APPENDIX A

MEDICAL BROAD-SCOPE INSPECTION RECORD

Region I

Inspection record No. 99-01 License No. 08-01738-02

Licensee (Name and Address): Docket No. 030-01317

Army
Walter Reed Army Medical Ctr.
Washington DC 20307-5001

Licensee Contact: William Johnson Telephone No. _____

Priority: 1 Program Code: 2110

Date of Last Inspection: 2/11-13/98
Date of This Inspection: ~~3/16/99~~ 3/16 – 18/99

Type of Inspection: ( ) Announced (✓) Unannounced
(✓) Routine ( ) Special
( ) Initial

Next Inspection Date 11/2000 ( ) Normal ( ) Reduced (✓) Extended

Justification for change in normal inspection frequency: (2) clear inspections

Summary of Findings and Actions:

(✓) No violations cited, clear U.S. Nuclear Regulatory Commission (NRC) Form 591 or regional letter issued
( ) Non-cited violations
( ) Violation(s), Form 591 issued
( ) Violation(s), regional letter issued
( ) Followup on previous violations

Inspector(s) Thomas K Thompson Date 3/29/99
(Sign Name)
Thomas K. Thompson
(Print Name)

Approved M. Shanbaky Date 3/30/99
(Sign Name)
M. SHANBAKY
(Print Name)

2/80

PART I-LICENSE, INSPEC. .N, INCIDENT/EVENT, AND ENFOR(IENT HISTORY

1. AMENDMENTS AND PROGRAM CHANGES:
[License amendments issued since last inspection; program changes (including major changes in facilities, activities, procedures, or personnel) noted in the license]

AMENDMENT #	DATE	SUBJECT
71	6/9/98	Add new RSC Chairman Colonel Nancy Phillips

2. INSPECTION AND ENFORCEMENT HISTORY:
(Unresolved issues; previous and repeat violations; Confirmatory Action Letters; and orders)

2/11-13/98 clear

3. INCIDENT/EVENT HISTORY:
(List any incidents, recordable events, or misadministrations reported to NRC since the last inspection. Citing "None" indicates that regional event logs, event files, and the licensing file have no evidence of any incidents or events since the last inspection.)

X P-32 contam. 1/26/99
Licensee has/has been following several incidence of personnel entering I-131 pt rooms who were not authorized. Custodial ~~pt~~ nutritionist. The licensee identified the individuals & provided training.

PART II - INSPECTION DOCUMENTATION

References that correspond to each inspection documentation topic are in Inspection Procedure 87119, Appendix B, "Medical Broad-Scope Inspection References."

The inspection documentation part is to be used by the inspector to assist with the performance of the inspection. Note that all areas indicated in this part are not required to be addressed during each inspection. However, for those areas not covered during the inspection, a notation ("Not Reviewed" or "Not Applicable") should be made in each section where applicable.

All areas covered during the inspection should be documented in sufficient detail to describe what activities and procedures were observed and/or demonstrated. In addition, the types of records that were reviewed and the time periods covered by those records should be noted. If the licensee demonstrated any practices at your request, describe those demonstrations. The observations and demonstrations you describe in this report, along with measurements and some records review, should substantiate your inspection findings. Attach copies of all licensee documents and records needed to support violations.

1. ORGANIZATION AND SCOPE OF PROGRAM:
(Management organization; authorities and responsibilities; Radiation Safety Officer (RSO), Radiation Safety Committee (RSC) chairman and members; administrative controls, procedures, and management policies; authorized locations of use; type, quantity and frequency of byproduct material use; staff size; mobile nuclear medicine service; limited distribution of pharmaceuticals; and research involving human subjects)

3 Authorized HP's
3 Civilian HP's
5 HP Tech's
~43 active Principle Users
6 Brachy pts. in 98' Prostate implants major brachy area. Using Pd 103,
1 Generator/wk
Fuel Meade - Drug Testing lab uses I-125 kits - minimum use - Not inspected
Gillette Bldg - being decommissioned in Imm; little activity

2. MANAGEMENT OVERSIGHT:
[Management support to radiation safety; RSC, RSO; and program audits, including as low as is reasonably achievable (ALARA) reviews]

RSC Meeting Minutes reviewed
11/25/98
9/2/98
6/4/98
3/98
1 - new AU in 1998. Reviewed application submitted to RSC. OK

3. **FACILITIES**:

[Facilities as described; uses; control of access; engineering controls,(e.g., ventilation, hoods, filters, etc); irradiators and survey instrument calibrators; maintenance by authorized persons]

Visited Forest Glenn facility and Armer Labs.
Labs in Bldg 500 no longer use byproduct material
All materials were removed except 35 in liq scint-counter.
They await decommissioning survey clearance. Then these use areas will be removed.

* Gillette - Being decommissioned no use
13 Taft Court — limited # of labs using P-32 + S-35 - active
Bldg 40 = WRAIR
41 = HP Offices
54 — Pathology AFIP

4. **EQUIPMENT AND INSTRUMENTATION**:

(Dose calibrator; instrumentation for assaying alpha- and beta- radionuclides; generators; syringes and vials; survey instruments; 10 CFR Part 21 procedures; and special equipment and instrumentation) All survey instruments checked on Lab Tours were calibrated as required -

Capintec 35R normal use Constancy (See back page)
(30) uC not used except for Tc99m 6/25/98 one Constancy chk - commonly
6/26 same used settings check
6/29 same on Moly Channel reading
7/9 same obtained was 9284.61 %
Manually entered 136.90 mCi
Should have been 1.36 mCi

Linearity
3/1/99
~~1/22/97~~ 10/26/98 1/13/98
8/26/98
6/2/98

Accuracy
2/22/99
6/98

Xe-133
Xenamatic 3000
has Charcoal Trap + alarm, Alarm chkd 1/mth

5. **MATERIAL RECEIPT, USE, CONTROL, AND TRANSFER**:

(Materials and uses authorized; use of radiopharmaceuticals; security and control of licensed materials; and procedures for receipt and transfer of licensed material)

(2) 2-3 Ci Generators received per wk from DuPont Nuc Med Pharmacy

Individual Investigators order materials, however, all materials are received + checked against inventory by RSO personnel

N- eye applicators - stored Forest Glenn
CC - old irradiator - stored at Forest Glenn
O, +A.A - Brachy Sources
R - no longer possessed
U, - Source not used - Stored in Bldg 41
A.A. - Instr. calib. - no longer has, disposed

X - only 1.54E-3 mCi not 1 Ci
B.B - Contam stds. - Bldg 41

Capintec 30 not used for pt doses in 98'. Used only to train students.

Constancy

9/14 91.54 reading should have been 1.4 mCi was entered as 0.12

No violation noted for errors >10% on Capintec 30 because it is not used for pts. dose assay. Suggested to Licensee that they should, however, ~~put~~ make a record indicating what occurred when these errors are made on daily constancy checks, because the Licensee stated they would use the Capintec 30 for backup if their primary unit failed.

6. THERAPIES:
(Safety precautions; postings; contamination control; stay times; surveys; release criteria of patients and rooms)

~ 27 yr I-131 inpts.
dedicated rooms used

Interviewed custodi workers about trng. Worker was aware he should not go in therapy room but didn't specifically recall trng. session.
1 Sr-89 10/14/98 Brachy Rm 6562

QM

chked written directives, all ok
8 I-131
1 Sr-89

Brachy

CS-137 9/3/98

3/19/98 Cook Ir-192 ? Need written Directive - ~~None~~ - not caught on audit other record has equiv. info. *

CS137 2/18/98 ok written Directive ok

Jones Cs-137 ? - ~~didn't look at this - file could not be located.~~
Cs-137 pt on 3/4/98
Info on in+out log
1) # sources removed
2) Pts. name
3) date sources removed
4) date sources returned
5) # sources returned

missing load date

Reviewed I-131 pt. survey records + bioassay data.
All OK.

7. QUALITY MANAGEMENT PROGRAM (GMP) AND MISADMINISTRATIONS:
(QMP - written directives, implementation, reviews, and records; misadministrations - identification, notifications, reports, and records)

100% QM review is done by Nuclear Pharmacist, 100% review is also done of Brachy administrations.

8. AREA RADIATION SURVEYS AND CONTAMINATION CONTROL:
(Radiation and contamination surveys; air sampling; leak tests; inventories; handling of radioactive materials; protective clothing; dosimetry; records; and public doses)

Checked daily surveys in Nuc Med. area - ok
Checked I-131 & Brachy pt. area surveys - ok
Checked survey records in individual labs during facility tour. In all cases survey records were complete.

9. TRAINING AND INSTRUCTIONS TO WORKERS:
(Interviews and observations of routine work; staff knowledge of all routine activities; 10 CFR Part 20 requirements; therapy training and postulated emergency situations; supervision by authorized users; retraining and periodic training programs; training of ancillary personnel such as housekeeping, security, and maintenance; adequacy of training and instruction)

98'

1 - new author. revised 9/4/98

10. RADIATION PROTECTION:
[Radiation protection program with ALARA provisions (worker and general public external and internal exposure control; effluent control); external and internal dosimetry program; exposure evaluations; dose records and reports; and patient release]

Release for I-131 pts.
Conditional Release
< 33 mCi
Un Conditional
< 7 mCi

11. RADIOACTIVE WASTE MANAGEMENT:
(Disposal; effluent pathways and control; storage areas; transfer; packaging, control, and tracking procedures; equipment incinerators, hoods, vents, and compactors; and records)

All rad waste picked up & taken to Forest Glenn for compactin & stg for decay or Shipped as rad waste to Barnwell. RSO does this. Waste compactor has ventillatin & air sampling is taken of effluent each use.

12. DECOMMISSIONING:
(Records of radiological conditions; decommissioning plan/schedule; notification requirements; cost estimates; funding methods; financial assurance; and Timeliness Rule requirements)

* Licensee is in process of decommission several bldgs. & moving operations to the new facility at Forest Glenn

Bldg. 40 - plans being formed to decommission & move operations to Bldg 503 at Forest Glenn. May not occur for ~~~~ 1-2 yrs.

Bldg 500 & 506, & 508 are in process of being decommiss.

13. TRANSPORTATION:
(Quantities and types of licensed material shipped; packaging design requirements; HAZMAT communication procedures; unit dose return; return of sources; procedures for monitoring radiation and contamination levels of packages; HAZMAT training; and records and reports)

Last shipment 3/1/99 ~~#~~ (rad waste)
Reviewed shipment records randomly selected for ~~for~~ in '98'. All ok.

14. NOTIFICATIONS AND REPORTS:
(Theft; loss; incidents; overexposures; change in RSO, authorized user, or nuclear pharmacist; and radiation exposure reports to individuals)

(2) incidence of contam. (1) 1/99 P-32
(2) 2/11 S-35

15. POSTING AND LABELING:
(Notices; license documents; regulations; bulletins and generic information; posting of radiation areas; and labeling of containers of licensed material)

Appropriate posting and labeling noted in Laboratories & waste stg areas.

16. INDEPENDENT AND CONFIRMATORY MEASUREMENTS:
(Areas surveyed; comparison of data with licensee's results and regulations; and instrument type and calibration date)

Surveyed waste stg area Forest Glen <2mR/hr
Nuc. medicine Lab
Brachy source stg rm.

17. VIOLATIONS, NON-CITED VIOLATIONS (NCVs); AND OTHER SAFETY ISSUES:
(State requirement and how and when licensee violated the requirement. For NCVs, indicate why the violation was not cited. Attach copies of all licensee documents needed to support violations.)

1) Do not review everything
2) Visited most labs but not Taft Court

1) Daily constancy failing to note >10% error. not cited because device is not used.
2) (1) lab ~50-60 uG Rn-72 unsecured but licensee is taking action. Material was locked in refrig but lock + change could be bypassed.
3) Revised Rn-72 incident in Jan 99
4) Brachy therapy ~~records~~ source use records should be filled out in their entirety

Facilities visited Bldg 40 41 Forest Glen
Did not visit Taft Court 54

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18. PERSONNEL CONTACTED:
[Identify licensee personnel contacted during the inspection (including those individuals contacted by telephone).] Col. Johnson - RSO
Anna Rodriguez - PI for Nuc Medicine
Cpt. John Thomas - Pharmacist
Cpt Arthur Martin - Chief
David Burke - Chief, Rad. Materials Lic. Branch
Wilfred Sewchand - ~~Analyst~~ Clinical Physicist

Use the following identification symbols:
Individual(s) present at entrance meeting
* Individual(s) present at exit meeting

19. PERFORMANCE EVALUATION FACTORS (PEFs):

A.	Lack of senior management involvement with the radiation safety program and/or RSO oversight		( ) Y (~~✓~~) N
B.	RSO too busy with other assignments		( ) Y (~~✓~~) N
C.	Insufficient staffing		( ) Y (~~✓~~) N
D.	RSC fails to meet or functions inadequately	( ) N/A	( ) Y (~~✓~~) N
E.	Inadequate consulting services or inadequate audits conducted	( ) N/A	( ) Y (~~✓~~) N

Remarks (consider the above assessment and/or other pertinent PEFs with regard to the licensee's oversight of the radiation safety program):

21. Special Conditions or Issues:
(Special license conditions; year-2000 effects of computer software)

None

PENDIX A - ATTACHMENT A
DECOMMISSIONING TIMELINESS INSPECTION ATTACHMENT

Licensee: Walter Reed Med. Ctr.

Date of Inspection: 3/16-18/99

1. COMPLIANCE WITH DECOMMISSIONING TIMELINESS RULE
(NOTE: Repeat the answers given in Section 12 of the main body of the inspection record. The issues in subsequent sections are dependent on the answers to these questions.)

A. License to conduct a *principal activity* has expired or been revoked. ( ) Y (✓) N

B. Licensee has made a decision to permanently cease *principal activities*, at the entire site, or any separate buildings, or any outdoor areas, including inactive burial grounds. (✓) Y ( ) N

C. A 24-month duration has passed in which no *principal activities* have been conducted under the license at the site, or at any separate buildings, or any outdoor areas, including inactive burial grounds. ( ) Y (✓) N

D. If "Yes" to either A or B or C above:

(1) Identify Site/Bldg/Area: Letter to NRC dated 12/12/97

(2) Date of occurrence of A, B, or C: " "

2. NOTIFICATION REQUIREMENTS

A. Licensee has provided written notification to U.S. Nuclear Regulatory Commission (NRC) within 60 days of the occurrence of 1.A., 1.B., or 1.C., above. (✓) Y ( ) N

If "Yes," date of notification: Letter dated 12/12/97

B. If the licensee is requesting to delay initiation of the decommissioning process, the licensee has provided written notification to NRC within 30 days of occurrence of 1.A., 1.B., or 1.C.,above ( ) N/A ( ) Y (✓) N

If "Yes," date of notification: _____

Basis for Findings:

3. DECOMMISSIONING PLAN/SCHEDULE REQUIREMENTS

A. Licensee is required to submit a decommissioning plan per 10 CFR 30.36(g), 40.42(g), 70.38(g), or 10 CFR Part 72? ( ) Y (✓) N

If "No" to 3.A., answer the following items B. - F.:

B. The decommissioning work scope is covered by current license conditions. (✓) Y ( ) N

C. Decommissioning has been initiated within 60 days of notification to NRC, or NRC has granted a delay. ( ) Y ( ) N

Done historical review
Done characterization survey

D. If licensee has initiated decommissioning, give date the decommissioning was initiated:

Initiation date: Summer 98'

E. If decommissioning has been completed, it was completed within 24 months of notification of NRC. (✓) N/A ( ) Y ( ) N

F. If decommissioning is still scheduled to be completed, it is on schedule to be completed within 24 months of notification of NRC. ( ) N/A ( ) Y (✓) N

Basis for Findings: will need delay Ltr. - may not happen within 2 yrs. from this inspection.

If "Yes" to 3.A., answer the following items G. - J.:

G. The decommissioning plan has been submitted to NRC within 12 months of notification ( ) Y ( ) N

If "Yes," date of submittal: See 12/12/97 Letter

If NRC approved, date of NRC approval: 1/14/98

H. Has the licensee submitted an alternative schedule request? ( ) Y (~~✓~~) N

If "Yes," date of submittal: _____

~~asked Licensee to Send request for Delay.~~ Letter 12/9

I. If decommissioning has been completed, it was completed within 24 months after approval of the decommissioning plan (✓) N/A ( ) Y ( ) N Indicates decom not till 99

J. If decommissioning is still scheduled to be completed, it is on schedule to be completed within 24 months after approval of the decommissioning plan. NRC Should send letter granting Delay. ( ) N/A (~~✓~~) Y ( ) N

Basis for Findings: The new bldg. at Forest Glen will not be completed until later in 1999. The ~~Final~~ decommissn of other bldgs will not be complete until 1-2 yrs. after

Violations identified, if any:

APPENDIX B

MEDICAL BROAD-SCOPE INSPECTION REFERENCES*

1. ORGANIZATION AND SCOPE OF PROGRAM

10 CFR 35.6 Provisions for research involving human subjects.
10 CFR 35.29 Administrative requirements - mobile nuclear medicine service.
10 CFR 35.80 Technical requirements - mobile nuclear medicine service.
License application and applicable license conditions.

2. MANAGEMENT OVERSIGHT

A. Radiation Safety Committee

10 CFR 33.13 Requirements for issuance of a Type A specific license of broad scope
10 CFR 35.22 Radiation safety committee.
10 CFR 35.23 Statements of authority and responsibilities.
10 CFR 35.31 Radiation safety program changes.
Applicable license conditions.

B. Radiation Safety Officer

10 CFR 35.21 Radiation safety officer.
10 CFR 35.23 Statements of authority and responsibilities.
10 CFR 35.900 Radiation safety officer.

C. Audits, Reviews, or Inspections

10 CFR 35.22 Radiation safety committee.
10 CFR 20.1101 Radiation protection programs.
10 CFR 20.2102 Records of radiation protection programs.
Applicable license conditions.

D. ALARA

10 CFR 35.20 Radiation protection programs.

E. Authorized Users

10 CFR 35.11 License required.
10 CFR 35.13 License amendments.
10 CFR 35.25 Supervision.
Applicable license conditions.

* These references correspond to the sections of IP 87119, Part II of Appendix A, the "Medical Broad-Scope Inspection Record ."

3. FACILITIES

A. Access Control

10 CFR 20.1601 Control of access to high-radiation areas.
10 CFR 20.1602 Control of access to very high-radiation areas.
Applicable license conditions.

B. Engineering Controls

10 CFR 20.1701 Use of process or other engineering controls.
10 CFR 20.1702 Use of other controls
10 CFR 35.90 Storage of volatile gases.
10 CFR 35.205 Control of aerosols and gases.
Applicable license conditions.

4. EQUIPMENT AND INSTRUMENTATION

A. Dose Calibrators - Photon-emitting radionuclides

10 CFR 35.50 Possession, use, calibration, and check of dose calibrators.
Applicable license conditions.

B. Instrumentation- Alpha- or beta-emitting radionuclides

10 CFR 35.52 Possession, use, calibration, and check of instruments to measure dosages of alpha- or beta-emitting radionuclides.
Applicable license conditions.

C. Generators

10 CFR 35.204 Permissible molybdenum-99 concentrations.

D. Syringes and Vials

10 CFR 35.60 Syringe shields and labels.
10 CFR 35.61 Vial shields and labels.

E. Survey Instruments

1. Possession

10 CFR 35.120 Posession of survey instrument.
10 CFR 35.220 Possesion of survey instruments.
10 CFR 35.320 Possession of survey instruments.
10 CFR 35.520 Availability of survey instrument.
Applicable license conditions.

2. Calibration

10 CFR 35.51 Calibration and check of survey instruments.

F. Safety Component Defects

10 CFR 21.21 Notification of failure to comply or existence of a defect and its evaluation.

5. MATERIAL USE, C TROL, AND TRANSFER

A. Authorized Uses

10 CFR 31.11	General license for use of byproduct material for certain in-vitro clinical or laboratory testing.
10 CFR 35.53	Measurement of dosages of unsealed byproduct material for medical use.
10 CFR 35.100	Use of unsealed byproduct material for uptake, dilution, and excretion studies.
10 CFR 35.200	Use of unsealed byproduct material for imaging and localization studies.
10 CFR 35.204	Permissible molybdenum-99 concentrations.
10 CFR 35.300	Use of unsealed byproduct material for therapeutic administration.
10 CFR 35.400	Use of sources for brachytherapy.
10 CFR 35.500	Use of sealed sources for diagnosis.

B. Security and Control

10 CFR 20.1003	Definitions (restricted area and unrestricted area).
10 CFR 20.1801	Security of stored material.
10 CFR 20.1802	Control of material not in storage.

C. Receipt and Transfer of Licensed Material

10 CFR 20.1906	Procedures for receiving and opening packages.
10 CFR 20.1501	General.
10 CFR 20.2103	Records of surveys.
10 CFR 30.41	Transfer of byproduct material.
10 CFR 30.51	Records.

6. THERAPIES

10 CFR 35.75	Release of patients or human research subjects containing radiopharmaceuticals or permanent implants.
10 CFR 35.315	Safety precautions.

Applicable license conditions.

7. QUALITY MANAGEMENT PROGRAM AND MISADMINISTRATIONS

10 CFR 35.2	Definitions (misadministration and recordable events).
10 CFR 35.32	Quality management program.
10 CFR 35.33	Notifications, reports, and records of misadministrations.

8. AREA RADIATION SURVEYS AND CONTAMINATION CONTROL

A. Area Surveys

10 CFR 2.01301	Dose limits for individual members of the public.
10 CFR 20.1302	Compliance with dose limits for individual members of the public.
10 CFR 20.1501	General.
10 CFR 20.2103	Records of surveys.
10 CFR 20.2107	Records of dose to individual members of the public.
10 CFR 35.70	Surveys for contamination and ambient radiation exposure rate.

Applicable license conditions.

B. Leak Tests and Inventories

10 CFR 35.59 Requirements for possession of sealed sources and brachytherapy sources.

Applicable license conditions.

9. TRAINING AND INSTRUCTIONS TO WORKERS

A. General

10 CFR 19.12 Instruction to workers.

Knowledge of 10 CFR Part 20 radiation protection procedures and requirements.

B. Specific

10 CFR 35.900	Radiation Safety Officer.
10 CFR 35.901	Training for experienced Radiation Safety Officer.
10 CFR 35.910	Training for uptake, dilution, and excretion studies.
10 CFR 35.920	Training for imaging and localization studies.
10 CFR 35.930	Training for therapeutic use of unsealed byproduct material.
10 CFR 35.932	Training for treatment of hyperthyroidism.
10 CFR 35.934	Training for treatment of thyroid carcinoma.
10 CFR 35.950	Training for use of sealed sources for diagnosis.
10 CFR 35.970	Training for experienced authorized users.
10 CFR 35.971	Physician training in a three month program.
10 CFR 35.972	Recentness of training.
10 CFR 35.980	Training for an authorized nuclear pharmacist.
10 CFR 35.981	Training for experienced nuclear pharmacists.

C. Therapy Training

10 CFR 35.310	Safety instruction.
10 CFR 35.59	Requirements for possession of sealed sources and brachytherapy sources.

D. Supervision

10 CFR 35.25 Supervision.

10. RADIATION PROTECTION

A. General

IP 83822 Radiation Protection.

B. Radiation Protection Program

1. Exposure evaluation

10 CFR 20.1501 General.

2. Programs

10 CFR 20.1101	Radiation protection programs.
10 CFR 35.20	ALARA program.

C. Dosimetry

1. Dose Limits

10 CFR 20.1201	Occupational dose limits for adults.
10 CFR 20.1202	Compliance with requirements for summation of external and internal doses.
10 CFR 20.1207	Occupational dose limits for minors.
10 CFR 20.1208	Doses to an embryo/fetus.

2. External

10 CFR 20.1203	Determination of external dose from airborne radioactive material.
10 CFR 20.1501	Dosimetry processing.
10 CFR 20.1502	Conditions requiring individual monitoring of external and internal occupational dose.

Applicable license conditions.

3. Internal

10 CFR 20.1204	Determination of internal exposure.
10 CFR 20.1502	Conditions requiring individual monitoring of external and internal occupational dose.
10 CFR 20, Subpart H	Respiratory protection and controls to restrict internal exposure in restricted areas.
10 CFR 35.205	Control of aerosols and gases.
10 CFR 35.315	Safety precautions - radiopharmaceutical therapy.

D. Records

10 CFR 20.2102	Records of radiation protection programs.
10 CFR 20.2103	Records of surveys.
10 CFR 20.2104	Determination of prior occupational dose.
10 CFR 20.2106	Records of individual monitoring results.

E. Patient Release

10 CFR 35.75	Release of patients or human research subjects containing radiopharmaceuticals or permanent implants.

11. RADIOACTIVE WASTE MANAGEMENT

A. Disposal

10 CFR 35.92	Decay in storage.
10 CFR 20.1904	Labeling containers.
10 CFR 20.2001	General waste disposal requirements.
10 CFR 20.2005	Disposal of specific waste
10 CFR 20.2103	Records of surveys.
10 CFR 20.2108	Records of waste disposal.

B. Effluents

1. General

2. Release into sanitary sewer

10 CFR 20.2003 Disposal by release into sanitary sewerage.
Applicable license conditions.

3. Release to septic tanks

10 CFR 20.1003 Definitions (sanitary sewerage).
10 CFR Part 20, App. B, Table 2 Limits.

4. Incineration of waste

10 CFR 20.2004 Treatment or disposal by incineration.

5. Control of air effluents and ashes

10 CFR 20.1201 Occupational dose limits for adults.
10 CFR 20.1301 Dose limits for individual members of the public.
10 CFR 20.1501 General.
10 CFR 20.1701 Use of process and other engineering controls.
Applicable license conditions

C. Waste Management

1. General

10 CFR 20.2001 General requirements.
IP 84850 Radioactive Waste Management - Inspection of Waste Generator Requirements of 10 CFR Part 20 and 10 CFR Part 61

2. Waste compacted

Applicable license conditions.

3. Waste storage areas

10 CFR 20.1801 Security of stored material.
10 CFR 20.1902 Posting requirements.
10 CFR 20.1904 Labeling containers.
Applicable license conditions.

4. Packaging, Control, and Tracking

10 CFR Part 20, Appendix F Requirements for low-level waste transfer for disposal at land disposal facilities and manifests.
10 CFR 20.2006 Transfer for disposal and manifests.
10 CFR 61.55 Waste classification.
10 CFR 61.56 Waste characterization.

5. Transfer

2. Release into sanitary sewer

10 CFR 20.2003 Disposal by release into sanitary sewerage.
Applicable license conditions.

3. Release to septic tanks

10 CFR 20.1003 Definitions (sanitary sewerage).
10 CFR Part 20, App. B, Table 2 Limits.

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10 CFR 20.2004 Treatment or disposal by incineration.

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10 CFR 20.1301 Dose limits for individual members of the public.
10 CFR 20.1501 General.
10 CFR 20.1701 Use of process and other engineering controls.
Applicable license conditions

C. Waste Management

1. General

10 CFR 20.2001 General requirements.
IP 84850 Radioactive Waste Management - Inspection of Waste Generator Requirements of 10 CFR Part 20 and 10 CFR Part 61

2. Waste compacted

Applicable license conditions.

3. Waste storage areas

10 CFR 20.1801 Security of stored material.
10 CFR 20.1902 Posting requirements.
10 CFR 20.1904 Labeling containers.
Applicable license conditions.

4. Packaging, Control, and Tracking

10 CFR Part 20, Appendix F Requirements for low-level waste transfer for disposal at land disposal facilities and manifests.
10 CFR 20.2006 Transfer for disposal and manifests.
10 CFR 61.55 Waste classification.
10 CFR 61.56 Waste characterization.

5. Transfer

10 CFR Part 20, Appendix F	Requirements for low-level waste transfer for disposal at land disposal facilities and manifests.
10 CFR 20.2001	General requirements.
10 CFR 20.2006	Transfer for disposal and manifests.
10 CFR 30.41	Transfer of byproduct material

6. Records

10 CFR 20.2103	Records of surveys.
10 CFR 20.2108	Records of waste disposal.

12. DECOMMISSIONING

10 CFR 30.35	Financial assurance and record-keeping for decommissioning.
10 CFR 30.36	Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.
IMC 2602	Decommissioning Inspection Program for Fuel Cycle Facilities and Materials Licensees.
IP 87104	Decommissioning Inspection Procedure for Materials Licensees.
IMC 2605	Decommissioning Procedures for Fuel Cycle and Materials Licensees.
NUREG/BR-0241	NMSS Handbook for Decommissioning Fuel Cycle and Materials Licensees.

13. TRANSPORTATION

A. General

NRC Charts	Hazard Communication for Class 7 (Radioactive) Materials.
10 CFR 71.5	Transportation of licensed material.
TI 2515/133	Implementation of Revised 49 CFR Parts 100-179 and 10 CFR Part 71.

B. Shippers - Requirements for Shipments and Packaging

1. General Requirements

49 CFR Part 173, Subpart I	Class 7, radioactive material.
49 CFR 173.24	General requirements for packagings and packages.
49 CFR 173.448	General transportation requirements.
49 CFR 173.435	Table of A_1 and A_2 values for radionuclides.

2. Transport Quantities

10 CFR 71.4 Definitions of quantities.

a. All quantities

10 CFR 71.4	Definitions of quantities.
49 CFR 173.410	General design requirements.
49 CFR 173.441	Radiation level limitations.
49 CFR 173.443	Contamination control.
49 CFR 173.475	Quality control requirements prior to each shipment of Class 7 (radioactive) materials.

49 CFR 173.476	Approval of spec... form Class 7 (radioactive) materials.

b. Limited quantities

49 CFR 173.421	Excepted packages for limited quantities of Class 7 (radioactive) materials.
49 CFR 173.422	Additional requirements for excepted packages containing Class 7 (radioactive) materials.

c. Type A quantities

49 CFR 173.412	Additional design requirements for Type A packages.
49 CFR 173.415	Authorized Type A packages.
49 CFR 178.350	Specification 7A; general packaging, Type A

d. Type B quantities

IP 86740, Section 2	Inspection of transportation activities.

e. LSA material and SCO

49 CFR 173.403	Definitions.
49 CFR 173.427	Transport requirements for low specific activity (LSA) Class 7 (radioactive) materials and surface contaminated objects (SCO).

3. HAZMAT Communication Requirements

49 CFR 172.200-205	Shipping papers.
49 CFR 172.300-338	Marking packages.
49 CFR 172.400-450	Labeling packages.
49 CFR 172.500-560	Placarding vehicles.
49 CFR 172.600-604	Emergency response information and guidance.

C. HAZMAT Training

49 CFR 172.702	Applicability and responsibility for training and testing.
49 CFR 172.704	Training requirements.

D. Transportation by Public Highway

49 CFR 171.15	Immediate notice of certain hazardous materials incidents.
49 CFR 171.16	Detailed hazardous materials incident reports.
49 CFR 177.800	Responsibility for compliance and training.
49 CFR 177.816	Driver training.
49 CFR 177.842	Loading and unloading: Class 7 (radioactive) material.

14. NOTIFICATIONS AND REPORTS

10 CFR 19.13	Notifications and reports to individuals.
10 CFR 20.2201	Reports of theft or loss of licensed material.
10 CFR 20.2202	Notification of incidents.
10 CFR 20.2203	Reports of exposures, radiation levels, and concentrations of radioactive material exceeding the constraints or limits.
10 CFR 30.50	Reporting requirements.
10 CFR 35.14	Notifications (RSO, authorized users, and nuclear pharmacists).

15. POSTING AND LABELING

10 CFR 19.11	Posting of notices to workers.
10 CFR 20.1902	Posting requirements.
10 CFR 20.1903	Exemptions to posting requirements.
10 CFR 20.1904	Labeling containers.
10 CFR 20.1905	Exemptions to labeling requirements.
10 CFR 21.6	Posting requirements.

16. INDEPENDENT AND CONFIRMATORY MEASUREMENTS

No references.

17. VIOLATIONS, NON-CITED VIOLATIONS AND OTHER SAFETY ISSUES

NUREG/BR-0195, Rev.1	NRC Enforcement Manual.
NUREG-1600	General Statement of Policy and Procedures for NRC Enforcement Actions.

18. PERSONNEL CONTACTED

No references.

19. PERFORMANCE EVALUATION FACTORS

IP 87101 Performance Evaluation Factors.

END

Bldg 40

Rm

Lindler - 2058

P-32

Total inventory as of 2/22/99 250 uCi

~ 50-60 uCi

C-14

4 uCi

H-3

5 mCi

Rm 3067 Bldg 40

Ca-45 use 1-2 mCi stock

<10 uCi handling

100 X Appendix C

10 uCi

Exit Meeting.

18 MAR 99

NAME / Title	ORG / DEPT	
CPT Arthur Morton, C, HPO Operations	WRAMC, HPO	
CPT Justin Hartings, HPO		
David Burton	C, RMC Branch	WRAMC, HPO
James Phillips	DCCS	WRAMC
MAJ Brian Goldsmith	C. Radiation Oncology	WRAMC
CPT John D. Thomas	Nuclear Pharmacy	WRAMC
LTC Robert Massey	Nuclear Pharmacy	WRAMC
Wilfred Sewchand	Radiation Oncology	WRAMC
COL William B Johnson	C, HPO/RPO	WRAMC
Dr. Zongmei Sheng		AFIP
Thomas K Thompson	USNRC	

1998 Occupational Radiation Exposure Walter Reed Army Medical Center, Washington, DC						
			Average Radiation Dose (millirem)			
Organization/Section	N	N>0	EXTREMITY	SKIN	EYE	TEDE
Walter Reed	516	170	319	102	102	46
Cardiology	52	40	414	218	236	64
Medical Maintenance	23	6	NA	24	35	43
Endocrinology	2	0	0	0	0	0
Gastroenterology	28	2	13	7	5	14
Health Physics	15	6	128	20	21	22
Radiology Physicians	25	15	587	62	55	41
Special Procedures	14	13	39	328	356	100
Imaging Section Radiology	7	1	NA	17	19	25
X-ray Technologists	53	7	NA	77	103	55
Nuclear Medicine	31	23	519	98	97	104
Radiation Oncology	32	7	159	26	12	14
Urology	32	14	151	31	23	13
Ward 65 (Implants)	26	7	NA	22	9	9
Ward 75 (Oblations)	45	5	NA	20	14	16
Speech Pathology	8	0	NA	0	0	0
Research Workers	106	21	274	53	49	32
Veterinary Medicine	15	3	168	36	43	70

RADIATION DOSES (millirem) 1998 WRAMC for all Workers				
	SKIN	EYE	TEDE	FINGER
n	516	516	516	328
n>0	170	161	128	82
min value	4	4	1	12
max value	3222	3316	601	3876
sum (d)	17261	16476	5837	26151
avg dose	102	102	46	319

Cardiology 1998 Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	52	52	52	54
n>0	40	36	31	5
min value	4	4	0	31
max value	928	964	316	1516
sum (d)	8701	8510	1974	2069
avg dose	218	236	64	414

Medical Maintenance 1998 Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	23	23	23	NA
n>0	6	6	6	NA
min value	7	7	7	NA
max value	36	101	145	NA
sum (d)	144	209	257	NA
avg dose	24	35	43	NA

Endocrinology 1998 Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	2	2	2	1
n>0	0	0	0	0
min value	0	0	0	0
max value	0	0	0	0
sum (d)	0	0	0	0
avg dose	0	0	0	0

Gastro 1998 Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	28	28	28	28
n>0	2	1	1	2
min value	5	5	14	12
max value	8	5	14	13
sum (d)	13	5	14	25
avg dose	7	5	14	13

HEALTH PHYSICS 1998 Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	15	15	15	12
n>0	6	6	6	1
min value	4	4	4	128
max value	92	98	101	128
sum (d)	122	128	131	128
avg dose	20	21	22	128

NUCLEAR MEDICINE Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	31	31	31	29
n>0	23	23	22	20
min value	4	4	4	12
max value	332	346	346	2435
sum (d)	2260	2237	2294	10373
avg dose	98	97	104	519

RADIATION ONCOLOGY Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	32	32	32	12
n>0	7	7	5	7
min value	4	4	4	12
max value	79	48	43	718
sum (d)	185	86	70	1115
avg dose	26	12	14	159

SPECIAL PROCEDURES Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	14	14	14	14
n>0	13	12	8	3
min value	4	4	4	12
max value	3222	3316	601	91
sum (d)	4264	4268	799	118
avg dose	328	356	100	39

WARD 65 (Implants) Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	26	26	26	NA
n>0	7	7	5	NA
min value	4	4	4	NA
max value	55	11	11	NA
sum (d)	154	61	44	NA
avg dose	22	9	9	NA

WARD 75 (Oblations) Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	45	45	45	NA
n>0	5	5	4	NA
min value	8	6	8	NA
max value	40	31	32	NA
sum (d)	102	70	65	NA
avg dose	20	14	16	NA

RADIOLOGY PHYSICIANS Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	25	25	25	21
n>0	15	13	7	8
min value	11	7	1	13
max value	221	232	128	3876
sum (d)	924	712	284	4698
avg dose	62	55	41	587

UROLOGY Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	32	32	32	32
n>0	14	13	5	7
min value	11	7	1	13
max value	102	103	41	380
sum (d)	439	301	64	1057
avg dose	31	23	13	151

RESEARCH WORKERS Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	106	106	106	101
n>0	21	21	19	19
min value	4	4	5	13
max value	272	345	327	1287
sum (d)	1105	1021	607	5199
avg dose	53	49	32	274

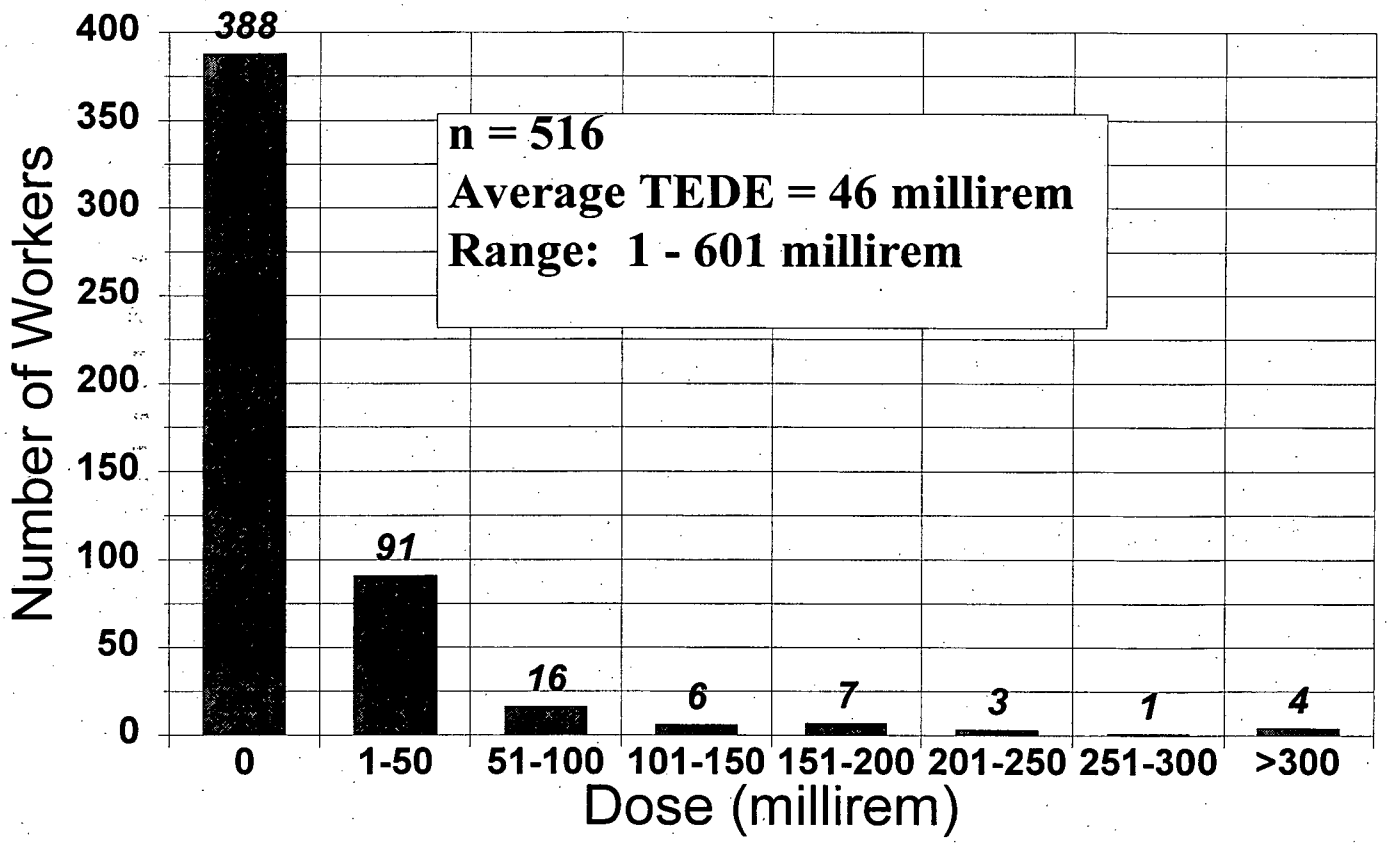
IMAGING (CT/Mammo) Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	7	7	7	NA
n>0	1	1	1	NA
min value	17	19	25	NA
max value	17	19	25	NA
sum (d)	17	19	25	NA
avg dose	17	19	25	NA

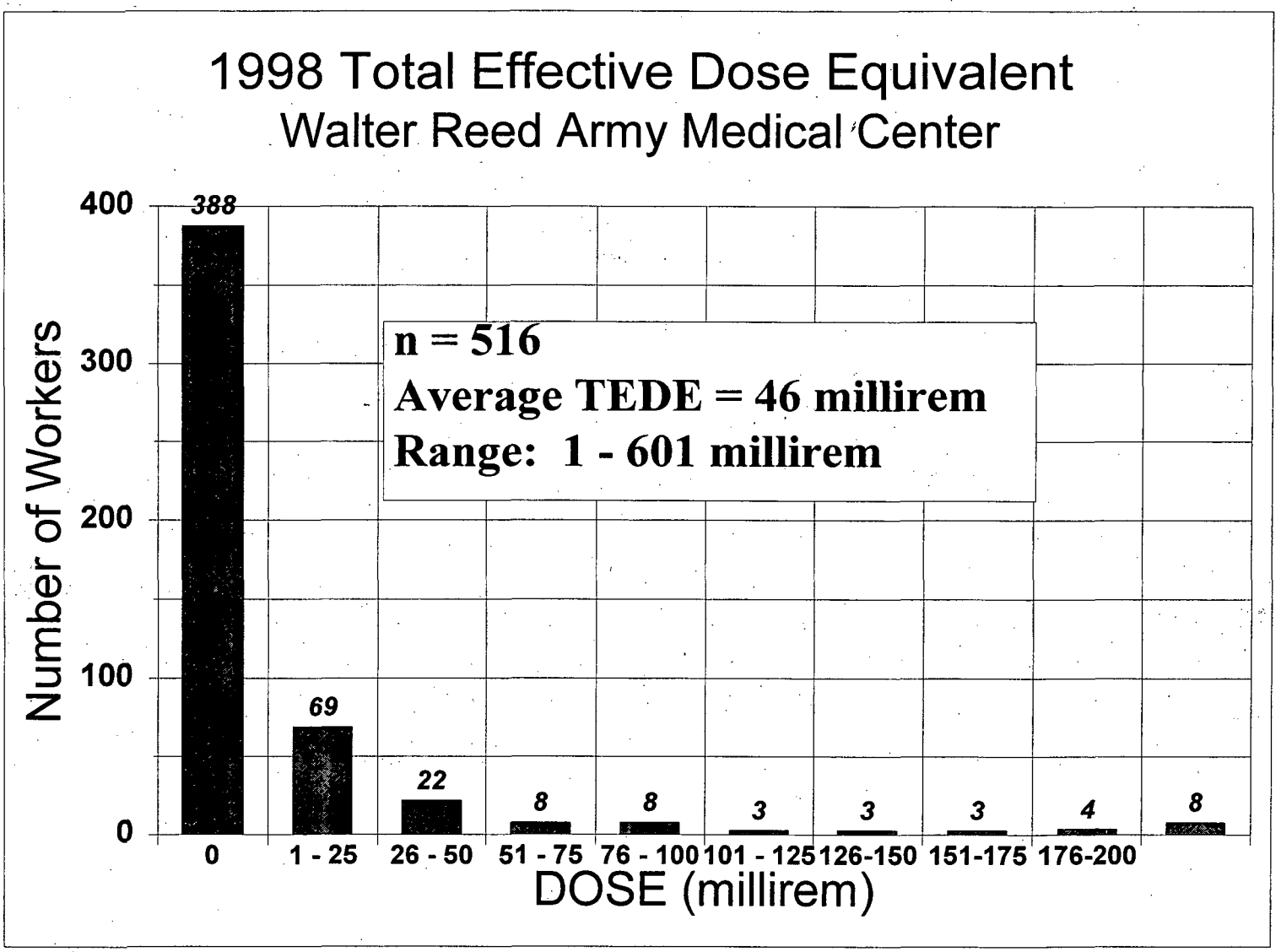
X-RAY TECHNOLOGISTS Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	53	53	53	NA
n>0	7	7	6	NA
min value	12	16	21	NA
max value	316	425	213	NA
sum (d)	539	724	329	NA
avg dose	77	103	55	NA

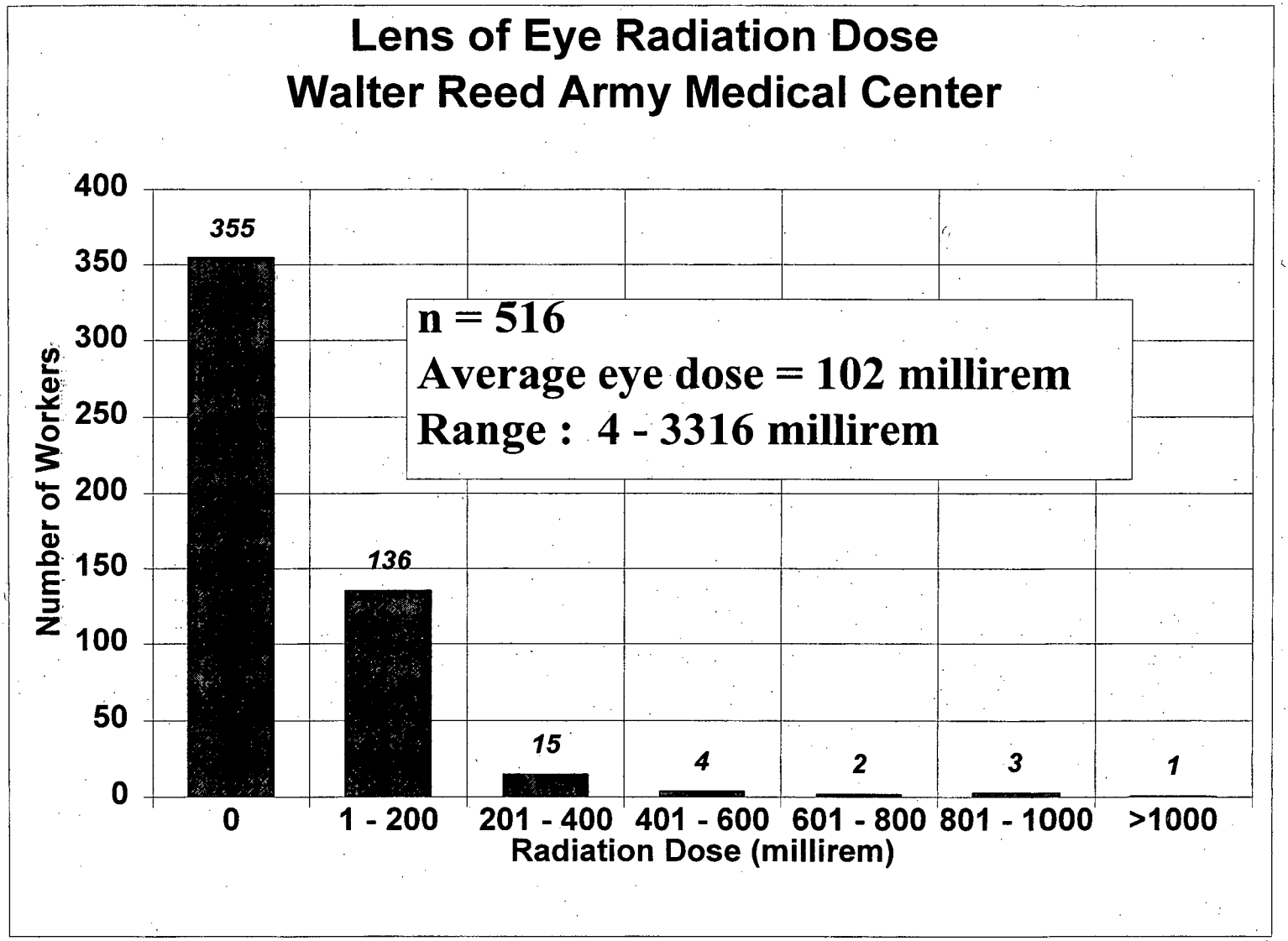
SPEECH PATHOLOGY Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	8	8	8	NA
n>0	0	0	0	NA
min value	0	0	0	NA
max value	0	0	0	NA
sum (d)	0	0	0	NA
avg dose	0	0	0	NA

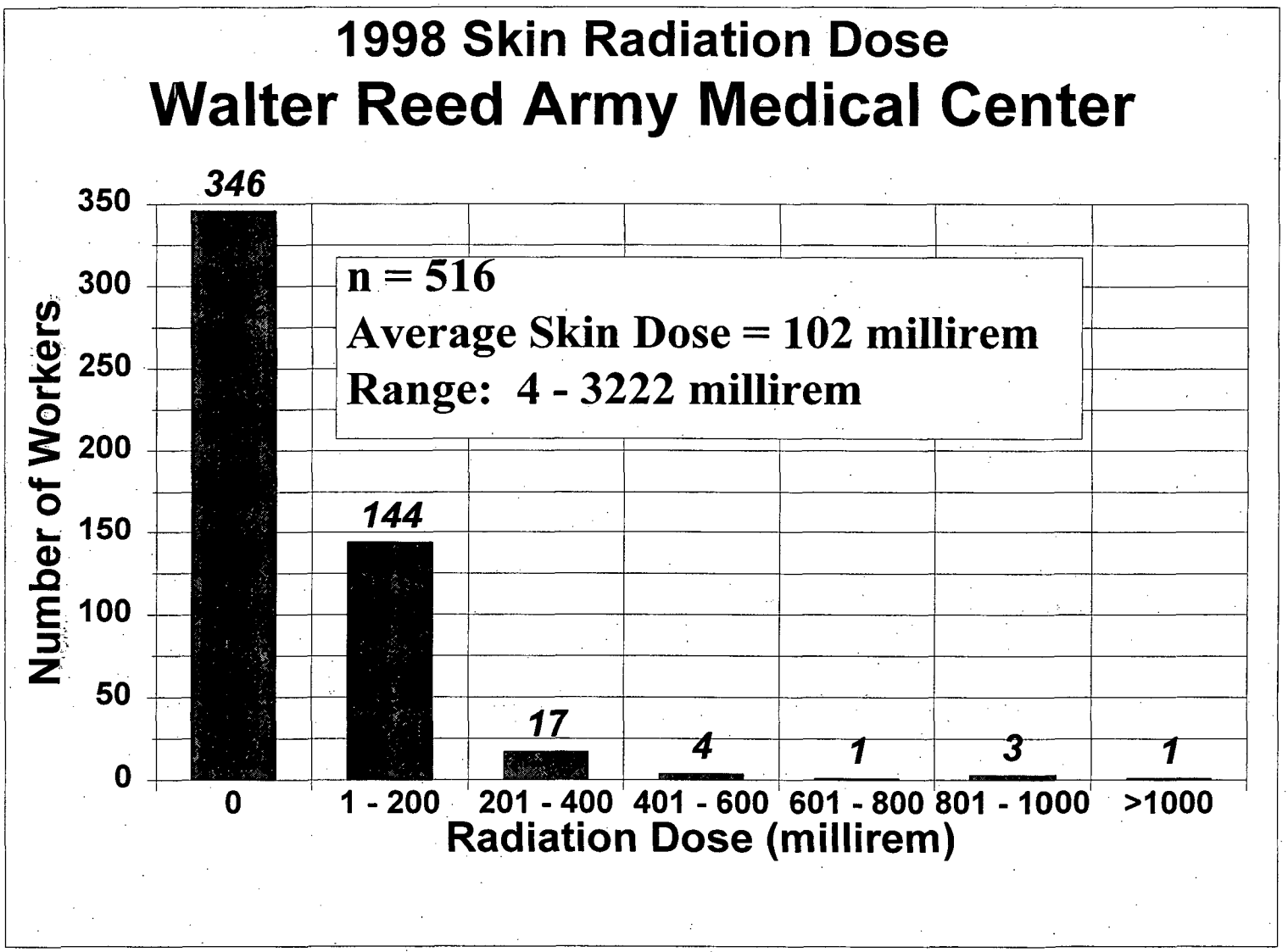
VETERINARY MEDICINE Radiation Doses (millirem)				
	SKIN	EYE	TEDE	FINGER
n	15	15	15	15
n>0	3	3	2	6
min value	41	59	59	32
max value	57	60	81	380
sum (d)	107	129	140	1011
avg dose	36	43	70	168

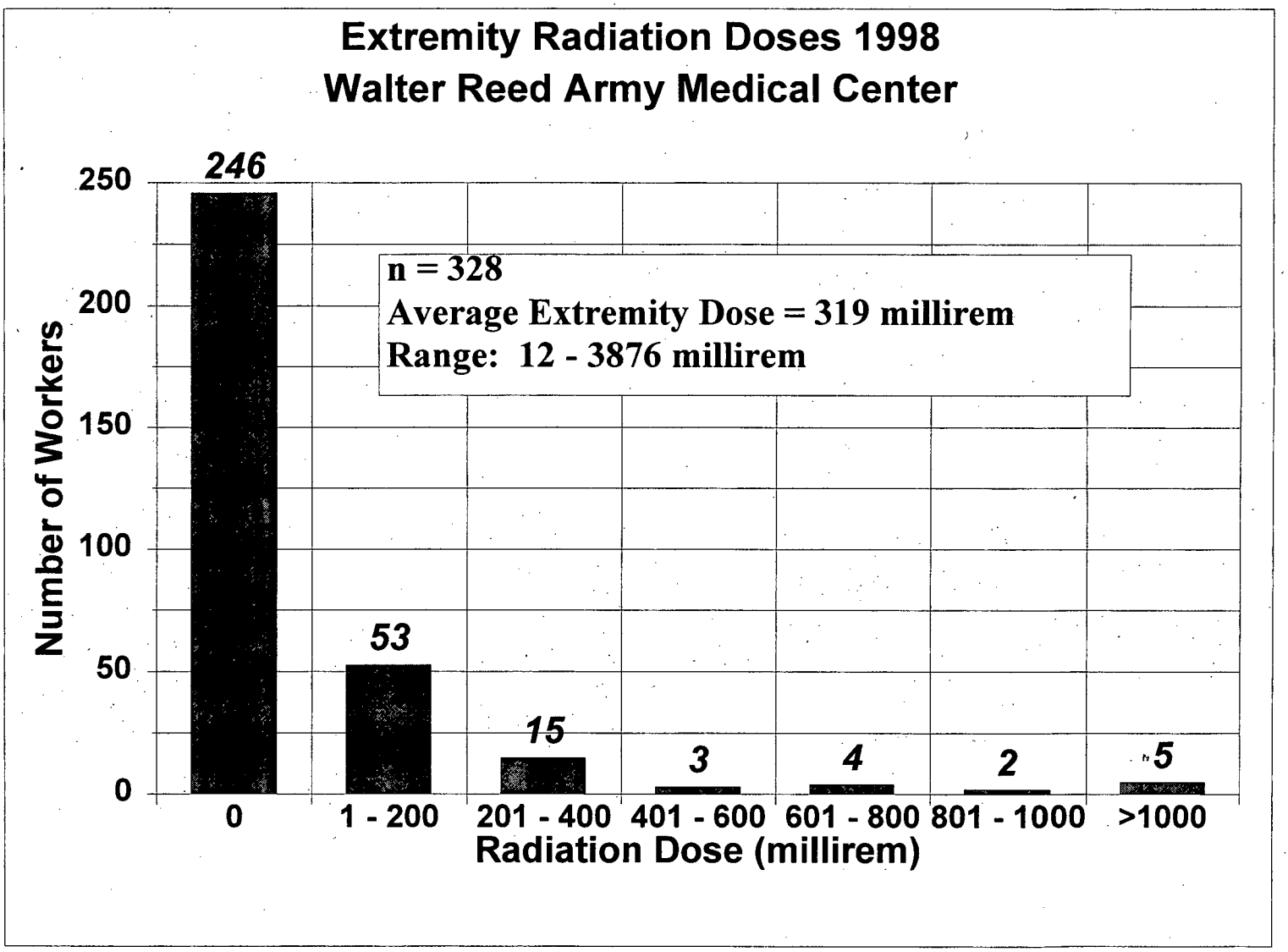
1998 Total Effective Dose Equivalent
Walter Reed Army Medical Center




1998 Total Effective Dose Equivalent
Walter Reed Army Medical Center
Number of Workers
400
300
200
100
0
388
69
22
8
8
3
3
3
4
8
n = 516
Average TEDE = 46 millirem
Range: 1 - 601 millirem
0
1 - 25
26 - 50
51 - 75
76 - 100
101 - 125
126-150
151-175
176-200
DOSE (millirem)


Lens of Eye Radiation Dose
Walter Reed Army Medical Center
n = 516
Average eye dose = 102 millirem
Range : 4 - 3316 millirem
Number of Workers
400
350
300
250
200
150
100
50
0
355
136
15
4
2
3
1
0
1 - 200
201 - 400
401 - 600
601 - 800
801 - 1000
>1000
Radiation Dose (millirem)


1998 Skin Radiation Dose
Walter Reed Army Medical Center
n = 516
Average Skin Dose = 102 millirem
Range: 4 - 3222 millirem
Number of Workers
350
300
250
200
150
100
50
0
346
144
17
4
1
3
1
0
1 - 200
201 - 400
401 - 600
601 - 800
801 - 1000
>1000
Radiation Dose (millirem)


Extremity Radiation Doses 1998
Walter Reed Army Medical Center
n = 328
Average Extremity Dose = 319 millirem
Range: 12 - 3876 millirem
Number of Workers
250
200
150
100
50
0
246
53
15
3
4
2
5
0
1 - 200
201 - 400
401 - 600
601 - 800
801 - 1000
>1000
Radiation Dose (millirem)

1998 Occupation Radiation Dose Data Distributions for Walter Reed Army Medical Center

--- TEDE ---	
--x axis-- Dose mR	--y axis--- frequency
0	388
1-50	91
51-100	16
101-150	6
151-200	7
201-250	3
251-300	1
>300	4

-------- SKIN ----------	
--x axis-- Dose mR	--y axis--- frequency
0	346
1 - 200	144
201 - 400	17
401 - 600	4
601 - 800	1
801 - 100	3
>1000	1

-------- EYE ----------	
--x axis-- Dose mR	--y axis--- frequency
0	355
1 - 200	136
201 - 400	15
401 - 600	4
601 - 800	2
801 - 100	3
>1000	1

---- EXTREMITY	
--x axis-- Dose mR	--y axis--- frequency
0	246
1 - 200	53
201 - 400	15
401 - 600	3
601 - 800	4
801 - 100	2
>1000	5