACT (Proc. Inst. Ident.) NO.: DADA15-89-C-0066

3. EFFECTIVE DATE: 09/08/89

4. REQUISITION/PURCHASE REQUEST/PROJECT NO.: W74MYG-9116-2506

5. ISSUED BY CODE: DADA15

DIRECTORATE OF CONTRACTING
WALTER REED ARMY MEDICAL CTR
WASHINGTON, D.C. 20307-5000

6. ADMINISTERED BY (If other than Item 5) CODE: A01

Admin Inquiries See Block 6

Pay/Invoice Info See Block 15

7. NAME AND ADDRESS OF CONTRACTOR (No., street, city, county, State and ZIP Code)

JL SHEPHERD & ASSOCIATES
1010 ARROYO AVENUE
SAN FERNANDO , CA 91340-1822

8. DELIVERY
☐ FOB ORIGIN ☒ OTHER (See below)

9. DISCOUNT FOR PROMPT PAYMENT
00.000%00 Net 030

10. SUBMIT INVOICES (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN: ITEM 12

CODE 00005377 FACILITY CODE

11. SHIP TO/MARK FOR CODE: W74MYG

PROPERTY MANAGEMENT BRANCH
WHSE 178 - FOREST GLEN SECTION
2461 LINDEN LANE - WRAMC
SILVER SPRING, MD 20910

12. PAYMENT WILL BE MADE BY CODE: YMEAMK

F&AO,Commercial Accts.Section
Bldg 11, Rm 1-101
WRAMC,Telephone:(202)576-3123
Washington, DC 20307-5000

13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION:
☐ 10 U.S.C. 2304(c)( ) ☐ 41 U.S.C. 253 (c)( )

14. ACCOUNTING AND APPROPRIATION DATA
2192035 906-8040 p5310-31nj s18126 aaur proj-med p893219

15A. ITEM NO.	15B. SUPPLIES/SERVICES	15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT
	See attached Schedule(s)				

15G. TOTAL AMOUNT OF CONTRACT ▷ $ 54,785.00

16. TABLE OF CONTENTS

(X)	SEC	DESCRIPTION	PAGE (S)	(X)	SEC	DESCRIPTION	PAGE (S)
		PART I - THE SCHEDULE				PART II - CONTRACT CLAUSES	
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X	B	SUPPLIES OR SERVICES AND PRICES/COSTS	2			PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS	
X	C	DESCRIPTION/SPECS./WORK STATEMENT	2		J	List of Attachments	
X	D	PACKAGING AND MARKING	1			PART IV - REPRESENTATIONS AND INSTRUCTIONS	
X	E	INSPECTION AND ACCEPTANCE	1		K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	
X	F	DELIVERIES OR PERFORMANCE	2				
X	G	CONTRACT ADMINISTRATION DATA	6		L	INSTRS., CONDS., AND NOTICES TO OFFERORS	
	H	SPECIAL CONTRACT REQUIREMENTS			M	EVALUATION FACTORS FOR AWARD	

CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE

17. ☐ CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return _____ copies to Issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award / contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)

18. ☒ AWARD (Contractor is not required to sign this document.) Your offer on Solicitation Number DADA15-89-R-0122, including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award / contract. No further contractual document is necessary.

19A. NAME AND TITLE OF SIGNER (Type or print)

20A. NAME OF CONTRACTING OFFICER
DAVID D. DENTON (202)576-8221

19B. NAME OF CONTRACTOR
BY _____
(Signature of person authorized to sign)

19C. DATE SIGNED

20B. UNITED STATES OF AMERICA
BY _____
(Signature of Contracting Officer)

20C. DATE SIGNED
12 SEP 1989

SF 26 Continued.....

The following revisions are hereby mutually accepted and are hereby incorporated into subject contract:

1. Amendment #0001 dated 7/21/89, attached at rear of contract document.

2. Contractor's Best and Final Offer is made part of the award.

3. Sections K,L and M of Solicitation DADA15-89=R-0122 are made part of the award and are incorporated by reference.

J.L. SHEPHERD & ASSOCIATES
1010 ARROYO AVE., SAN FERNANDO, CALIFORNIA 91340-1822
818-898-2361 FAX 818-361-8095

FAXED 9/5/89

September 5, 1989

Mr. David D. Denton
Contracting Division
Directorate of Contracting -
Supply & Equipment Branch

Re: Your Fax of September 1, 1989 Requesting Clarification of Proposal on Solicitation DADA15-89-R-0122

Dear Mr. Denton:

[redacted] will provide to Walter Reed Army Medical Center a [redacted] with [redacted] Curies. We are currently in production on this model and can easily accommodate the 60 day delivery schedule.

As another added benefit, the 3,000 Rad dose will be delivered in 2-3 minutes, not 6. These are the only changes to Proposal 1, Revision A.

The pricing of $53,285 shall be firm for this device.

Please do not hesitate to contact us if any further questions arise. We look forward to your favored reply.

Sincerely,

J.L. SHEPHERD & ASSOCIATES

Joseph S. Shepherd
Director, Business Development

JSS/mp

Ex 2

JL SHEPHERD and Associates

FED 8-24

J.L. SHEPHERD & ASSOCIATES BEST AND FINAL OFFER

Proposal 1
Revision A

Solicitation No. DADA15-89-R-0122

CESIUM-137 BLOOD PRODUCT IRRADIATOR

SAMPLE CHAMBER: 4" Dia. x 8" High - 1.64 Liters

Performance Specifications

1. Cesium-137 in "Special Form" encapsulation to be provided for gamma radiation to inactivate lymphocytes in blood and blood components.

2. The device shall be self-shielding encasing the Cesium-137 source in a double walled stainless steel holder.

3. The stainless steel holder shall be permanently installed and sealed in a lead encased biological shield.

4. The system shall contain [ ] Curies Cesium-137 in 4 distinct sources. The dose rate variation shall be ± 15% over the sample chamber.

5. The external radiation levels shall be less than 2.0 mR/hr at the SURFACE of the device in all operating modes. This is below the requirements of ICRP #15.

6. A [ ] dose shall be delivered in [ ] minutes.

7. The sample chamber shall incorporate a built in turntable which rotates at approximately 7 rpm. The sample shall be automatically rotated towards and away from the Cesium-137 source.

8. A battery back-up system shall be provided to allow cycle completion in case of power failure. A manual return system shall also be provided.

9. A keyswitch shall control electrical power.

10. A sample chamber door shall be provided. The turntable shall not operate unless the door is closed.

11. An audible alarm shall sound upon completion of the irradiation cycle. The alarm shall NOT cease until the door is opened.

Ex 2

12. The device shall operate safely in accordance with the requirements of ICRP #15.

13. The device shall weigh approximately 3,000 lbs. Dimensions shall be 31" x 31" x 66" (78" with sample chamber in "LOAD" position).

14. An eight hour training session for at least six people shall be included.

Additional Features

15. An electronic timer (0000.00 min.) with automatic reset shall be provided.

16. The device shall be mounted on a rolling dolly with locking mechanism.

17. A baked enamel steel cover shall be standard.

18. A stainless steel sealable sample canister shall be provided.

19. The device shall be designed and certified to meet all US DOT 7A container specifications.

Safety

20. Dual "IRRADIATE" switches which are required to operate the sample drawer negate the possibility of operator being hurt during drawer travel.

Warranty

21. The warranty shall be as follows:

    a. 12 months on parts and labor.

    b. Additional 48 months on parts.

22. PRICE (F.O.B. Destination) - $53,285

Delivery

23. 60 Days ARO

SF 26 Continued.....

The following revisions are hereby mutually accepted and are hereby incorporated into subject contract;

1. Amendment #0001 dated 7/21/89, attached at rear of contract document.

2. Contractor's Best and Final Offer is made part of the award.

3. Sections K,L and M of Solicitation DADA15-89=R-0122 are made part of the award and are incorporated by reference.

SOLICITATION, OFFER AND AWAF

HIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)

NG 00

4. PAGE 1 OF PAGES

2. CONTRACT NO.	3. SOLICITATION NO.	4. TYPE OF SOLICITATION	5. DATE ISSUED	6. REQUISITION/PURCHASE NO.
	DADA15-89-R-0122	☐ SEALED BID (IFB) ☒ NEGOTIATED (RFP)	07/17/89	W74MYG-9116-2506

7. ISSUED BY CODE DADA15
DIRECTORATE OF CONTRACTING
WALTER REED ARMY MEDICAL CTR
WASHINGTON, D.C. 20307-5000

8. ADDRESS OFFER TO (If other than Item 7)
Directorate of Contracting
Bldg T-20, 1st Floor
Walter Reed Army Medical Cntr
Washington, DC 20307-5000

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

SOLICITATION

9. Sealed offers in original and 1 copies for furnishing the supplies or services in the Schedule will be received at the place specified in Item 8, or if handcarried, in the depository located in DIRECTORATE OF CONTRACTING until 04:30 (Hour) local time 08/17/89 (Date)

CAUTION - LATE Submissions, Modifications, and Withdrawals: See Section L, Provision No. 52.214-7 or 52.215-10. All offers are subject to all terms and conditions contained in this solicitation.

10. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS)
	DELORES WRIGHT	(202)576-8228

11. TABLE OF CONTENTS

(X)	SEC	DESCRIPTION	PAGE(S)	(X)	SEC	DESCRIPTION	PAGE(S)
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X	E	INSPECTION AND ACCEPTANCE	1	X	K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	11
X	F	DELIVERIES OR PERFORMANCE	2				
X	G	CONTRACT ADMINISTRATION DATA	6	X	L	INSTRS., CONDS., AND NOTICES TO OFFERORS	10
	H	SPECIAL CONTRACT REQUIREMENTS		X	M	EVALUATION FACTORS FOR AWARD	1

OFFER (Must be fully completed by offeror)

NOTE: Item 12 does not apply if the solicitation includes the provisions at 52.214-16, Minimum Bid Acceptance Period.

12. In compliance with the above, the undersigned agrees, if this offer is accepted within _____ calendar days (60 calendar days unless a different period is inserted by the offeror) from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered at the price set opposite each item, delivered at the designated point(s), within the time specified in the schedule.

13. DISCOUNT FOR PROMPT PAYMENT (See Section I, Clause No. 52-232-8)	10 CALENDAR DAYS %	20 CALENDAR DAYS %	30 CALENDAR DAYS %	CALENDAR DAYS %
			NET	

14. ACKNOWLEDGMENT OF AMENDMENTS (The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated:	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE

15A. NAME AND ADDRESS OF OFFEROR
CAGE CODE 29345 FACILITY
J L Shepherd & Associates
1010 Arroyo Avenue
San Fernando, CA 91340

16. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)
Joseph S. Shepherd
Director, Business Development

15B. TELEPHONE NO. (Include area code)
(818) 898-2361

☐ 15C. CHECK IF REMITTANCE ADDRESS IS DIFFERENT FROM ABOVE - ENTER SUCH ADDRESS IN SCHEDULE.

17. SIGNATURE

18. OFFER DATE
August 15,

AWARD (To be completed by Government)

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION

22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION:
☐ 10 U.S.C. 2304 (c)( ) ☐ 41 U.S.C. 253(c) ( )

23. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified) ITEM

24. ADMINISTERED BY (If other than Item 7) CODE

25. PAYMENT WILL BE MADE BY CODE

26. NAME OF CONTRACTING OFFICER (Type or print)

27. UNITED STATES OF AMERICA
(Signature of Contracting Officer)

28. AWARD DATE

IMPORTANT - Award will be made on this Form, or on Standard Form 26, or by other authorized official written notice.

SECTION B
SUPPLIES OR SERVICES AND PRICES/COSTS

B.1. SCOPE

B.1.1. This solicitation is for the acquisition and delivery of a Gammacell 1000 Elite Blood Product Irradiator, brand name or equal by Nordion International, Inc., for use by the department of Pathology and ALS Blood Bank, Walter Reed Army Medical Center, Washington, D.C.

B.2. COMMERCIAL WARRANTY

B.2.1. The contractor agrees that the supplies/equipment furnished under this contract shall be covered by the most favorable commercial warranties the contractor gives to any customer for such supplies/equipment and that the rights and remedies provided herein are in addition to and do not limit any rights afforded to the Government by any other clause of this contract. Offeror shall complete the following:

Warranty Period: _____
Starting Date of Warranty: _____

Warranty certificate shall be furnished with the items at time of inspection and acceptance.

B.3. BRAND NAME OR EQUAL

B.3.1. Offerors are cautioned as to the need to comply with the applicable terms of the Brand Name or Equal Clause, paragraph L-9.

Contractors offering products which differ from the reference brand name shall be considered for award when the Contracting Officer determines that the offered product is equal in all material aspects to the product referenced. Offers will not be rejected because of minor differences in design, construction, or features which do not affect the suitability of the product for its intended use. The product offered must meet the essential characteristics listed in Section C of this solicitation.

Offerors are also cautioned that the submittal of any statement (such as offerors descriptive literature) to the effect that specifications are subject to change without notice may render the offer non-responsive and cause its rejection.

B.4. BRAND NAME OR EQUAL PROPOSALS

The Contract Line Items (CLIN) requested in The Schedule are identified as Brand Name or Equal. The catalog or model numbers referenced for each CLIN are manufactured by the company identified below. Please provide the brand

ITEM	DESCRIPTION	QUANTITY	U/M	U/P	AMOUNT

name, manufacturers name and catalog/model numbers for the items you are offering in your proposal in the space below the clin:

Reference Items are manufactured by: Gammacell By Nordion

B.5. THE SCHEDULE

ITEM	DESCRIPTION	QUANTITY	U/M	U/P	AMOUNT
0001	6640-01-C14-1974 GAMMACELL 1000 ELITE BLOOD PRODUCT	1	EA	53285.000000	53285.00
0001	(Continued) IRRADIATOR 115 VAC, 60 Hz, MODEL D OFFERING ON - BRAND NAME: _____ MANUFACTURER: _____ CATALOG/MODEL NUMBERS: _____				
0002	2 COPIES OF EACH TECHNICAL LITERATURE TO INCLUDE OPERATOR MANUAL, WIRING DIAGRAMS, PARTS LISTING WITH PRICES, AND PREVENTIVE MAINTENANCE RECOMMENDATION, IN ADDITION TO ONE (1) FREE COPY OF THE TECHNICAL LITERATURE.	2	EA	0.000000	0.00
0003	STANDARD COMMERCIAL INSTALLATION (FURNISH AND INSTALL)	1	EA	1500.000000	1500.00

END OF SECTION B

C. MINIMUM ESSENTIAL REQUIREMENTS

C.1. Must use gamma radiation to inactivate lymphocytes in blood and blood components.

C.1.2. The unit must be self-shielded encasing the radiation source in a double walled stainless steel holder.

C.1.3. The steel holder must be permanently installed and sealed in a lead encased biological shield.

C.1.4. The system must have three to four sources of radiation with a minimum Curie content of 1800 for even erradiation.

C.1.5. The external radiation level must meet or be below the requirements of the International Commission in Radiation Protection (ICRP#15).

C.1.6. A 3000 radiation dose must be delivered in two to seven minutes.

C.1.7. A turntable must be within the chamber for dose uniformity. The sample must automatically rotate towards and away from the irradiation source.

C.1.8. A battery back up system is required to allow cycle completion in case of power failure.

C.1.9. A key operated switch must control electrical power to the unit.

C.1.10. The sample chamber rotor must not operate until the front door is closed.

C.1.11. An audible alarm system must be in place to announce the end of irradiation process.

C.1.12. The unit must be able to operate safely in a laboratory environment in accordance with ICRP#15.

C.1.13. Dimensions must be approximately 66" high x 30" wide x 26" deep. Weight approximately 3500 pounds.

C.1.14. On-site training must be provided for at least six people for eight hours.

END OF SECTION C

SECTION D
PACKAGING AND MARKING

D.1 52.000-4024 PACKAGING

The supplies or equipment shall be packaged to afford adequate protection against corrosion, deterioration and damage in transit from the supply source to the receiving activity. Contractor's standard commercial packaging will be considered acceptable, provided it satisfies the above criteria.

END OF SECTION D

SECTION E
INSPECTION AND ACCEPTANCE

E.1 52.252-0002 CLAUSES INCORPORATED BY REFERENCE (JUN 1988)

This contract incorporates the following clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their text available.

I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES

II. DOD FAR SUPPLEMENT (48 CFR CHAPTER 2) CLAUSES

(End of clause)

(R 7-001)

E.2 52.246-0002 **INSPECTION OF SUPPLIES--FIXED-PRICE (JUL 1985)**
(Reference 46.302)

E.3 52.246-0016 **RESPONSIBILITY FOR SUPPLIES (APR 1984)**
(Reference 46.316)

E.4 52.000-4026 **INSPECTION AND ACCEPTANCE AT DESTINATION**

Inspections and acceptance of the supplies or services to be furnished hereunder shall be made at destination by the receiving office or consignee shown in the contract.

END OF SECTION E

SECTION F
DELIVERIES OR PERFORMANCE

F.1 52.252-0002 CLAUSES INCORPORATED BY REFERENCE (JUN 1988)

This contract incorporates the following clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their text available.

I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES

II. DOD FAR SUPPLEMENT (48 CFR CHAPTER 2) CLAUSES

(End of clause)

(R 7-001)

F.2 52.247-0034 F.O.B. DESTINATION (APR 1984)
(Reference 47.303-6(c))

F.3 52.000-4004 CONTRACT PERIOD
This contract shall be effective AUGUST 17TH, or date of award, whichever is later, and shall continue FOR 60 DAYS, unless sooner terminated under the terms of the contract.

F.4 52.000-4025 PLACE OF DELIVERY - FOB DESTINATION

The articles to be furnished hereunder shall be delivered, all transportation charges paid by the contractor, and in accordance with FOB Destination clause (FAR 52.247-34) in Section I of this solicitation. Deliver to:

DOL, PROPERTY MANAGEMENT BRANCH
BUILDING #178 FOREST GLEN SECTION
2461 LINDEN LANE (WRAMC)
SILVER SPRING, MD 20910-1291

F.5 52.000-4027 OFFERS NOT DESIGNATED AS F.O.B. DESTINATION

Offers submitted on a basis other than f.o.b. Destination may be rejected as non-responsive in accordance with FAR 47.305.4(b).

F.6 52.212-0001 TIME OF DELIVERY (APR 1984)

(a) The Government requires delivery to be made according to the following schedule:

REQUIRED DELIVERY SCHEDULE

ITEM NO.	QUANTITY	WITHIN DAYS AFTER DATE OF CONTRACT
1 AND 3	1 EA	60
2	2 EA	60

The Government will evaluate equally, as regards time of delivery, offers that propose delivery of each quantity within the applicable delivery period specified above. Offers that propose delivery that will not clearly fall within the applicable required delivery period specified above, will be considered nonresponsive and rejected. The Government reserves the right to award under either the required delivery schedule or the proposed delivery schedule, when an offeror offers an earlier delivery schedule than required above. If the offeror proposes no other delivery schedule, the required delivery schedule above will apply.

OFFEROR'S PROPOSED DELIVERY SCHEDULE

ITEM NO.	QUANTITY	WITHIN DAYS AFTER DATE OF CONTRACT
1	1 each	60 DAYS - Items 1 & 2.
2	2 each	

Please note that the devices offered as options require 90-120 days for delivery.

(b) Attention is directed to the Contract Award provision of the solicitation that provides that a written award or acceptance of offer mailed, or otherwise furnished to the successful offeror, results in a binding contract. The Government will mail or otherwise furnish to the offeror an award or notice of award not later than the day award is dated. Therefore, the offeror should compute the time available for performance beginning with the actual date of award, rather than the date the written notice of award is received from the Contracting Officer through the ordinary mails. However, the Government will evaluate an offer that proposes delivery based on the Contractor's date of receipt of the contract or notice of award by adding five days for delivery of the award through the ordinary mails. If, as so computed, the offered delivery date is later than the required delivery date, the offer will be considered nonresponsive and rejected.

(End of clause)
(R 7-104.92(b) 1974 APR)
(R 1-1.316-5)
(R 1-1.316-4(c))

END OF SECTION F

SECTION G
CONTRACT ADMINISTRATION DATA

G.1 52.000-4000 CORRESPONDENCE AFTER AWARD

All correspondence after award of this contract shall be directed to the following address:

CONTRACTING OFFICER
Directorate of Contracting
Walter Reed army Medical Center
Washington, DC 20307-5000

G.2 52.000-4002 ii INVOICING AND PAYMENT

Payment shall be made upon receipt and acceptance by the Government. Invoices shall be submitted in quadruplicate (one copy marked "original"), to the following address:

Commercial Accounts Section
Walter Reed Army Medical Center
Washington, DC 20307--5000

G.3 52.000-4003 CONTRACTING OFFICER'S AUTHORITY

The Contracting Officer is the ONLY person authorized to approve changes to any of the requirements under this contract, and notwithstanding any provision contained elsewhere in this contract the said authority remains solely with the Contracting Officer. In the event the Contractor effects any changes at the direction of any person other than the Contracting Officer, the change will be considered to have been made without authority, and no adjustment will be made in the contract price to cover any increase in charges incurred as a result thereof.

G.4 52.000-4522 52.232-0025 PROMPT PAYMENT (APR 1989) (AL 89-10)

Notwithstanding any other payment clause in this contract, the Government will make invoice payments and contract financing payments under the terms and conditions specified in this clause. Payment shall be considered as being made on the day a check is dated or an electronic funds transfer is made. Definitions of pertinent terms are set forth in 32.902. All days referred to in this clause are calendar days, unless otherwise specified. The term "foreign vendor" means an incorporated concern not incorporated in the United States, or an unincorporated concern having its principl place of business outside the Jnited States.

(a) Invoice Payments.

(1) For purposes of this clause, "invoice payment" means a Government disbursement of monies to a Contractor under a contract or other authorization for supplies or services accepted by the Government. This includes payments for partial deliveries that have been accepted by the Government and final cost or fee payments where amounts owed have been settled between the Government and the Contractor.

(2) Except as indicated in subparagraph (a)(3) and paragraph (c) of this clause, the due date for making invoice payments by the designated payment office shall be the later of the following two events:

(i) The 30th day after the designated billing office has received a proper invoice from the Contractor.

(ii) The 30th day after Government acceptance of supplies delivered or services performed by the Contractor. On a final invoice where the payment amount is subject to contract settlement actions, acceptance shall be deemed to have occurred on the effective date of the contract settlement. However, if the designated billing office fails to annotate the invoice with the actual date of receipt, the invoice payment due date shall be deemed to be the 30th day after the date the Contractor's invoice is dated, provided a proper invoice is received and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

(3) The due date on contracts for meat and meat food products, contracts for perishable agricultural commodities, contracts for dairy products, edible fats or oils, and food products prepared from edible fats or oils, and contracts not requiring submission of an invoice shall be as follows:

(i) The due date for meat and meat food products, as defined in Section 2(a)(3) of the Packers and Stockyard Act of 1921 (7 U.S.C. 182(3)) and further defined in Pub. L. 98-181 to include any edible fresh or frozen poultry meat, any perishable poultry meat food product, fresh eggs, and any perishable egg product, will be as close as possible to, but not later than, the 7th day after product delivery.

(ii) The due date for perishable agricultural commodities, as defined in Section 1(4) of the Perishable Agricultural Commodities Act of 1930 (7 U.S.C. 499a(44)), will be as close as possible to, but not later than, the 10th day after product delivery, unless another date is specified in the contract.

(iii) The due date for dairy products, as defined in section 111(e) of the Dairy Production Stabilization Act of 1983 (7 U.S.C. 4502(e)), edible fats or oils, and food products prepared from edible fats or oils, will be as close as possible to, but not later than, the 10th day after the date on which a proper invoice has been received.

(4) An invoice is the Contractor's bill or written request for payment under the contract for supplies delivered or services performed. An invoice shall be prepared and submitted to the designated billing office

specified in the contract. A proper invoice must include the items listed in subdivisions (a)(4)(i) through (a)(4)(viii) of this clause. If the invoice does not comply with these requirements, then the Contractor will be notified of the defect within 7 days after receipt of the invoice at the designated billing office (3 days for meat and meat food products and 5 days for perishable agricultural commodities, edible fats or oils, and food products prepared from edible fats or oils). Untimely notification will be taken into account in the computation of any interest penalty owed the Contractor in the manner described in subparagraph (a)(6) of this clause.

(i) Name and address of the Contractor.

(ii) Invoice date.

(iii) Contract number or other authorization for supplies delivered or services performed (including order number and contract line item number).

(iv) Description, quantity, unit of measure, unit price, and extended price of supplies delivered or services performed.

(v) Shipping and payment terms (e.g., shipment number and date of shipment, prompt payment discount terms). Bill of lading number and weight of shipment will be shown for shipments on Government bills of lading.

(vi) Name and address of Contractor official to whom payment is to be sent (must be the same as that in the contract or in a proper notice of assignment).

(vii) Name (where practicable), title, phone number and mailing address of person to be notified in event of a defective invoice.

(viii) Any other information or documentation required by other requirements of the contract (such as evidence of shipment).

(5) An interest penalty shall be paid automatically by the Government, without request from the Contractor, if payment is not made by the due date and the conditions listed in subdivisions (a)(5)(i) through (a)(5)(iii) of this clause are met, if applicable. An interest penalty shall not be paid on contracts awarded to foreign vendors outside the United States for work performed outside the United States.

(i) A proper invoice was received by the designated billing office.

(ii) A receiving report or other Government documentation authorizing payment was processed and there was no disagreement over quantity, quality, or contractor compliance with any contract term or condition.

(iii) In the case of a final invoice for any balance of funds due the Contractor for supplies delivered or services performed, the amount was not subject to further contract settlement actions between the Government and the Contractor.

(6) The interest penalty shall be at the rate established by the Secretary of the Treasury under Section 12 of the Contract Disputes Act of 1978 (41 U.S.C. 611) that is in effect on the day after the due date, except where the interest penalty is prescribed by other governmental authority. This rate is referred to as the "Renegotiation Board Interest Rate," and it is published in the Federal Register semiannually on or about January 1 and July 1. The interest penalty shall accrue daily on the

invoice payment amount approved by the Government and be compounded in 30-day increments inclusive from the first day after the due date through the payment date. That is, interest accrued at the end of any 30-day period wiull be added to the approved invoice payment amount and be subject to interest penalties if not paid in the succeeding 30-day period. If the designated billing office failed to notify the contractor of a defective invoice within the periods prescribed in subparagraph (a)(4) of this clause, then the due date on the corrected invoice will be adjusted by subtracting the number of days taken beyond the prescribed notification of defects period. Any interest penalty owed the Contractor will be based on this adjusted due date. Adjustments will be made by the designated payment office for errors in calculating interest penalties, if requested by the Contractor.

(i) For the sole purpose of computing an interest penalty that might be due the Contractor, Government acceptance shall be deemed to have occurred constructively on the 7th day (unless otherwise specified in this contract) after the Contractor delivered the supplies or performed the services in accordance with the terms and conditions of the contract, unless there is a disagreement over quantity, quality, or contractor compliance with a contract provision. In the event that actual acceptance occurs within the constructive acceptance period, the determination of an interest penalty shall be based on the actual date of acceptance. The constructive acceptance requirement does not, however, compel Government officials to accept supplies or services, perform contract administration functions, or make payment prior to fulfilling their responsibilities.

(ii) The following periods of time will not be included in the determination of an interest penalty:

(A) The period taken to notify the Contractor of defects in invoices submitted to the Government, but this may not exceed 7 days (3 days for meat and meat food products and 5 days for perishable agricultural commodities, dairy products, edible fats or oils, and food products prepared from edible fats or oils).

(B) The period between the defects notice and resubmission of the corrected invoice by the Contractor.

(iii) Interest penalties will not continue to accrue after the filing of a claim for such penalties under the clause at 52.233-1, Disputes, or for more than 1 year. Interest penalties of less than $1.00 need not be paid.

(iv) Interest penalties are not required on payment delays due to disagreement between the Government and Contractor over the payment amount or other issues involving contract compliance or on amounts temporarily withheld or retained in accordance with the terms of the contract. Claims involving disputes, and any interest that may be payable, will be resolved in accordance with the clause at 52.233-1, Disputes.

(7) An interest penalty shall also be paid automatically by the designated payment office, without request from the contractor, if a discount for prompt payment is taken improperly. The interest penalty will

be calculated as described in subparagraph (a)(6) of this clause on the amount of discount taken for the period beginning with the first day after the end of the discount period through the date when the contractor is paid.

(8) If this contract was awarded on or after October 1, 1989, a penalty amount, calculated in accordance with regulations issued by the Office of Management and Budget, shall be paid in addition to the interest penalty amount if the Contractor--

(i) Is owed an interest penalty;

(ii) Is not paid the interest penalty within 10 days after the date the invoice amount is paid; and

(iii) Makes a written demand, not later than 40 days after the date the invoice amount is paid, that the agency pay such a penalty.

(b) Contract Financing Payments.

(1) For purposes of this clause, "contract financing payment" means a Government disbursement of monies to a Contractor under a contract clause or other authorization prior to acceptance of supplies or services by the Government. Contract financing payments include advance payments, progress payments based on cost under the clause at 52.232-16, Progress Payments, progress payments based on a percentage or stage of completion (32.102(e)(1)) other than those made under the clause at 52.232-5, Payments Under Fixed-Price Construction Contracts, or the clause at 52.232-10, Payments Under Fixed-Price Architect-Engineer Contracts, and interim payments on cost type contracts.

(2) For contracts that provide for contract financing, requests for payment shall be submitted to the designated billing office as specified in this contract or as directed by the Contracting Officer. Contract financing payments shall be made on the N/A day after receipt of a proper contract financing request by the designated billing office. In the event that an audit or other review of a specific financing request is required to ensure compliance with the terms and conditions of the contract, the designated payment office is not compelled to make payment by the due date specified.

(3) For advance payments, loans, or other arrangements that do not involve recurrent submissions of contract financing requests, payment shall be made in accordance with the corresponding contract terms or as directed by the Contracting Officer.

(4) Contract financing payments shall not be assessed an interest penalty for payment delays.

(c) If this contract contains the clause at 52.213-1, Fast Payment Procedures, payments will be made within 15 days after the date of receipt of the invoice.

END OF SECTION G

SECTION I
CONTRACT CLAUSES

I.1 52.252-0002 CLAUSES INCORPORATED BY REFERENCE (JUN 1988)

This contract incorporates the following clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their text available.

I. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES

II. DOD FAR SUPPLEMENT (48 CFR CHAPTER 2) CLAUSES

(End of clause)

(R 7-001)

I.2 52.000-4509 52.209-7001 ACQUISITIONS FROM DEFENSE CONTRACTORS SUBJECT TO ON-SITE INSPECTION UNDER THE INTERMEDIATE-RANGE NUCLEAR FORCES (INF) TREATY (JUN 1988) (AL 88-16)
(Reference)

I.3 52.000-4521 52.232-8 DISCOUNTS FOR PROMPT PAYMENT (APR 1989) (AL 89-10)
(Reference)

I.4 52.202-0001 DEFINITIONS (APR 1984)
(Reference 2.2)

I.5 52.203-0001 OFFICIALS NOT TO BENEFIT (APR 1984)
(Reference 3.102-2)

I.6 52.203-0003 GRATUITIES (APR 1984)
(Reference 3.202)

I.7 52.203-0005 COVENANT AGAINST CONTINGENT FEES (APR 1984)
(Reference 3.404(c))

I.8 52.203-0006 RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT (JUL 1985)
(Reference 3.503-2)

I.9 52.203-0007 ANTI-KICKBACK PROCEDURES (OCT 1988)
(Reference 3.502-3)

I.10	52.203-7001	SPECIAL PROHIBITION ON EMPLOYMENT (APR 1987) (Reference 3.571-5)
I.11	52.215-0001	EXAMINATION OF RECORDS BY COMPTROLLER GENERAL (APR 1984) (Reference 15.106-1(b))
I.12	52.215-0002	AUDIT--NEGOTIATION (APR 1988) (Reference 15.106-2(b))
I.13	52.215-0033	ORDER OF PRECEDENCE (JAN 1986) (Reference 15.406-3(b))
I.14	52.219-0008	UTILIZATION OF SMALL BUSINESS CONCERNS AND SMALL DISADVANTAGED BUSINESS CONCERNS (JUN 1985) (Reference 19.708(a))
I.15	52.220-0003	UTILIZATION OF LABOR SURPLUS AREA CONCERNS (APR 1984) (Reference 20.302(a))
I.16	52.222-0020	WALSH-HEALEY PUBLIC CONTRACTS ACT (APR 1984) (Reference 22.610(b))
I.17	52.222-0026	EQUAL OPPORTUNITY (APR 1984) (Reference 22.810(e))
I.18	52.222-0035	AFFIRMATIVE ACTION FOR SPECIAL DISABLED AND VIETNAM ERA VETERANS (APR 1984) (Reference 22.1308)
I.19	52.222-0036	AFFIRMATIVE ACTION FOR HANDICAPPED WORKERS (APR 1984) (Reference 22.1408)
I.20	52.222-0037	EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA (JAN 1988) (Reference 22.1308(b))

I.21	52.223-0006	DRUG-FREE WORKPLACE (MAR 1989) (Reference 23.505(c))
I.22	52.225-7001	BUY AMERICAN ACT AND BALANCE OF PAYMENTS PROGRAM (APR 1985) (Reference 25.109(d)(S)
I.23	52.225-7027	RESTRICTION ON CONTRACTING WITH TOSHIBA CORPORATION OR KONGSBERG VAPENFABRIKK (MARCH 1988) (Reference 25.7011(d))
I.24	52.227-0001	AUTHORIZATION AND CONSENT (APR 1984) (Reference 27.201-2(a))
I.25	52.227-0002	NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT (APR 1984) (Reference 27.202-2)
I.26	52.229-0003	FEDERAL, STATE, AND LOCAL TAXES (APR 1984) (Reference 29.401-3)
I.27	52.229-0005	TAXES--CONTRACTS PERFORMED IN U.S. POSSESSIONS OR PUERTO RICO (APR 1984) (Reference 29.401-5)
I.28	52.232-0001	PAYMENTS (APR 1984) (Reference 32.111(a)(1)
I.29	52.232-0011	EXTRAS (APR 1984) (Reference 32.111(d)(2)
I.30	52.232-0017	INTEREST (APR 1984) (Reference 32.617(a))
I.31	52.232-0023	ASSIGNMENT OF CLAIMS (JAN 1986) (Reference 32.806(a)(1)

I.32	52.233-0001	DISPUTES (APR 1984) (Reference 33.214)
I.33	52.233-0003	PROTEST AFTER AWARD (JUN 1985) (Reference 33.106(b))
I.34	52.243-0001	CHANGES--FIXED-PRICE (AUG 1987) (Reference 43.205(a)(1)
I.35	52.243-7001	PRICING OF ADJUSTMENTS (APR 1984) (Reference 43.205(S-71)
I.36	52.249-0001	TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (FIXED-PRICE) (SHORT FORM) (APR 1984) (Reference 49.502(a)(1)
I.37	52.249-0008	DEFAULT (FIXED-PRICE SUPPLY AND SERVICE) (APR 1984) (Reference 49.504(a)(1)
I.38	52.000-4525	52.209-6 PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT (MAY 1989) (FAC 84-46)

END OF SECTION I