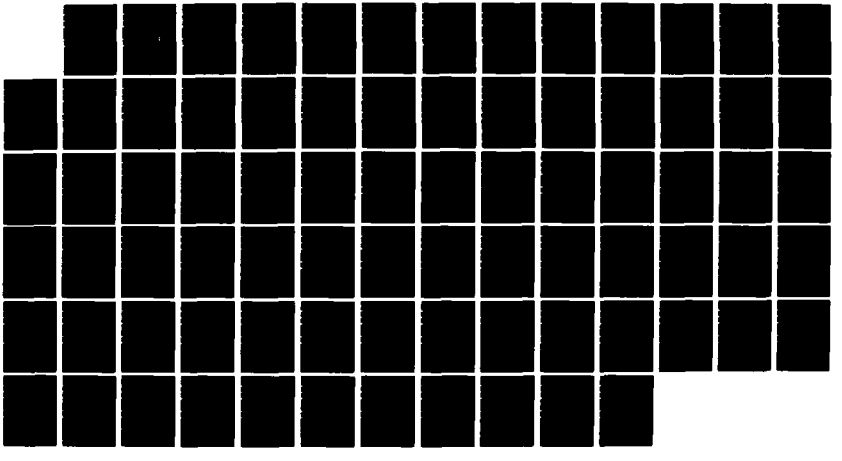
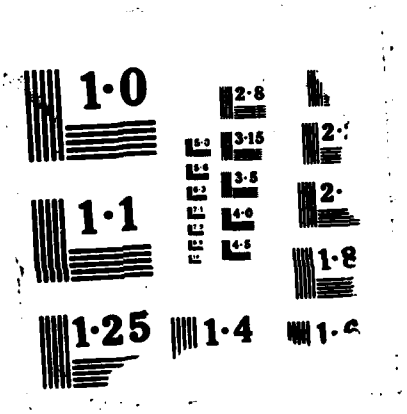
AD-A193 188 FORMS FOR DOCUMENTING RADIATION SAFETY PROGRAMS(U) 1/1
MEDICAL CENTER SCOTT AFB IL R WEED ET AL. JAN 88
USAFMCS/TR-88/001

UNCLASSIFIED F/G 6/7 NL




1·0
1·1
1·25
1·4
2·8
3·15
3·5
2·
1·8

DEPARTMENT OF RADIOLOGY REPORT

FORMS FOR DOCUMENTING RADIATION SAFETY PROGRAMS

DEPARTMENT OF RADIOLOGY
RADIATION SAFETY/HEALTH PHYSICS

JANUARY 1987

USAF MEDICAL CENTER SCOTT
23rd AIR FORCE (MAC)
SCOTT AIR FORCE BASE, IL 62225-5300

UNCLASSIFIED

REPORT DOCUMENTATION PAGE

1a. Report Security Classification: UNCLASSIFIED

3. Distribution/Availability of Report: Approved for public release; distribution is unlimited.

4. Performing Organization Report Number: USAFSMC/TR-88/001

6a. Name of Performing Organization: USAF Scott Medical Center

6b. Office Symbol: SGHR

6c. Address: Scott AFB, IL 62225-5000

11. Title: Forms for Documenting Radiation Safety Programs (Unclassified)

12. Personal Authors: Capt Ronald Weed and Capt Larry Donovan

13a. Type of Report: Final

14. Date of Report: January 1988

15. Page Count: 40

17. COSATI Codes: Fields/Groups: 06/18, 18/02,06,07

18. Subject Terms: IONIZING RADIATION, NUCLEAR RADIATION, RADIATION DOSAGE, RADIATION CONTAMINATION, RADIATION WASTE, RADIATION MEASURING, DOSIMETERS, RADIATION MONITOR, HEALTH PHYSICS INSTRUMENTATION, MONITORS, RADIATION PROTECTION, NUCLEAR RADIATION PROTECTION, RADIOACTIVE MATERIALS, RADIOACTIVE HAZARDS, RADIOACTIVE MATERIAL WASTES, RADIOGRAPHIC FILM, RADIO IMMUNOASSAY, RADIOLOGICAL LABORATORIES, RADIOPHARMACEUTICALS, RADIATION PROTECTION).

19. Abstract: The Department of Radiology, Scott Medical Center, created and compiled this booklet of documental forms in Quality Assurance/Risk Management and ALARA (as low as reasonably achievable) for Nuclear Medicine/Radiology Departments. A health physicist manages, evaluates, trial tests, and curently uses forms such as these. They can be altered or easily redesigned as the needs of radiation surveillance programs change. These *Documental Forms for Ionizing Radiation ("Formless Forms")* should be useful for facilities that devise their own Nuclear Medicine/Radiology Quality Assurance-Risk Management and ALARA PROGRAMS.

20. Distribution/Availability of Abstract: Same as report.

21. Abstract Security Classification: Unclassified

22a. Name of Responsible Individual: Capt Ronald Weed

22b. Telephone: 618 256-7411 A576-7411

22c. Office Symbol: USAF Medical Center Scott/SGHR

DD FORM 1473

UNCLASSIFIED

NOTICES

This final report was prepared by personnel of the Scott Medical Center, Department of Radiology, 23rd Air Force, Military Air Command, Scott Air Force, Illinois.

When Government drawings, charts, forms, or other data are used for any purpose other than in connection with a definitely government-related procurement, the United States Government incurs no responsibility nor any obligation whatsoever. The fact that the Government may have formulated or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication, or otherwise in any manner construed, as licensing the holder or any other person or corporation; or as conveying any rights or permission to manufacture, use or sell any patented invention that may in anyway be related thereto.

PREFACE

The Department of Radiology, Scott Medical Center, Scott Air Force Base created and compiled forms for this booklet of documental forms in QUALITY ASSURANCE/RISK MANAGEMENT and ALARA for Nuclear Medicine/Radiology Departments. A health physicist manages, evaluates, trial tests and currently uses forms such as these; they can be altered or easily redesigned as the needs of radiation surveillance programs change. These *Documental Forms for Ionizing Radiation* (*"Formless Forms"*) should be useful for facilities which are devising their own Nuclear Medicine/Radiology Quality Assurance-Risk Management and "As Low As Reasonable Achievable" (ALARA) Programs.

GOAL OF RADIATION SAFETY

The goal of the Radiation Safety Office is to limit patient exposure to ionizing radiation while making maximum use of current radiation sources and devices available. To this end, the Department (1) makes this format using a modern form computer, (2) develops improved documental formats for recording measurements, documenting and setting limits in order to control radiation exposure, and (3) provides technical assistance in designing forms to facilities responsible for QA/RM and ALARA programs using this format.

STATEMENT OF PURPOSE

This "documental format" was compiled and created over four years in an effort to more reliably and effectively document the ongoing surveillance of an entire Radiation Safety Program. While commercial computer programs can be purchased for radiation safety programs, to our knowledge, this is the first strictly military computer compiled documental format available. It is available on Xerox Star 8010 disc from Department of Radiology or HQ MAC/DAPF (Autovon 576-4840).

COMMENTS REQUESTED

Readers are encouraged to report errors or omissions to the Department of Radiology, Radiation Safety Office. Scott AFB IL 62225. Your suggestions and comments are encouraged and should be useful to facilities which are devising their own QA/RM and ALARA programs.

Ronald L. Weed

RONALD L. WEED, Capt, USAF, BSC
Health Physicist/Radiation Safety Officer
Scott Medical Center

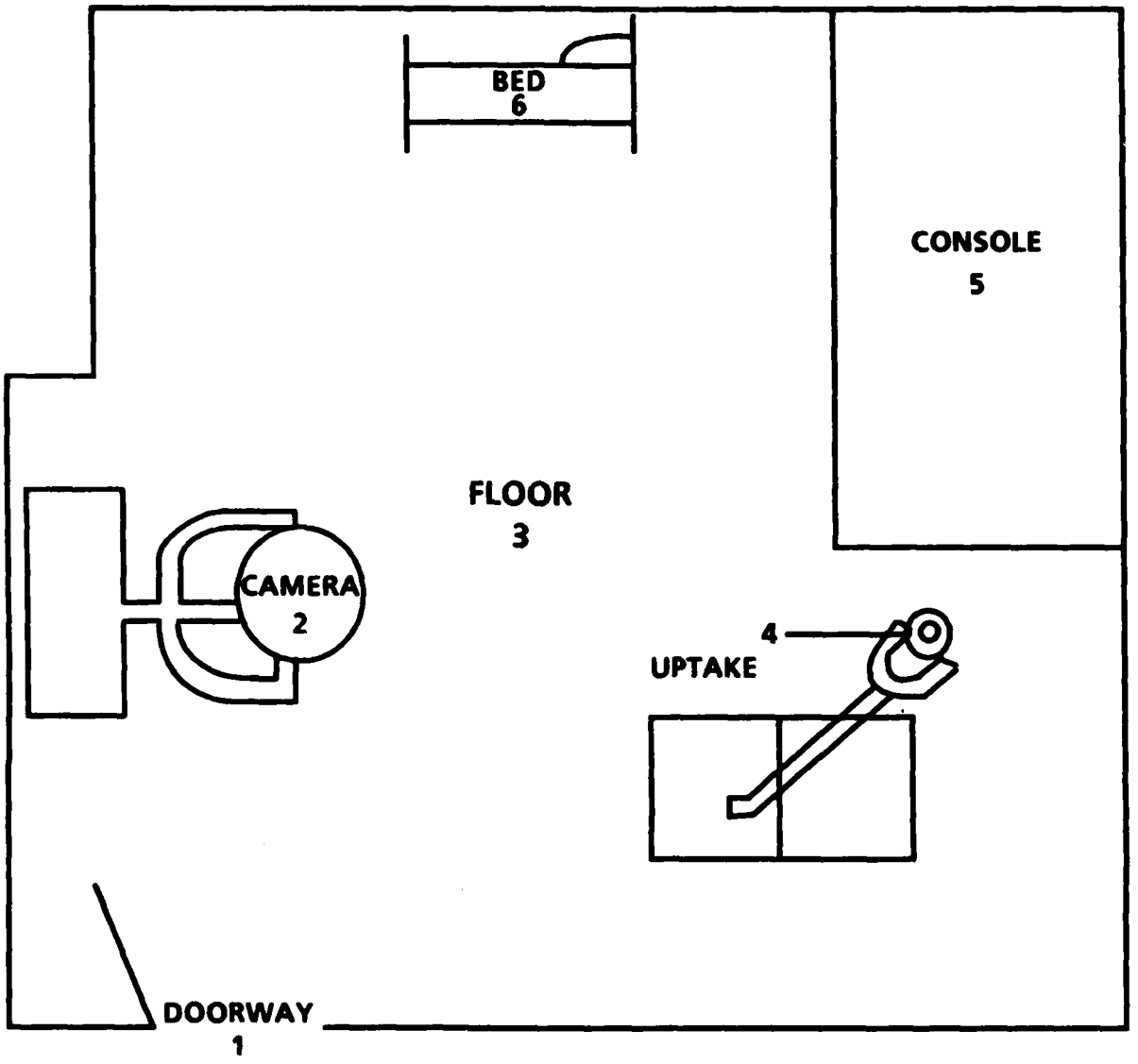
Charles C.D. DuMontier, Maj, USAF, MC

CHARLES C.D. DuMONTIER, Maj, USAF, MC
Chairperson, Department of Radiology
Scott Medical Center

CONTENTS

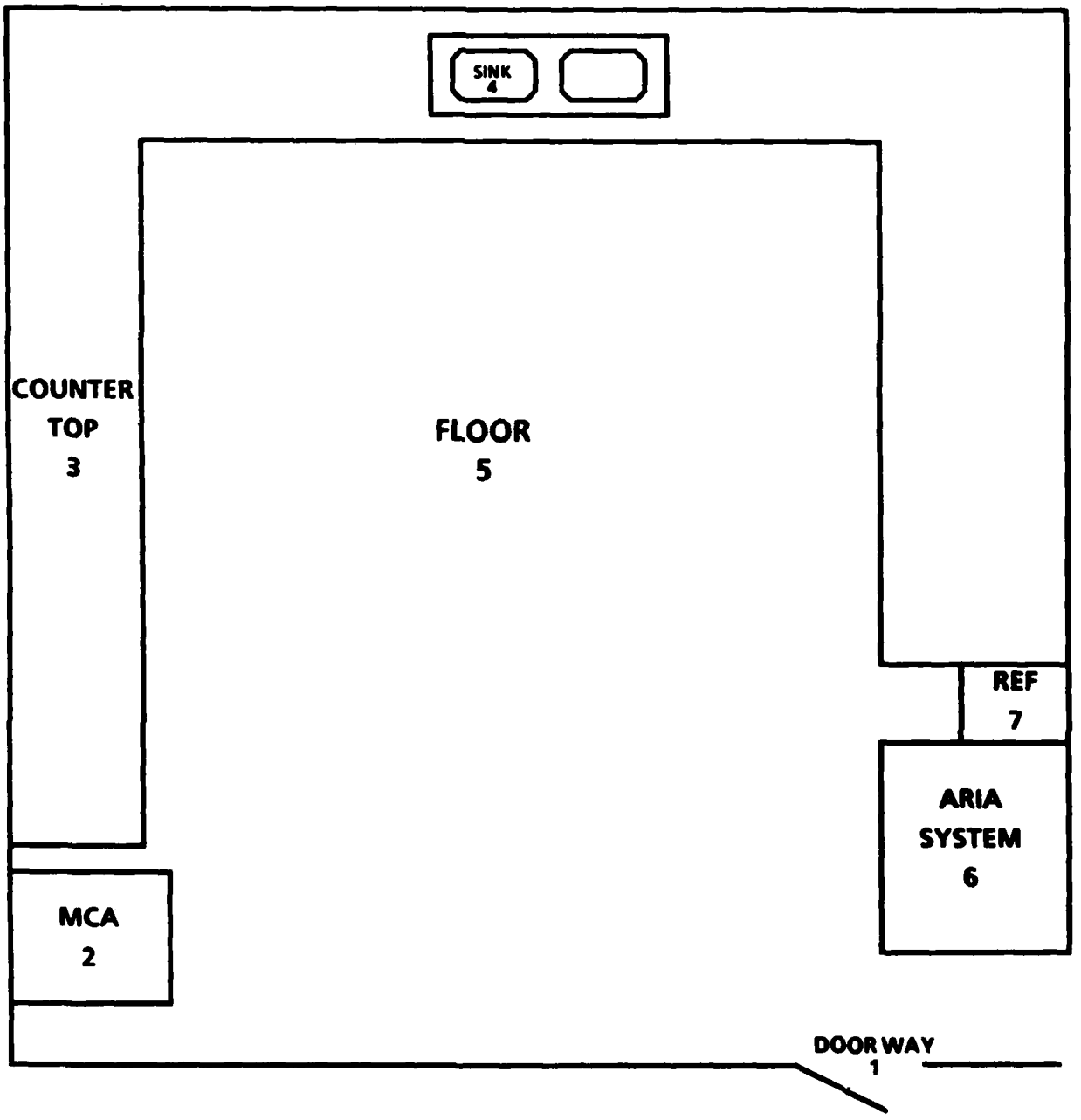
FORMS FOR DOCUMENTING RADIATION SAFETY PROGRAMS

ROOM LEVEL SURVEY



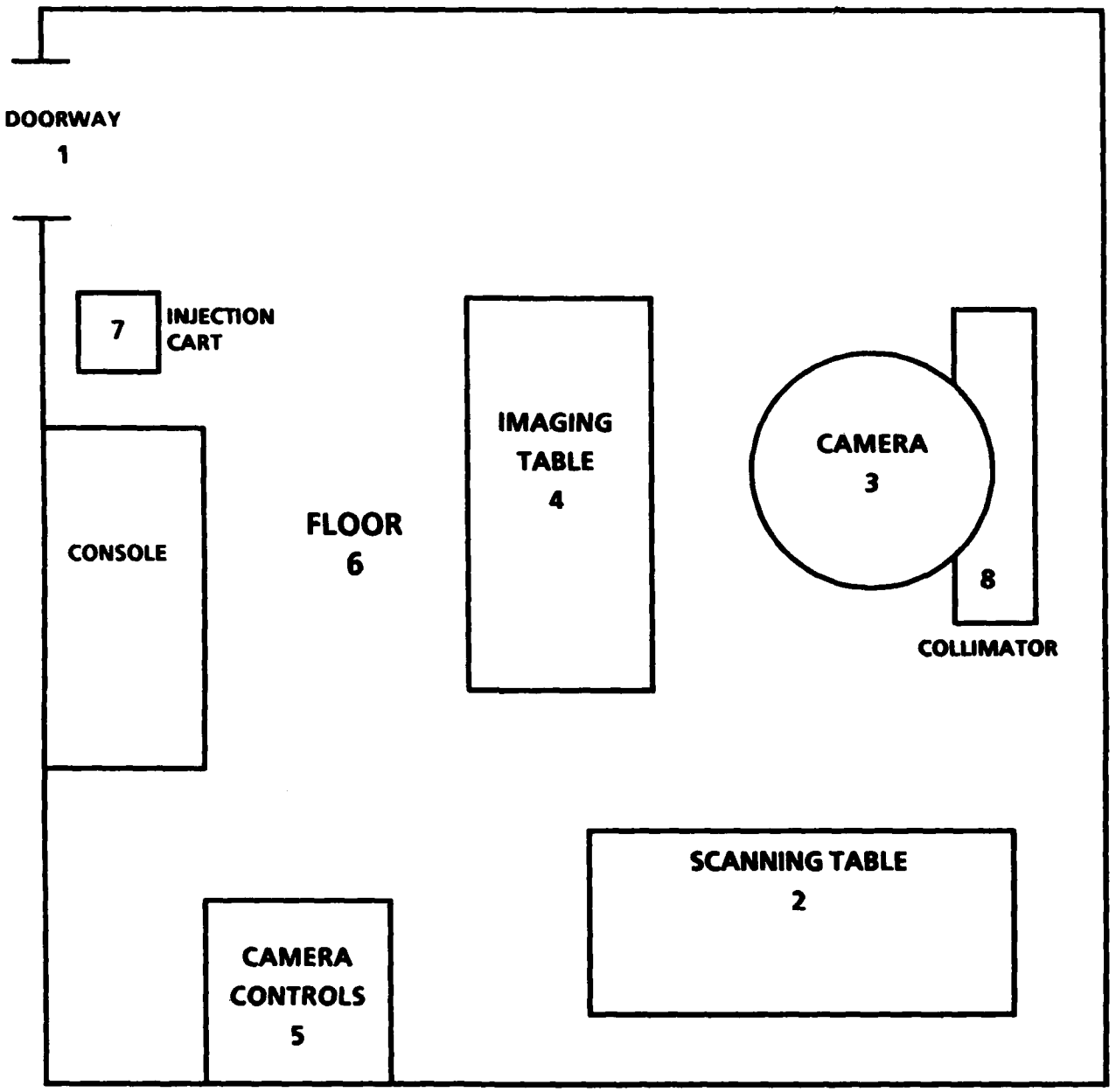
EFFECTIVE DATE	EFFECTIVE DATE

COUNTING LABORATORY *(Room D-5)*



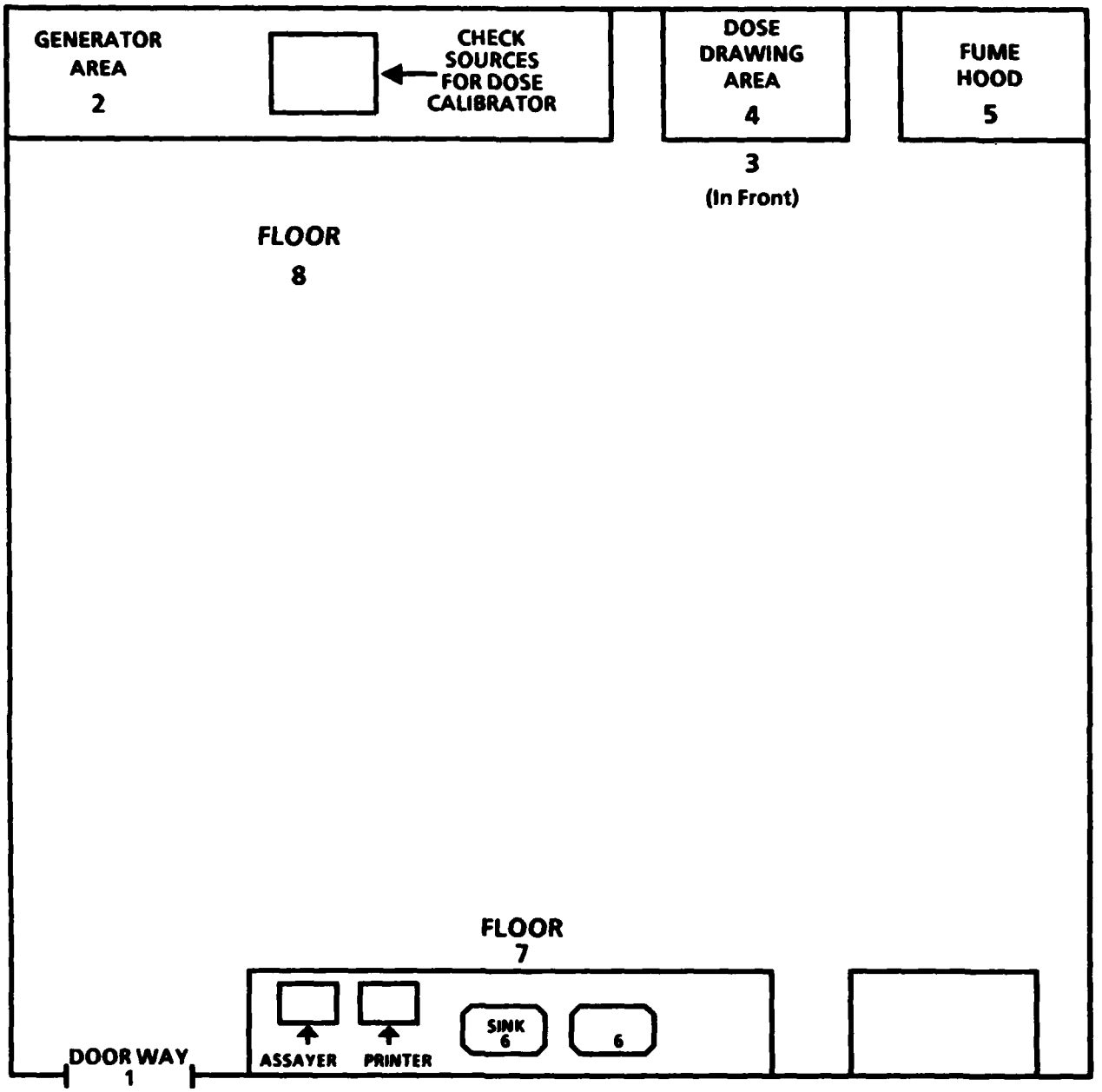
EFFECTIVE DATE	EFFECTIVE DATE

CAMERA *(Room D-6)*



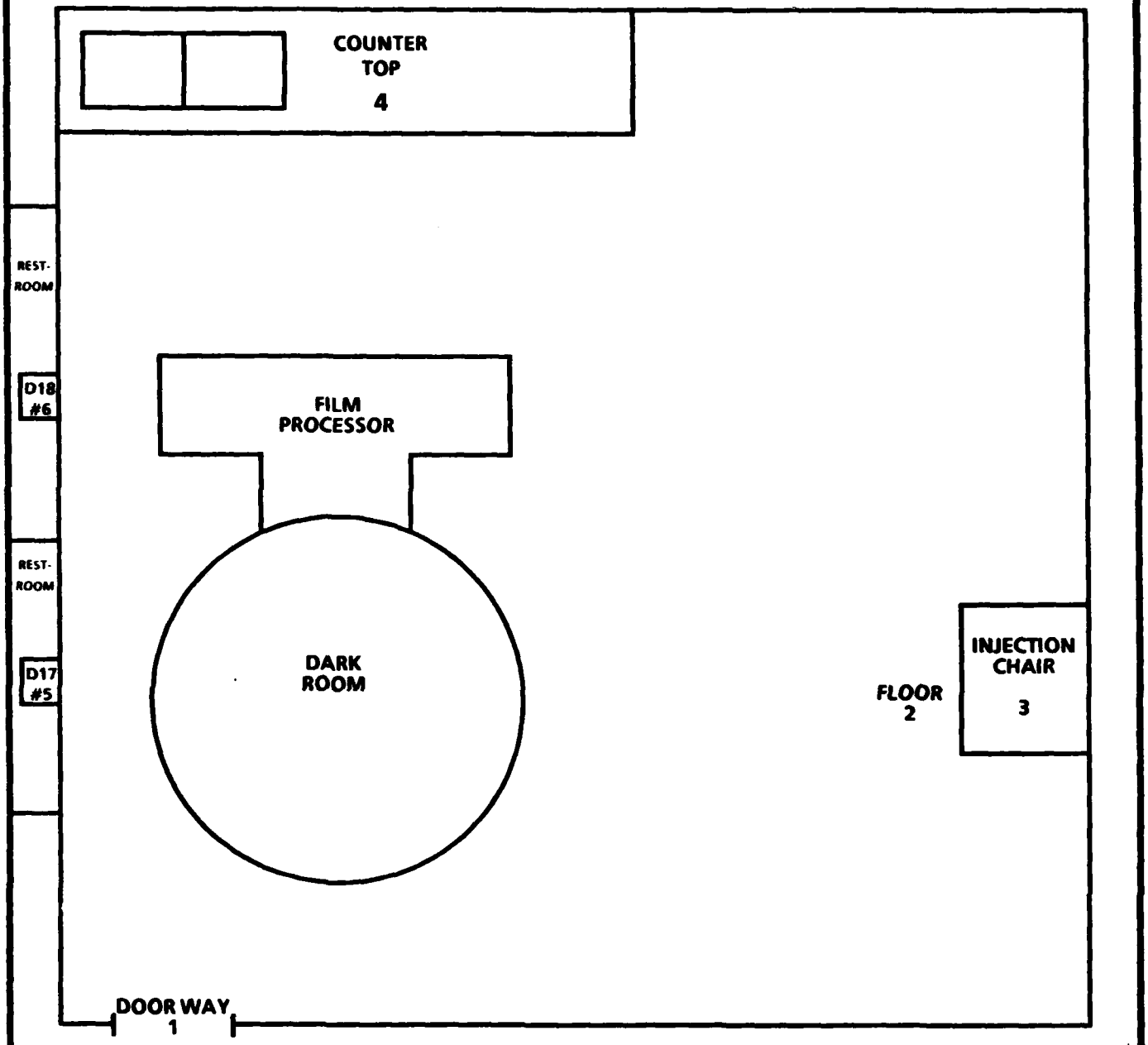
EFFECTIVE DATE	EFFECTIVE DATE

HOT LABORATORY *(Room D-10)*



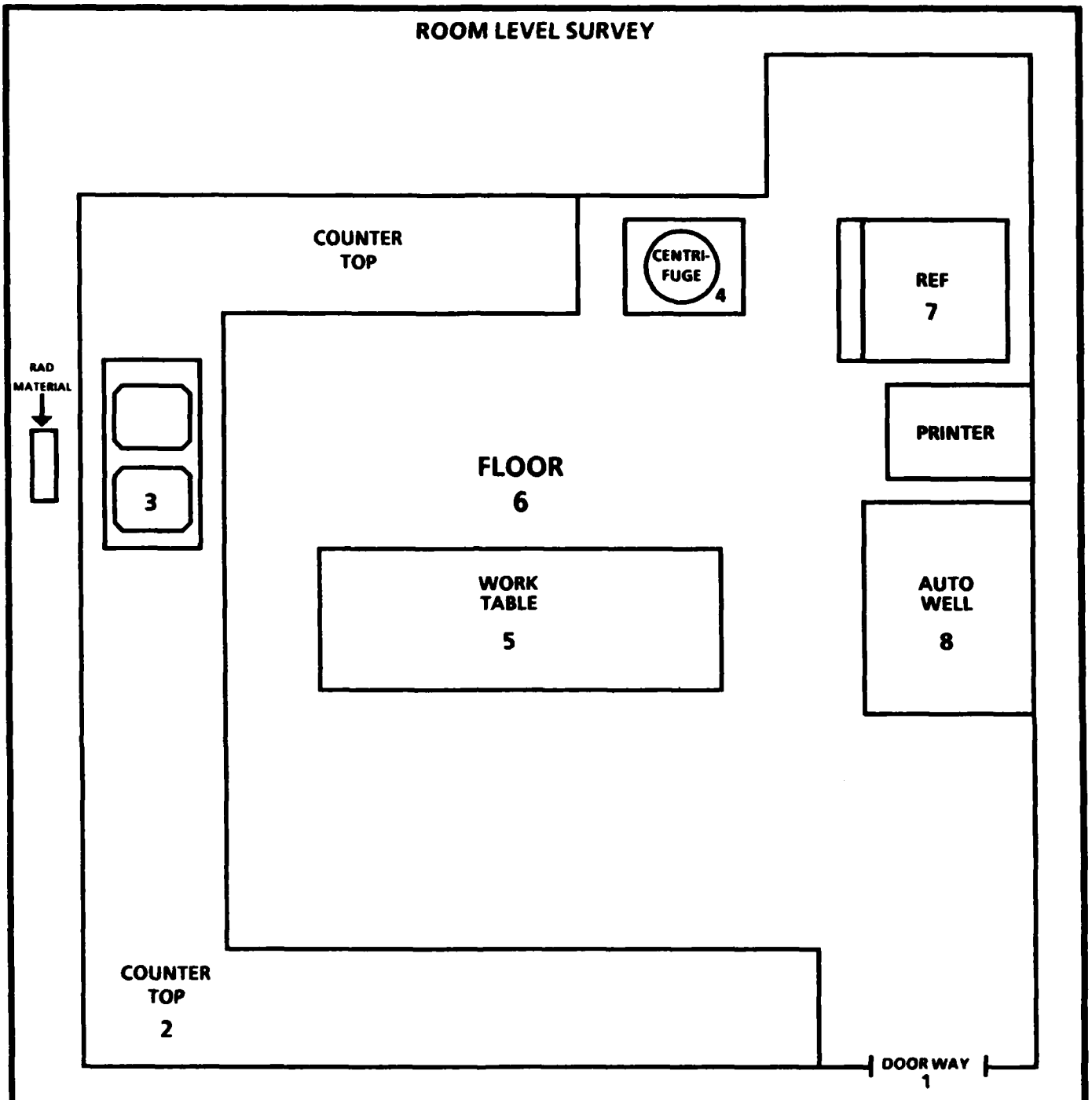
EFFECTIVE DATE	EFFECTIVE DATE

INJECTION ROOM *(D-21)*



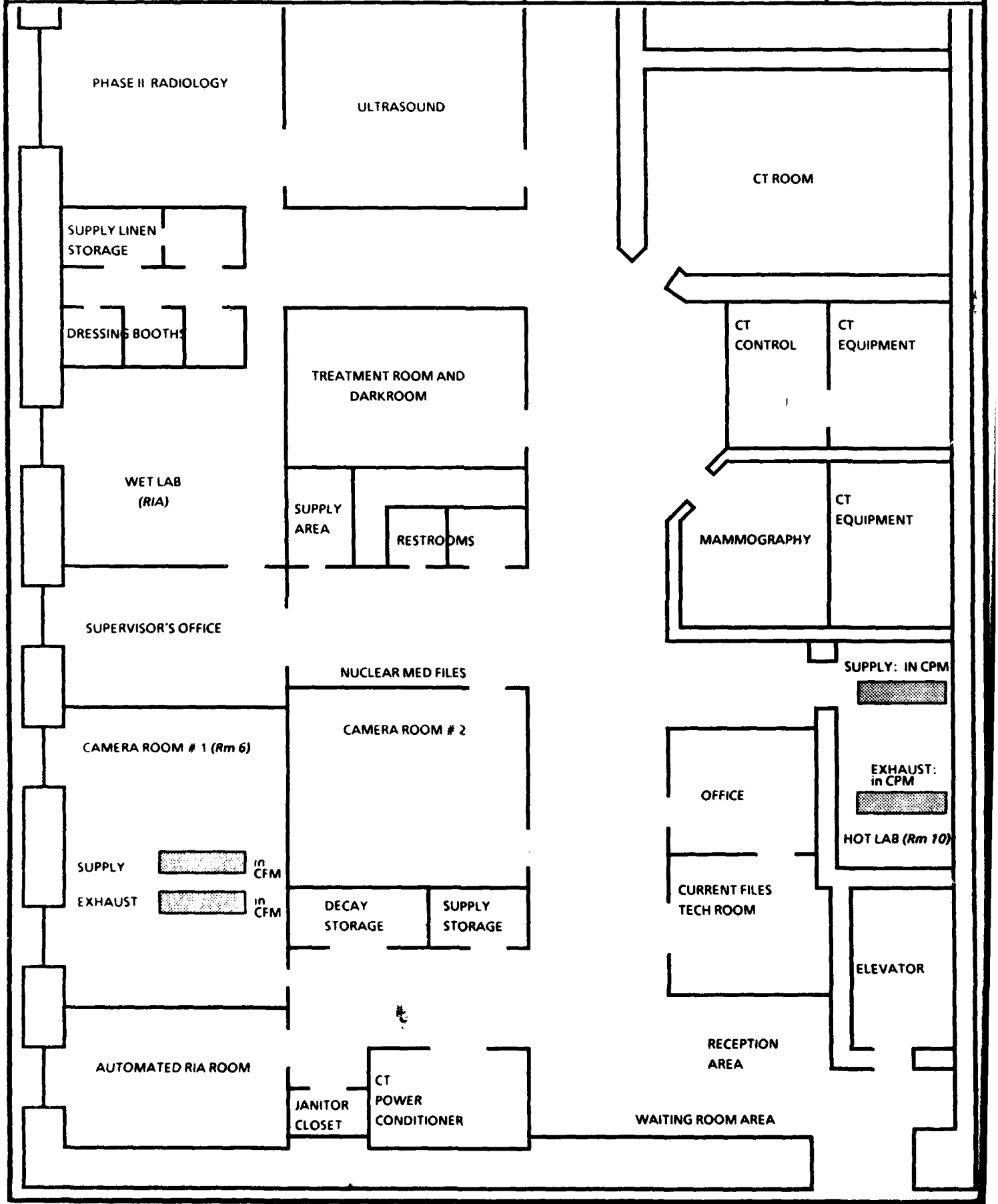
EFFECTIVE DATE	EFFECTIVE DATE

ROOM LEVEL SURVEY



EFFECTIVE DATE	EFFECTIVE DATE

NUCLEAR MEDICINE FLOOR PLAN AND AIR FLOW REPORT	DATE IN EFFECT	INITIALS



AUTO WELL CONSTANCY CHECK

DATE	BACKGROUND	I-129 GAMMA REF SOURCE NOTE: ENERGY SELECT AUTO (I-125) ACTION LEVEL LESS THAN OR MORE THAN	Cs-137 GAMMA REF SOURCE NOTE: ENERGY SELECT MANUAL BROAD SPECTRUM ACTION LEVEL LESS THAN OR MORE THAN	Ba-133 GAMMA REF SOURCE NOTE; ENERGY SELECT MANUAL BROAD SPECTRUM ACTION LEVEL LESS THAN OR MORE THAN

DATE	ACTION TAKEN

USAF MED CEN SCOTT Form 255a, JAN 87

XENON EXHAUST TRAP SURVEY

DATE	O_2 %		(1) PRIOR TO PATIENT INTERNAL STATED ACTIVITY *(in mCi/l.)* NOTE; SUGGESTED STARTING ACTIVITY = mCi	(2) MEASURED mCi/l AFTER BREATHING *(in mCi/l.)*	(3) VOLUME MEASURED AFTER BREATHING *(in l.)*	(1) – (2) x [(3) ÷ 1.25] = NOTE: RESIDENT VOLUME IS 1.25l. TOTAL ACTIVITY CALCULATED (in mCi)	INITIALS
	SET	INDICATED					

USAF MED CEN SCOTT Form 255b, JAN 87

LIQUID RIA WASTE	ACTION LEVEL 4×10^{5} μ Ci PER ML OR 10 μ Ci PER DAY FOR 2×10^{7} GALLONS PER DAY	SINK LOCATION	MONTH	YEAR

DATE	μ Ci	ISOTOPE
TOTAL		

USAF MED CEN SCOTT Form 255c, MAY 87

GENERATOR SHIPMENT SURVEY

ACTION LEVEL
RESTRICTED AREA: 20,000 DPM OR 2.0 mR PER HR. *(Tc99m)*

SHIPMENT DATE	BKG SWIPE	SWIPE TEST RESULT IN DPM	LEVEL SURVEY BKG	LEVEL SURVEY RESULTS		INSTRUMENT AND CALIBRATION DATE	EFFICIENCY	SURVEYORS INITIALS
				1 METER	SURFACE			

ACTION TAKEN

USAF MED CEN SCOTT Form 255d, AUG 87

RADIOACTIVE WASTE LEVEL SURVEY

ACTION LEVEL
RESTRICTED AREA: 2,000DPM OR 1.0 mR/HR (High Beta)
20,000DPM OR 2.0 mR/HR (Tc99m).

☐ E-520 EFFICIENCY %
☐ LUDLUM 12 EFFICIENCY %

☐ mR PER HR. ☐ µR/Hr
☐ CPM ☐ DPM

DATE	ROOM	LOCATION	INSTRUMENT	CALIB DATE	BKGD	LEVEL	SURVEYOR	CHECK SOURCE RDG BEFORE	CHECK SOURCE RDG AFTER

ACTION TAKEN

USAF MED CEN SCOTT Form 255e, SEP 87

DOSE CALIBRATOR CONSTANCY CHECK

NOTE: AUTOMATIC BACKGROUND USED

☐ IN CPM ☐ IN DPM	CHECK WHICH REFERENCE USED ☐ REFERENCE CS-137	☐ REFERENCE Ba-133	Mo-99	Ga-67	T1-201	I-131	I-123	Co-57	Xe-133	Tc-99m
ACTION LEVEL (*Less than* →										
or *more than)* →										
DATE										

DATE	ACTION TAKEN

USAF MED CEN SCOTT Form 255f, NOV 87 PREVIOUS EDITION IS OBSOLETE

XENOGARD ROOM AIR LOG				ACTION LEVEL		FROM	TO	
DATE		NUMBER OF STUDIES	NUMBER Of mCi	CHECK SOURCE (CS-137)			METER READING	
				PRE	POST		MPC HOURS	HOURS
1.						START		
						FINISH		
						DIFFERENCE		
2.						START		
						FINISH		
						DIFFERENCE		
3.						START		
						FINISH		
						DIFFERENCE		
4.						START		
						FINISH		
						DIFFERENCE		
5.						START		
						FINISH		
						DIFFERENCE		
6.						START		
						FINISH		
						DIFFERENCE		
7.						START		
						FINISH		
						DIFFERENCE		
8.						START		
						FINISH		
						DIFFERENCE		
9.						START		
						FINISH		
						DIFFERENCE		

USAF MED CEN SCOTT Form 255g, MAY 87

XENON MONITOR FILTER CLEANING

A. DATE	B. FREQUENT	C. SCHEDULED					D INITIALS
	BREATHING MOUTHPIECE CLEANED BEFORE USE	(1) Autoclavable Bacteriological Filter (1X/Mth) NOTE: DISPOSE ONCE YEAR	(2) Carbon Dioxide Filter(1XMth) NOTE: OR AS COLOR CHANGES	(3) Moisture for (Silica Gel) 2/3 Shows Color Change NOTE: HEAT TO 300 °F AND REPLACE	(4) O_2 Fuel Cell NOTE: DEPLETED IN ~6 MONTHS	(5) Charcoal Pack Saturated NOTE: STORE 15 HALF LIVES	

USAF MED CEN SCOTT Form 255h, JAN 87

CHROMATOGRAPHY OF Tc ^{99m} RADIOPHARMCEUTICAL				NOTE: MUST BE 90% OR BETTER	
DATE	COMPOUND	% BOUND	FREE Tc^{99m}	TAG GOOD OR BAD	GRAPH SHOWS ONE PEAK 

USAF MED CEN SCOTT Form 255i, JAN 87

BIANNUAL DOSE CALIBRATOR ACCURACY CHECK

MACHINE

DATE	ISOTOPE (NOTE: ALSO NES NUMBER)	CALCULATED VALUE (IN µCi)	ACTUAL VALUE (IN µCi)	% ERROR

ACTION LEVEL IS ____________ (LESS THAN) TO ____________ (MORE THAN)

DATE	ACTION TAKEN

DATE	ISOTOPE (NOTE: ALSO NES NUMBER)	CALCULATED VALUE (IN µCi)	ACTUAL VALUE (IN µCi)	% ERROR

ACTION LEVEL IS ____________ (LESS THAN) TO ____________ (MORE THAN)

DATE	ACTION TAKEN

DATE	ISOTOPE (NOTE: ALSO NES NUMBER)	CALCULATED VALUE (IN µCi)	ACTUAL VALUE (IN µCi)	% ERROR

ACTION LEVEL IS ____________ (LESS THAN) TO ____________ (MORE THAN)

DATE	ACTION TAKEN

NOTES/COMMENTS

USAF MED CEN SCOTT Form 255j, JAN 87

NUCLEAR MEDICINE ROOM SURVEYS

ACTION LEVEL
RESTRICTED AREA: 2000DPM OR 1.0 mR PER HR / 20,000 DPM (Tc99) OR 2 mR PER HR
UNRESTRICTED AREA: 200 DPM OR 0.1 mR PER HR / 2,000DPM (Tc99) OR 1.0 mR PER HR

ISOTOPES USED: ☐ Tc 99m ☐ Ga67 ☐ Tl201 ☐ Co57 ☐ I123 ☐ I125 ☐ I131

ROOM NUMBER:

SURVEY INSTRUMENT MODEL:

EFFICIENCY:

CALIBRATION DATE:

SURVEY MEASUREMENT READINGS IN: ☐ µR Hr ☐ DPM ☐ C/m ☐ mR Hr

LOCATION: NUCLEAR MEDICINE

DATE	BKG	1	2	3	4	5	6	Cs137 CHECK SOURCE PRE CAL. 7	Cs137 CHECK SOURCE POST CAL. 8	DATE

DATE	ACTION TAKEN

THYROID UPTAKE LOG

DATE	CALIBRATION SOURCE SOURCE IDENTIFICATION ☐ Cs 137 — IDENTIFICATION NUMBER ☐ OTHER — IDENTIFICATION NUMBER COUNTS (CPM)	HIGH VOLTAGE	INITIALS

USAF MED CEN SCOTT Form 255l, JAN 87

SOLID RADIOISOTOPE WASTE LOG						NOTE: NORMAL STORAGE BAG (*Full of RIA Tubes*) $\leq$ < 2u Ci/BAG		ACTION LEVEL (*At Surface of Barrel/Drum*) FINAL MEASURED ACTIVITY MUST BE BELOW 0.1 mR PER HR. (*Beta*) AND 1.0 mR PER HR. (*Low Risk Beta*) (*Tc99m*)			
LEGEND* A = Tc99m B = Tl-201 Ga-67 I-131 C = I-125 OR Co-57			MEASURED INITIAL ACTIVITY (*Pre Storage*)			MEASURED FINAL ACTIVITY (*Post Storage*)					
A, B, OR C ISOTOPE *	ESTIMATED ACTIVITY	ITEM(s)	BACKGROUND	RAD. LEVEL uR/Hr OR mR/Hr	DATE	DRUM/ BARREL NO.	BACK-GND	RAD. LEVEL uR/Hr OR mR/Hr	DISPOSAL DATE	DISPOSITION	SURVEYOR'S INITIALS

USAF MED CEN SCOTT Form 255m, NOV 87

PERFORMANCE TESTS	RADIOGRAPHIC ROOM/DEVICE					
	DATE					
SAFETY						
OUTPUT						
SCATTER						
ESE						
KVP						
*m*A LINEAR						
TIME						
SCATTER						
INVENTORY						
HVL						
QA TESTS *(Specify test name)*						
OTHER TEST ACCOMPLISHED						
SURVEYOR'S INITIALS						

REMARKS

USAF MED CEN SCOTT Form 255n, JAN 87

POCKET DOSIMETER READING(s) RECORD

(Current Occupational External Radiation Exposure)

MEDICAL FACILITY
USAF MEDICAL CENTER, SCOTT
SCOTT AFB IL 62225-5300

DATE	NAME (*Last, First, MI*)	DEPARTMENT	SSN	DATE OF BIRTH (*Day, Month, Year*)	DOSIMETER NUMBER	READING		TOTAL IN mRem
						PRE-EXPOSURE IN mRem	POST-EXPOSURE IN mRem	

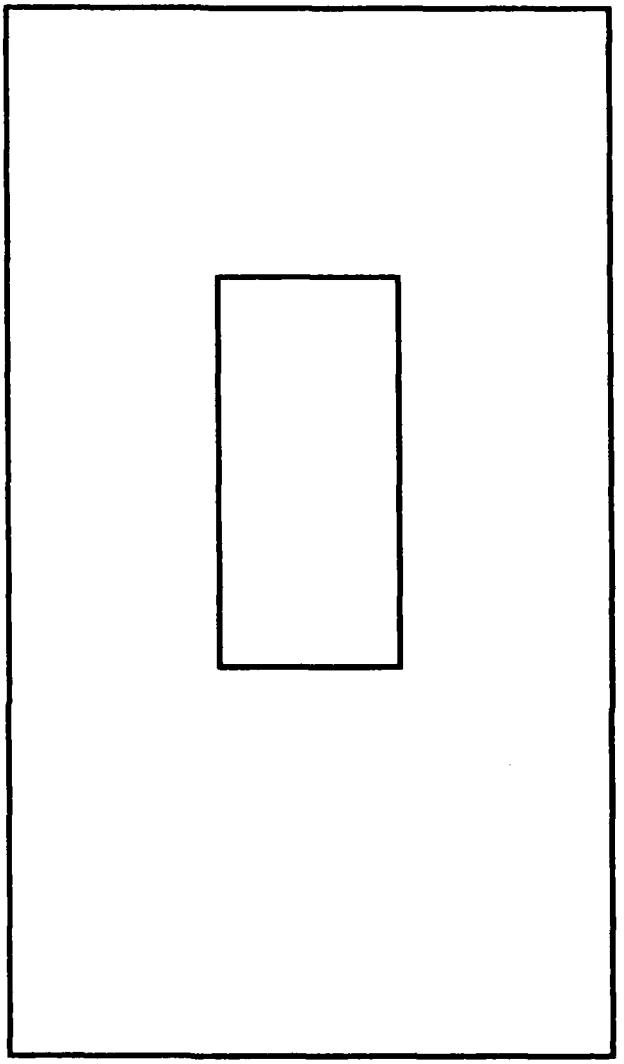
USAF MED CEN Form 255o, JAN 87

RADIATION PROTECTION SURVEY SKETCH, SCATTER, SHIELDING, OUTPUT

EQUIPMENT TYPE	ROOM NO./BLDG.	DATE	SURVEYOR(s)
☐ C-ARM ☐ FLUROSCOPIC ☐ X-RAY ☐ MAMMOGRAPHY ☐ DENTAL X-RAY ☐ PORTABLE			

SCATTER IN mR per HR

Show all barriers, doors, windows, walls, and location of personnel and equipment.



SHOW N

TECHNIQUE USED	_____KVp _____ mA _____ SEC	PHANTOM MATERIAL

OUTPUT WITH PHANTOM		OUTPUT WITHOUT PHANTOM	OUTPUT WITH PHANTOM
* MEDIUM SIZE PATIENT	** LARGE SIZE PATIENT		
_____ R/min	_____ R/min	_____ R/min	_____ TYPE _____ R/min

DETECTOR TYPE	SERIAL NUMBER	DATE OF CALIBRATION

* 2x.75 in Al ** 2 x .75 in Al + 2mm Pb

USAF MED CEN, SCOTT Form 255p, MAY 87

X-RAY CONSTANCY CHECK

NORMAL RANGE in mR (*Average*)	NORMAL RANGE IN mR mAs(*Average*)	ROOM	MONTH

MEDICAL X-RAY OUTPUT

DATE	STTD	kVp	mA	TIME	mAs	mR	mR/mAS	WITHIN ± 10% OF RANGE		TECHNICIAN'S INITIALS
								YES	NO	
				TOTAL AVE.						

FLUOROSCOPIC OUTPUT

	DATE	KVp	mA	OUTPUT IN R/min		BELOW 10R/min		TECH'S INITIALS
MEDIUM (*2x.75 in Al*)								
HEAVY (*2x.75 in. Al + 2mm Pb*)								

DATE	REMARKS

USAF MED CEN SCOTT Form 255q, JAN 87

OPTICAL SYSTEM FOCUS

FREQUENCY *(Suggested. Once per Week)*

ROOM

DATE	RESOLVED MESH (See attached Films: 1. Mesh - 2. 4 Dots)				INITIALS
	MINI CRITERIA *(Optical)*		HIGH RESOLUTION	LOW RESOLUTION	
	Number 20	NUMBER 24?	HIGHEST MESH?	WHICH 4 HOLES?	

USAF MED CEN SCOTT Form 255r, JAN 87

DENTAL PHANTOM RESOLUTION

MEDICAL FACILITY
USAF MEDICAL CENTER, SCOTT
SCOTT AFB IL 62225-5300

UNIT IDENTIFICATION NUMBER	DATE	ROOM	WIRE MESH RESOLUTION (*In lp/inches - lp/millimeters*) (*Can Resolve Down to*) (*Check One*)			STEP WEDGE DENSITY (*In ODs*) VALUE			
			100 / 3.9	150 / 5.9	200 / 7.89	0.5	1.0	1.5	2.0

FILMS

DENSITOMETER MFC	MODEL NUMBER	DATE OF CALIBRATION
REVIEWED BY	TECHNICIAN	

RADIOLOGICAL EXPOSURE OUTPUT SURVEY

YEAR | ROOM

CERTIFICATION OF RADIOLOGIC EXPOSURE RATE

This notice is to certify that the x-ray machine in this room was surveyed for output exposures and was compared with federal guidelines for typical patient exposures *(See F Below)*

EXPOSURE RATES WITH MEDICAL X-RAY TUBE

SUMMARY OF MONTHLY EXPOSURE OUTPUTS

A. TECHNIQUE

☐ Kvp ☐ mA ☐ sec ☐ IN *

* FROM ANODE TO TABLE TOP

B.

SURVEY INSTRUMENT	SERIAL NUMBER	DATE OF CALIBRATION

C. EXPOSURE OUTPUTS *(Average of 4-5 Workdays)*

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
EXPOSURE *(mR)*												
EXPOSURE per mAs mR/mAs												
NAME AND DATE												

NOTE: D. NORMAL RANGES *(Average of 20 workday exposures)*

IN mR	IN mR/mAs	AS OF DATE

E. ADDITIONAL VIEWS OF TYPICAL PATIENT EXPOSURES

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
☐ ABDOMEN ☐ CHEST												

TECHNIQUE

kVp	mA	TIME	ANODE TO TABLE DISTANCE

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
OTHER _____ *(NAME)*												

F. FEDERAL GUIDELINES *(per view)* are:

CHEST (DA) = 30 mR
SKULL (LAT) = 300 mR
ABDOMEN (AP) = 750 mR
CERVICAL SPINE (AP) = 250
THORACIC SPINE (AP) = 900 mR
FULL SPINE (AP) = 300 mR
LUMBO-SACRAL SPINE (AP) = 1000 mR
RETROGRADE PYELOGRAM (AP) = 900 mR
FEET BEARING (DP) = 27 mR

REMARKS

USAF MED CEN SCOTT Form 255t, JAN 87

FLUOROSCOPIC EXPOSURE RATE OUTPUT SURVEY

(For Medium and Heavy Patients)

CERTIFICATION OF FLUOROSCOPE SURVEY AND PATIENT EXPOSURE RATES

This notice is to certify that the fluoroscope in this room was surveyed for output exposure and was found to be below the appropriate Federal guidelines (See "E" below) for limiting patient exposure when operated by the trained physician or technician

This notice provides you with the following measured exposure rates

SUMMARY OF MONTHLY EXPOSURE RATE OUTPUTS

A. TECHNIQUE *(Check One)*

☐ Kvp ☐ mA ☐ TABLE ☐ PORTABLE

B.

SURVEY INSTRUMENT	SERIAL NUMBER	DATE OF CALIBRATION

C. EXPOSURE RATES BY PATIENT SIZE

PATIENT EXPOSURE RATES

Auto Mode — Average Tissue Thickness (13cm): _____ R/min., for _____ kVp, _____ mA

Maximum Tissue Thickness (26cm): _____ R/min., for _____ kVp, _____ mA

Manual Mode — Average Tissue Thickness (13cm): _____ R/min., for _____ kVp, _____ mA

Maximum Tissue Thickness (26cm): _____ R/min., for _____ kVp _____ mA

PHYSICIAN EXPOSURE RATES

Eyes and Head _____ mr/Hour, Maximum, Unshielded

Body _____ mr/Hour, at Tabletop, Unshielded

Automatic Mode
Maximum Machine Output

SURVEY INSTRUMENT	SERIAL NUMBER

NOTE: Lead aprons on fluoroscopists and on machine will reduce physician exposure rates behind aprons to 1/10 or less.

C. EXPOSURE OUTPUTS *(Average of 4-5 Workdays)*

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
EXPOSURE RATE *(R/min)* AVERAGE PATIENT (13cm)												
EXPOSURE RATE *(R/min)* THICK PATIENT (16cm)												
NAME AND DATE												

D. NORMAL RANGES *(Averaged for 6 Months)* FOR:

MEDIUM PATIENT	HEAVY PATIENT

E. FEDERAL UNIT IS 10R/min for AERC

REMARKS

USAF MED CEN SCOTT Form 255u, JAN 87

NUCLEAR MEDICINE PERSONNEL RADIATION SURVEY

ACTION LEVEL
PROTECTIVE CLOTHING IN RESTRICTED AREA 2000 DPM or 1.0 mR PER HR/ 2000 DPM or 2.0 mR PER HR
SKIN: 2000 DPM or 0.1 mR PER HR./2000 DPM or 1.0 mR PER HR.

NAME

CHECK INSTRUMENT USED			EFFICIENCY		☐ CPM ☐ DPM ☐ mR PER HR. ☐ uR PER HR						INITIALS
E-520 measured mR PER HR.	LUDLEM 12 measured uR PER HR.	OTHER _____	BKGD uR PER HR.	DATE	PALMS	BACKS	SOLES	TOPS	FRONT	BACK	

USAF MED CEN SCOTT Form 255v, OCT 87

QUARTERLY RADIATION EXPOSURE REPORT ALARA SUMMARY

DATE

FROM

TO

QUARTERLY SUMMARY OF _____ **QUARTER** RADIATION EXPOSURE REPORT

As part of our ALARA *(As Low As Reasonably Achieveable)* Program, personnel radiation exposures are monitored by the Radiation Safety Officer *(RSO)*. Quarterly exposure in excess of Level I are reported to the Radiation Safety Committee *(RSC)* for further action. Exposures in excess of Level II are investigated by the RSO, reported to the RSC and then sent to the Commander for review. ALARA quarterly exposure levels in millirems as defined in our Nuclear Regulatory Commission Permit are as follows (in inRem):

	LEVEL I	LEVEL II
WHOLE BODY, HEAD, TRUNK, BLOODFORMING ORGANS, LENS OF THE EYE, GONADS	125	375
HANDS, FOREARMS, FEET, ANKLES	1875	5625
SKIN OF WHOLE BODY	750	2250

During this quarter, all badged individuals in your organization were less than Level I above. The records for your organization are kept in the RSO office (Rm DX122, Radiology); however, any individual or supervisor wishing to review the records may do so by contracting me at extension 6-7411. The base bioenvironmental engineer also maintains a record.

COMMENTS AND DISCREPANCIES OF PERSONNEL DOSIMETRY REPORTS

THIS REPORT IS FOR YOUR RECORDS. IF YOU HAVE ANY QUESTIONS OR COMMENTS, PLEASE DO NOT HESITATE TO CALL ME AT 6-7411

RADIATION SAFETY OFFICER/HEALTH PHYSICIST

USAF MED CEN SCOTT Form 255w, MAY 87

MAMMOGRAPHIC PHANTOM QUALITY CONTROL LOG

TECHNIQUE USED ☐ KVp ☐ mAs | ROOM D-19 | DATE FOR (Month)

INSTRUCTIONS PLACE AN "S" IN THE BLOCKS WHERE YOU SEE SPECKS, AN "F" IN THOSE THAT CONTAIN A FIBER, AND AN "M" IN THOSE THAT CONTAIN A MASS LEAVE THOSE BLANK WHICH DO NOT SHOW AN OBJECT A MAGNIFYING GLASS SHOULD BE USED TO SEARCH FOR SMALL TEST OBJECTS

A

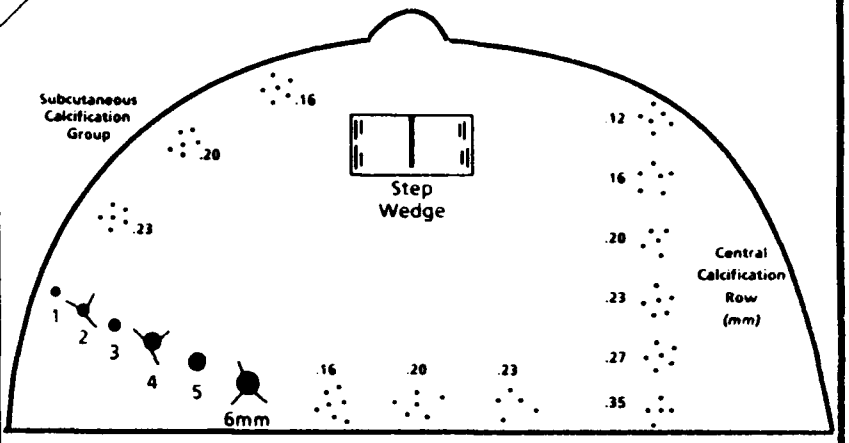
TOP

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

SHOULD HAVE SEEN (Numbers):

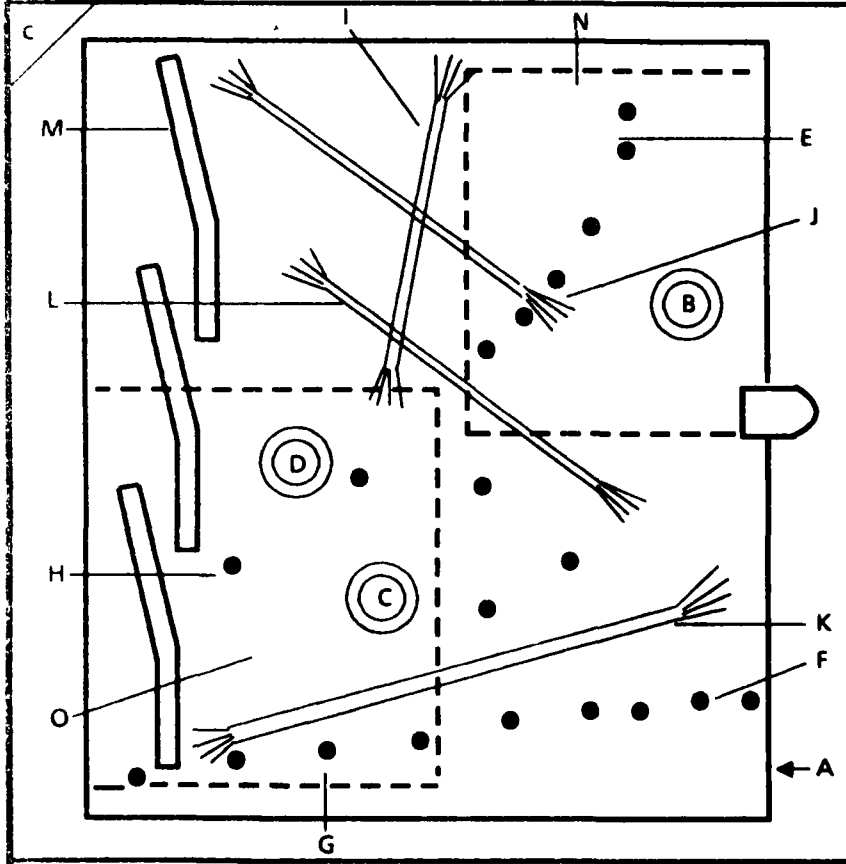
B

"SHOULD SEE"
MAKE NOTE OF DISCREPANCIES BELOW



ITEMS NOT NOTED ARE:

C



	NOTED
1. Area A *(Front edge on breast skin line)*	
2 Points B, C, & D *(Masses and indicate changes in subject latitude)*	
3. Indicators E, F, G, H *(Calcifications and demonstratese exposure related changes in contrast)*	
4 Areas I, J, K, & L *(Vessels and five structures)*	
5 Series M Bars *(Ribs & surrounding areas)*	
6. N & O *(Resolution bar targets)*	

COMMENTS/ACTIONS TAKEN

COMMENTS/ACTION TAKEN

HEALTH PHYSICIST'S NAME | TECHNICIAN'S NAME

USAF MED CEN SCOTT Form 255x, NOV 87

RADIOACTIVE MATERIAL SHIPMENT RECEIPT RECORD

1 GENERAL IDENTIFICATION DATA

A. PURCHASE ORDER NUMBER	B. INVOICE NUMBER	C. LOCALLY ESTABLISHED CONTROL NUMBER

2A. CONDITION OF PACKAGE *(Mark "X" condition and explain in item 2B, if required)*

☐ OK ☐ PUNCTURED ☐ WET ☐ STATUS ☐ CRUSHED ☐ OTHER *(Specify)*

2B

3 EXTERNAL PACKAGE DATA

A. LABELED	B. TYPE LABEL	
☐ YES ☐ NO ☐ EXEMPT	☐ WHITE - I	☐ YELLOW - II ☐ YELLOW - III
C. ACTIVITY AMOUNT	D. TRANSPORTATION INDEX	E. TYPE ISOTOPE

F. PACKAGE RADIATION LEVELS		G. INSTRUMENT USED TO MEASURE LEVELS
(1) MEASUREMENT AT SURFACE		(1) TYPE
(A) mR/hr	(B) REPORTABLE *(Greater than 200 mR/hr)* ☐ YES ☐ NO	(2) LAST CALIBRATION DATE *(Day, Month, Year)*
(2) MEASUREMENT AT ONE METER		
(A) mR/hr	(B) REPORTABLE *(Greater than 10 mR/hr)* ☐ YES ☐ NO	(3) BACKGROUND RADIATION READING

4. PACKING SLIP/VIAL AGREEMENT	YES	NO	DIFFERENCE *(Actually received)*
A. RADIONUCLIDE			
B. AMOUNT			
C. CHEMICAL FORM			

5. SWIPE TEST RESULTS

A. OUTER CONTAINER	CPM	X	EFFICIENCY	=	DPM
B. FINAL	CPM	X	EFFICIENCY	=	DPM

6. SURVEY RESULTS OF PACKING MATERIAL AND CARTONS	7. LABELS REMOVED OR DEFACED	8. DISPOSITION OF PACKAGE AFTER INSPECTION
mR/hr, cpm	☐ YES ☐ NO	

9. NRC/CARRIER NOTIFICATION DATA

A. NOTIFICATION REQUIRED	B. IF YES, COMPLETE FOLLOWING DATA ON NOTIFICATION ACTION		
	TIME	DATE *(Day, Month, Year)*	NAME OF PERSON NOTIFIED *(Last, First, Middle Initial)*
☐ YES ☐ NO			

10. REMARKS

11. SURVEY DATA

A. DATE SURVEYED	B. TIME	C. SIGNATURE OF SURVEYOR

USAF MED CEN SCOTT Form 169, APR 83

(FOR EXEMPT QUANTITIES)

RADIOACTIVE MATERIAL SHIPMENT RECEIPT RECORD

RIA

DO

1. GENERAL IDENTIFICATION DATA

A. PURCHASE ORDER NUMBER	B. INVOICE NUMBER	C. LOCALLY ESTABLISHED CONTROL NUMBER

2A. CONDITION OF PACKAGE *(Mark "X" condition and explain in item 28, if required)*

☐ OK ☐ PUNCTURED ☐ WET ☐ STATUS ☐ CRUSHED ☐ OTHER *(Specify)*

28.

3. EXTERNAL PACKAGE DATA

A. LABELED	B. TYPE LABEL	
☐ YES ☐ NO ☐ EXEMPT	☐ WHITE - I ☐ YELLOW - II ☐ YELLOW - III	
C. ACTIVITY AMOUNT	D. TRANSPORTATION INDEX	E. TYPE ISOTOPE

F. PACKAGE RADIATION LEVELS	G. INSTRUMENT USED TO MEASURE LEVELS
(1) MEASUREMENT AT SURFACE	(1) TYPE Ludlum 12
(A) mR/hr / (B) REPORTABLE *(Greater than 200 mR/hr)* ☐ YES ☐ NO	(2) LAST CALIBRATION DATE *(Day, Month, Year)*
(2) MEASUREMENT AT ONE METER	
(A) mR/hr / (B) REPORTABLE *(Greater than 10 mR/hr)* ☐ YES ☐ NO	(3) BACKGROUND RADIATION READING Oil uR/hr

4. PACKING SLIP/VIAL AGREEMENT	YES	NO	DIFFERENCE *(Actually received)*
A. RADIONUCLIDE			
B. AMOUNT			
C. CHEMICAL FORM			

NOTE

5. SWIPE TEST RESULTS *(Exempt)* TO CFR 20.205(b)(1)(12)

	CPM		EFFICIENCY		DPM
A. OUTER CONTAINER		X		=	
B. FINAL		X		=	

6. SURVEY RESULTS OF PACKING MATERIAL AND CARTONS mR/hr, cpm	7. LABELS REMOVED OR DEFACED ☐ YES ☐ NO	8. DISPOSITION OF PACKAGE AFTER INSPECTION

9. NRC/CARRIER NOTIFICATION DATA

A. NOTIFICATION REQUIRED ☐ YES ☐ NO	B. IF YES, COMPLETE FOLLOWING DATA ON NOTIFICATION ACTION		
	TIME	DATE *(Day, Month, Year)*	NAME OF PERSON NOTIFIED *(Last, First, Middle Initial)*

10. REMARKS

DO

11. SURVEY DATA

A. DATE SURVEYED	B. TIME	C. SIGNATURE OF SURVEYOR

ACTION LEVEL
RESTRICTED AREA 2000DPM OR 1.0 mR PER HR / 20,000 DPM (Tc99) OR 2 mR PER HR
UNRESTRICTED AREA 200 DPM OR 0.1 mR PER HR / 2,000DPM (Tc99) OR 1.0 mR PER HR

RADIOISOTOPE LABORATORY SURVEY REPORT *(Hallway)*

MEDICAL FACILITY
USAF MEDICAL CENTER, SCOTT
SCOTT AFB IL 62225-5300

NAME OF INVESTIGATOR			BLDG	ROOM
	MONTHLY	NUCLEAR MEDICINE SERVICES	1530	SEE DIAGRAM

1. ISOTOPES USED

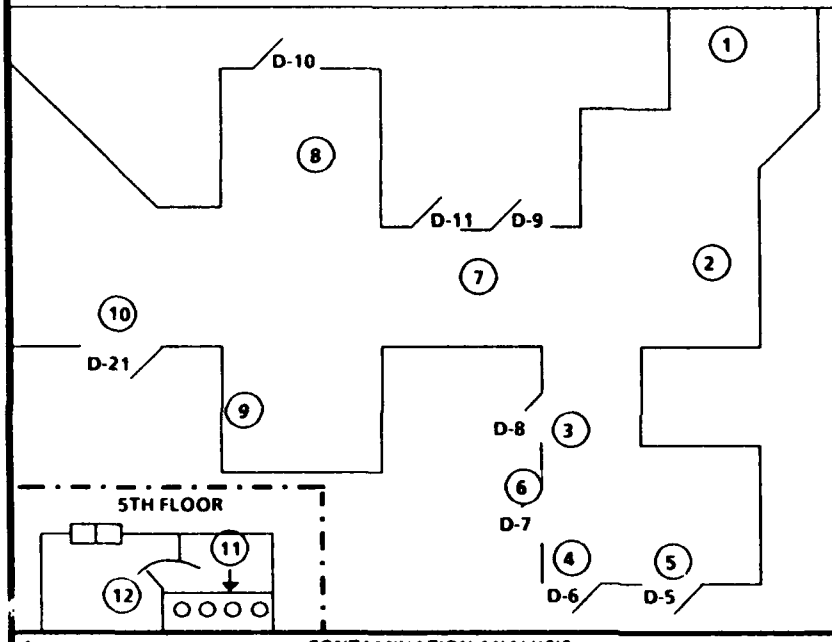
GAMMA (Circle)			ALPHA	BETA (Circle)
LOW ENERGY (Specify)	HIGH ENERGY (Specify)	OTHER (Specify)		OTHER (Specify)
Xe-133 I-125 Tl 201 Tc 99m	Cs 137 Co 60 I 131 Ra-226			
		NOTE: MAY INCLUDE I-123, Co-57, Cr-51, Ga-67	NOTE MAY INCLUDE Pu-230, Pu-239, U 235, U-238	NOTE: OCCASIONAL USE H-3, C-14, S-35, Ca-45, Sr-90, P-32, Fe-55

2. GENERAL LABORATORY HOUSEKEEPING

OVERALL EVALUATION ☐ SATISFACTORY ☐ UNSATISFACTORY

A SIGN AND LABELS				B EXHAUST RATE (Face Velocity)	
RAD HOOD	DOOR	RAD SINK	RAD REFRIG	HOOD FLOW RATE - DATE	NOTE: STANDARD IS 150 fpm 125 fpm (Ave.)
YES	YES	YES	YES	F/M	

3. SURVEY DATA



	LOCATION	NET DPM OR uCi (< 2XBKG)
1	HALLWAY BY ELEVATOR	
2	HALLWAY BY DESK	
3	HALLWAY IN FRONT OF D8	
4	HALLWAY IN FRONT OF D7	
5	HALLWAY IN FRONT OF D5	
6	INSIDE DOOR ON FLOOR D7	
7	HALLWAY SWIPE IN MIDDLE	
8	HALLWAY TOWARD D10	
9	HALLWAY BY BATHROOMS	
10	HALLWAY IN FRONT OF D21	
11	STORAGE AREA 5th FLOOR	
12	5TH FLOOR, WASTE ENTRANCE	

4. CONTAMINATION ANALYSIS

	1	2	3
SOURCE	I-129	Co57	Cs-137
ACTIVITY	0148uCi	0 121uCi	0 101 uCi
EFFICIENCY	61%	36%	7%

MODE: ☒ GAMMA COUNTER ☐ GAS FLOW ☐ LIQUID SCINT
☐ CPM ☐ DPM
BACKGROUND (CPM)

5. ACTION

☐ LABORATORY, APPEARS FREE FROM CONTAMINATION
☐ CIRCLED AREAS NEED TO BE DECONTAMINATED
☐ CONTACT HEALTH PHYSICIST FOR RESURVEY

E 520	LUDLUM-12	OTHER
CALIBRATION DUE DATE	CALIBRATION DUE DATE	CALIBRATION DUE DATE

LUDLUM-12

D 5 ARIA WASTE =
D 15 RIA TUBES =
5TH FLOOR
STORAGE BARRELS = _____

E-520

D 6 USED 2x2's =
D 21 USED NEEDLES AND SYRINGES = _____

ANY QUESTIONS OR COMMENTS SHOULD BE DIRECTED TO THE UNDERSIGNED AT EXTENSION 67507

SURVEYOR (Signature)

DATE

USAF MED CEN, SCOTT Form 178, OCT 87 PREVIOUS EDITION WILL BE USED

ACTION LEVEL
RESTRICTED AREA 2000DPM OR 1.0 mR PER HR / 20,000 DPM (Tc99) OR 2 mR PER HR
UNRESTRICTED AREA 200 DPM OR 0.1 mR PER HR / 2,000DPM (Tc99) OR 1.0 mR PER

RADIOISOTOPE LABORATORY SURVEY REPORT (Rooms and Storage Area)

MEDICAL FACILITY
USAF MEDICAL CENTER, SCOTT
SCOTT AFB IL 62225-5300

NAME OF INVESTIGATOR	FREQUENCY	LOCATION	BLDG	ROOM	MOST RECENT ORDER (AMOUNT AND DATE)
	WEEKLY	NUCLEAR MEDICINE SERVICES	1530	SEE DIAGRAM	RECURRING

1. ISOTOPES USED

BETA (Circle)		GAMMA (Circle)		ALPHA EMITTER (Circle)
LOW ENERGY: N/A H-3 C-14 S-35 Ca-45 Tc-99m	HIGH ENERGY: N/A Sr-90 P-32 Fe-55	LOW ENERGY Xe-133 I-125 Tl-201 Tc-99m	HIGH ENERGY Cs-137 Co-60 I-131 Ra-226	N/A Pu-230 Pu-239 U-235 U-238
OTHER (Specify): N/A	OTHER (Specify): N/A	OTHER (Specify): I-123, Co-57, Cr-51, Ga-67	OTHER (Specify): N/A	OTHER (Specify): N/A

2. GENERAL LABORATORY HOUSEKEEPING

OVERALL EVALUATION ☐ SATISFACTORY ☐ UNSATISFACTORY

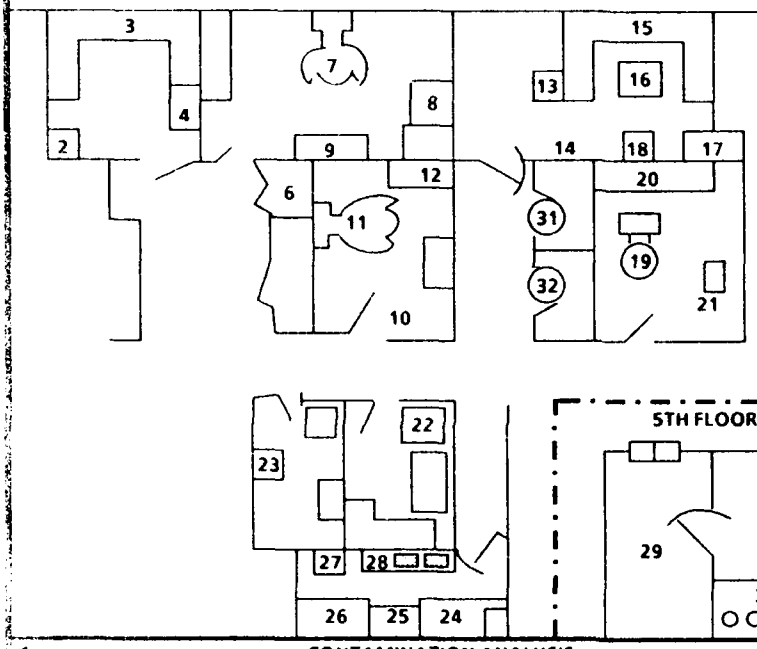
A. SIGN AND LABELS

RAD HOOD	DOOR	RAD SINK	RAD REFRIG	RAD STORAGE AREA	RAD WASTE
YES	YES	YES	YES	YES	YES

B. EXHAUST RATE (Face Velocity)

HOOD FLOW RATE / DATE	NOTE: STANDARD IS
CF/M	150 cfpm 125 cfpm. (Ave.)

3. SURVEY DATA



	LOCATION	NET DPM OR uCi
1	D-5, ENTRANCE, FLOOR	
2	REFRIGERATOR, RAD	
3	SINK RIM	
4	RIA II	
5	D-6 ENTRANCE, FLOOR	
6	GENERATOR STORAGE	
7	CAMERA COLLIMATOR	
8	CAMERA COMPUTER	
9	SCANNING TABLE	
10	D-13, ENTRANCE FLOOR	
11	CAMERA COLLIMATOR	
12	CAMERA CONSOLE	
13	D-14, DESK	
14	D-15, ENTRANCE FLOOR	
15	SINK RIM	
16	RIA WORK TABLE	
17	REFRIGERATOR RAD	
18	GAMMA COUNTER, AUTOWELL	
19	D-21, DARKROOM COUNTERTOP	
20	SINK RIM	
21	INJECTION CHAIR	
22	D-11, UPTAKE PROBE	
23	D-9, REFRIGERATOR	
24	D-10, GENERATOR SHIELD	
25	DRAWING AREA	
26	HOOD AND STORAGE LOCKER	
27	REFRIGERATOR RAD	
28	SINK RIM	
29	5TH FLOOR, WASTE ENTRANCE	
30	1ST BARREL ON THE RIGHT	
31	RESTROOM	
32	RESTROOM	
33		
34		
35		
36		
37		
38		
39		

4. CONTAMINATION ANALYSIS

	1	2	3
SOURCE	I-129	Co 57	Cs-137
ACTIVITY	0148	121 uCi	0.101 uC
EFFICIENCY	61%	36%	7%

MODE: [X] GAMMA COUNTER ☐ GAS FLOW ☐ LIQUID SCINT
☐ CPM ☐ DPM
BACKGROUND

5. ACTION

☐ LABORATORY, APPEARS FREE FROM CONTAMINATION
☐ CIRCLED AREAS NEED TO BE DECONTAMINATED
☐ CONTACT HEALTH PHYSICIST FOR RESURVEY

E 520	LUDLUM-12	OTHER
CALIBRATION DUE DATE	CALIBRATION DUE DATE	CALIBRATION DUE DATE

LUDLUM 12 E-520

D 5 ARIA WASTE =
D 6 USED 2x2's =
D 15 RIA TUBES =
D 21 USED NEEDLES AND SYRINGES =
5TH FLOOR STORAGE BARRELS = _____

ANY QUESTIONS OR COMMENTS SHOULD BE DIRECTED TO THE UNDERSIGNED AT EXTENSION 67507

SURVEYOR (Signature)

DATE

SCOTT MEDICAL CENTER ANNUAL RADIOGRAPHIC SURVEY *(Part I)*

SURVEY PERFORMED BY	REPORT DATE
SURVEY PERFORMED BY	**REPORT DATE**

I. FACILITY IDENTIFICATION

A. ORGANIZATION	B. BUILDING NO.	C. ROOM NO.	D. PHONE NO.

II. EQUIPMENT IDENTIFICATION

	MANUFACTURER	MODEL NO.	SERIAL NO.
A. CONSOLE			
B. COLLIMATOR			
C. TUBE INSERT			
D. TUBE HOUSING			
E. OTHER			

1. PHASE ☐ SINGLE ☐ THREE PHASE ☐ CONSTANT POTENTIAL

2. ☐ MOBILE ☐ SPECIAL PURPOSE *(Specify)* ☐ FIXED

3. DATE OF LAST SURVEY

III. PERSONNEL EXPOSURE	YES	NO	N/A
A. Are exposures, as recorded by personal dosimetry results, within permissable occupational limits?			
B. Review of dosimetry results does not show any adverse exposure trends?			

IV. RADIATION PROTECTION AND CALIBRATION SURVEYS			
A. Radiation protection protection survey has been conducted in accordance with AFM 161-38, 3b?			
B. Have actions been completed on all recommendations made in the last survey?			
C. Is X ray equipment periodically inspected and calibrated by MERC?			
D. Are records of surveys (*Radiation Protection and MERC maintenance*) on hand?			
E. Have there been changes in qualities, equipment or procedures since last radiation protection survey?			
F. Personnel shielding stored properly?			
G. Personnel shielding tested? ☐ Semi Annual ☐ Yearly			
H. Are personnel shields used routinely?			
I. Personal dosimeters worn?			
J. Personnel shielding available?			
Aprons			
Gloves			
Gonadal			
K. Operators do not routinely hold patients?			
L. Operators use shielding when holding patients?			

V. QUALITY CONTROL			
A. Does department have a formal quality assurance program?			
B. Is written policy on hand?			
C. Are the radiation protection practices evaluated?			
D. Are the quality assurance program elements evaluated? ☐ Weekly ☐ Monthly ☐ Yearly			

E. Which of the following QA Elements are(is) followed? Frequency?	DAILY	WEEKLY	MONTHLY
TEMPERATURE			
CHEMICAL CHANGES			
SPEED			
CONTRAST			
BASE FOG			
FILM REJECTS			
PROCESSOR CLEANING			

VI. SAFETY					
A. GENERAL	SEMI ANNUAL	YEARLY			
1. Are interlocks devices checked?					
2. On Off Beam Control Mechanism checked?					
3. Safety Warning Devices checked?					
4. All inspections (*1, 2, 3 above*) filed?					

VI	SAFETY *(Continued)*	YES	NO	N A
5	Are Warning Signs posted?			
	"Radiation Area"			
	"Pregnant Female"			
	"Knock before Entering"			
6	Are restrictions placed on equipment and facilities (*AFM 161-38, 103h*) being observed?			
B	Fluoroscopic Equipment			
1	Useful beam attenuated by a primary barrier			
2	Collimating device present			
3	Deadman switch present			
4	Bucky slot shield present			
5	Drapes or hinged or sliding panels intercept scattered radiation			
6	Timer's audible signal sounds at end of 5 minutes without turning off			
7	Timer's audible signal sounds at end of 5 minutes without turning off			
8	Image intensification present kVp and mA indicator at operator's location			
9a	Image intensification available on mobile machine			
b	Source to Skin Distance is more than 12" (*except surgical 8"*)			
10a	Image intensification has special means of activation to operate			
b	Continuous signal during HLC (*High Level Control*)			
11	The shutter restricts the useful beam to the diameter of the input phosphor			
12	Minimum field size at greatest SSD is less or equal to 2" X 2"			
13	Extraneous light in examination room eliminated			
C	Fixed Radiographic Equipment			
1	Collimating devices coned to size of useful beam			
2	Additional filtration clearly indicated			
3a	A switch terminates exposure			
b	Can it be reset?			
4	Switch permanently located behind shield			
5	Exposure terminates when switch released			
6	Visible mA indicator during exposure			
7	Technique factors indicated before exposure			
8	Tube head selection indicated at tube head and at console			
9	Light field dimensions indicated at designated SIDs			
10 *	X-Ray field dimensions agree with light field dimensions to within 2% of SID			
11 *	X-Ray field dimensions agree with collimator field size settings to within 2% of SID			
12 *	Center of X-Ray field aligned with center of light field to within 2% of SID			

*Use for Numbers 10, 11 and 12 *above*				SKETCH OF SETUP
SOURCE TO TABLE TOP (film on table top)	COLLIMATOR FIELD SIZE SETTING	LIGHT FIELD DIMENSIONS	X RAY FIELD DIMENSIONS	

13	Illumination is not less than 15 ft candles (*160 lux*) at 1 meter or at max SID (*whichever is less*)			
D	Mobile Unit (*additional questions*)			
1	Cannot be operated at SSD of less than 12 inches			
2	Exposure switch can be extended to reach minimum 6 feet distance			
3	The unit is not routinely used in same location			
4	Location of technician is as far away as practical			
5	Technician wears protective apron/or stands behind barrier			
6	Mobile (*battery*) unit energized only with adequate charge			
E	Urological Unit (*additional questions*)			
1	Without cone, tube collimated to useful beam area of 14 X 17 inches at film distance			
2	Radiation scatters twice before entering booth/control cabinet area			
3	Observation window provides radiation shielding to booth/shield personnel			

VI	SAFETY (Continued)	YES	NO	N A
F	Dental Radiological *(additional questions)*			
	1 Source to skin distance limited to 7 inches			
	2 For intra oral radiography, useful beam restricted to diameter of not more than 2 75 inches at min SSD			
	3 Tube head does not drift or vibrate in exposure portion			
	4 An open-ended collimated dental cone is used			
	5 Film is not held by operator during exposure			
G	Veterinary *(additional questions)*			
	1 Useful beam restricted to minimum field size required by study			
	2 Animal handler's body shall not be placed in useful beam without adequate protection			
	3 Lowest practical exposure technique factors used to minimize radiation output?			
	4 Protective skirt of at least 0 25 mm (or *Pb eq*) is provided to protect hands (*during catheterization*)?			
	5 Sandbags, V troughs, slings or other appropriate ancillary devices are used to assist in preparing animals for radiographic procedures			
	6 Log or record is kept of use of X-ray equipment to indicate date of exposure, kilovoltage, milliampere, exposure time, operator, and ID of animal			

VII. ENTRANCE SKIN EXPOSURE

A 1 MONITORING INSTRUMENTS(s)

NAME	SSN	DATE OF CABLIBRATION
NAME	SSN	DATE OF CABLIBRATION

2 ENVIRONMENTAL CONDITIONS

2A MDH PULSE FRACTION THRESHOLD	2B BAROMETRIC PRESSURE

B MEDICAL X RAY	FILMS PER WEEK	kVp	mA(s)	TIME (seconds)	SFD (inches)	SIZE	EXPOSURE IN mR * MEASURE	ESE	GUIDE
1 CHEST						9			30
2 SKULL						6			300
3 ABDOMEN						9			750
4 CERVICAL SPINE						5			250
5 THORACIC SPINE						9			900
6 LUMBO SACRAL SPINE						9			1000
7 RETROGRADE PYELOGRAM									900

*SOURCE TO CHAMBER DISTANCE (SCD) _____ inches

C DENTAL DATA	FILMS PER WEEK	kVp	mA(s)	TIME (seconds)	SFD (inches)	EXPOSURE IN mR * MEASURE	ESE	GUIDE
BITEWING/ PERIAPICAL								700

*SOURCE TO CHAMBER DISTANCE (SCD) _____ inches

D FLUROSCOPIC DATA	NOTE # 1 Make with sufficient Phantom material to maximize AERC	SOURCE TO CHAMBER DISTANCE (SCD) INCHES

	kVp	mA	STANDARD[1, 3] EXPOSURE R min	AERC[2] EXPOSURE R min	HLC[3] EXPOSURE R min
VIEW					

1 Without HLC and without AERC, Limit is 5R/min Within Limits	☐ YES	☐ NO
2 Without HLC and with AERC, Limit is 10R/min Within Limits	☐ YES	☐ NO
3 HLC not activated, Limit is 5R/min Within Limits	☐ YES	☐ NO

VIII **SHIELDING, SKETCH AND SCATTER**

A SKETCH *(NOT TO SCALE)*

N

B SHIELDING

	LOCATION	Pb (mm/in)	Conc (mm/in)	HEIGHT (ft)
1	North			
2	South			
3	East			
4	West			
5	Floor			
6	Ceiling			
7	Doors			
8	Shield			

NOTE: 1 Primary walls/barriers have 1/16 inch (or Pb eq) to 7 feet ☐ YES ☐ NO

2 Secondary walls/barriers have 1/21 inch (or Pb eq) to 7 feet ☐ YES ☐ NO

C DOORS AND WINDOWS EQUAL SHIELDING OF WALLS

☐ YES ☐ NO (Comments)

D SCATTER

TECHNIQUE	kVp	mA( )	TIME (SEC)	PHANTOM	STTD	IN FIELD ____ x ____ in

LOCATION ON SKETCH	DESCRIPTION	EXPOSURE * TT	MR/hr * CH
A			
B			
C			
D			
E			
F			

* TT = X-rays Directed at Phantom on Table Top

* CH = X-rays Directed at Phantom on Chest Cassette Holder

E Is Shielding Adequate? ☐ YES ☐ NO (Comments)

COMMENTS

SCOTT MEDICAL CENTER ANNUAL FLUOROSCOPIC SURVEY *(Part II)*

(Supplement to Radiographic Survey Report)

SURVEY PERFORMED BY	REPORT NO
SURVEY PERFORMED BY	SURVEY DATE

I. ROOM IDENTIFICATION	II. PERSONNEL CONTACTED		
Room Number	A. NAME	B. RANK	C. TITLE

III. ENVIRONMENTAL CONDITIONS AND MDH SETTINGS

A. 1. MONITORING INSTRUMENT(S)

NAME	SSN	DATE OF CALIBRATION
NAME	SSN	DATE OF CALIBRATION

2. ENVIRONMENTAL CONDITIONS

2A. MDH PULSE FRACTION THRESHOLD	2B. BAROMETRIC PRESSURE *(Millibars)*

IV. EQUIPMENT IDENTIFICATION

	MANUFACTURER	MODEL NO	SERIAL NO
A. CONSOLE			
B. COLLIMATOR			
C. TUBE INSERT			
D. TUBE HOUSING			
E. OTHER			

1. PHASE ☐ SINGLE ☐ THREE PHASE ☐ CONSTANT POTENTIAL

2. ☐ PORTABLE ☐ SPECIAL PURPOSE *(Specify)* ☐ ROUTINELY USED

3. DATE AND NO. OF LAST SURVEY

V. SYSTEM PARAMETERS

	kVp		mA		Time	
	MIN	MAX	MIN	MAX	MIN	MAX
FLUOROSCOPY						MIN
SPOT FILM/CINE						SEC

VI. SAFETY CHECK	YES	NO	N/A
A. Technique factors indicated before exposure			
B. Visible Beam On indication			
C. Lead Drapes Around Image Receptor			
D. Lead Drapes Used Routinely			
F. Bucky Shield included in table			
F. Bucky Shield used routinely			
G. Viewing System ☐ Direct Fluoro Screen ☐ Mirror ☐ Image Intensify ☐ Television Monitor			
H. Radiographic Capability ☐ Spot Film Device ☐ CINE			
I. Deadman Exposure Switch ☐ Foot Pedal ☐ Push Button			
J. Controls at Operators Location ☐ Kvp ☐ mA ☐ Time			
K. X Ray tube linked to image receptor			
L. X Rays interrupted if image receptor removed			
M. Audible signal when timer expires ☐ Signals continuously or for _____ seconds			
N. Timer terminates X Ray exposure			
O. High level control (HLC)			

VI	SAFETY CHECK (*Continued*)	YES	NO	N/A
P	Continuous audible signal when HEC activated			
Q	Automatic exposure rate control (AERC) Controls: ☐ kVp ☐ mA			
R	Continuous adjustment of X Ray field size			
S	Dimmer switch on lights			
T	Other			

VIII. MONTHLY FLUOROSCOPIC REPORTS

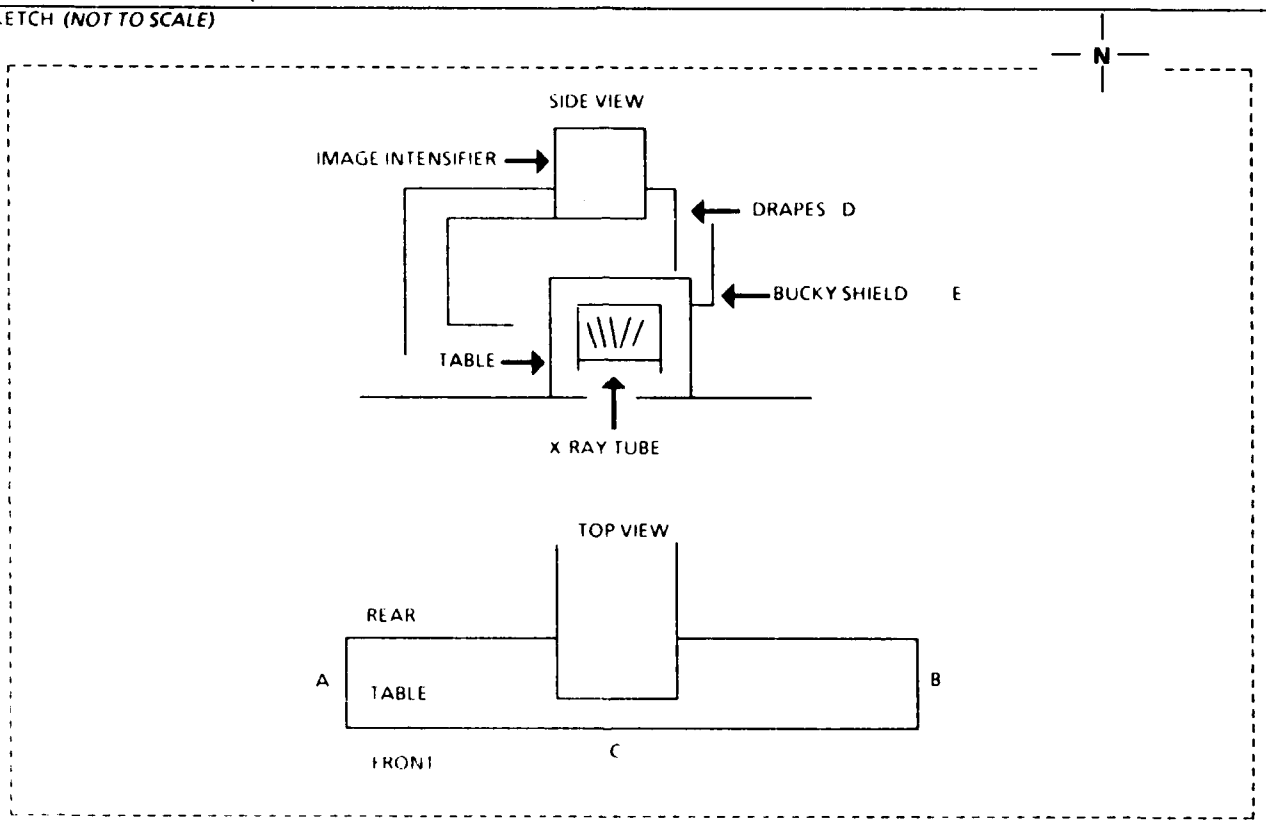
ANY ADVERSE TRENDS?	AVERAGE EXPOSURE OVER 30 DAYS	
	mR/hr	mR/hr/mAs

IX. SHIELDING, SKETCH AND SCATTER

A SHIELDING (*SEE REPORT #* _____)

DOORS AND WINDOWS EQUAL SHIELDING OF WALLS ☐ YES ☐ NO

B SKETCH (*NOT TO SCALE*)



C SCATTER

TECHNIQUE	kVp (*Maximum Output*)	mA	PHANTOM	SIZE FIELD
				IN X IN

LOCATION ON SKETCH	DESCRIPTION	EXPOSURE mR/hr
A		
B		
C		
D		
E		
F		
G		

X. WORKLOAD

A FLUORO		B SPOT FILMS		C CINE	AVAILABLE ☐ YES ☐ NO	
1 Number of Examinations per Week		1 Number of Spot Films during typical examination		1 Number of Cine examinations per week		
2 Maximum Fluoro kVp		2 Maximum Spot Film kVp		2 Average number of Cine per frames examination		
3 Typical Fluoro mA		3 Typical Spot Film mA ( )		3 Maximum Cine kVp		
4 Beam on time during typical examination	MIN			4 Typical Cine mA ( )		

XI. TUBE OUTPUT

A FLUORO MEASUREMENTS *(Sufficient Phantom material used to maximize AERC if available)*

Phantom material used *(and thickness)* _____ (_____ *in/mm)*

	kVp	mA	STANDARD EXPOSURE R/min	AERC EXPOSURE R/min	HLC EXPOSURE R/min
1					
2					
3					
4					
5					

TABLE TOP TO PROBE DISTANCE _____

(a) Without HLC and without AERC, Limit is 5 R/min Maximum exposure rate within limits: ☐ YES ☐ NO

(b) Without HLC and with AERC, Limit is 10 R/min Maximum exposure rate within limits: ☐ YES ☐ NO

(c) HLC not activated, Limit is 5R/min Maximum exposure rate within limits. ☐ YES ☐ NO

(With HLC activated there is NO limit)

B SPOT FILM MEASUREMENTS

PHOTOTIMED TECHNIQUE | MA ( ) | PHANTOM TYPE | THICKNESS *(in/mm)*

	kVp	EXPOSURE mR	EXPOSURE TIME *(seconds)*
1			
2			
3			
4			
5			
6			

TABLE TOP TO PROBE DISTANCE _____

C CINE MEASUREMENTS

PHOTOTIMED TECHNIQUE | MA ( ) | PHANTOM TYPE | THICKNESS *(cm)*

	kVp	FRAMES	EXPOSURE mR	mR/FRAMES
1				
2				
3				
4				
5				
6				
7				

XII. BEAM QUALITY

A MEASUREMENTS

TECHNIQUE | kVp | mA

NOTE; Maintain about 3.5 mm Al in beam, first above probe and in increasing amounts before probe

FILTER THICKNESS ADDED (mm Al)	EXPOSURE (R/min)
0.0	
1.5	
2.5	
4.5	

B RESULTS

	mm Al
1 HVL	
2 Minimum acceptable HVL	
3 Satisfies requirements ☐ YES ☐ NO	ADDITIONAL REQUIREMENTS

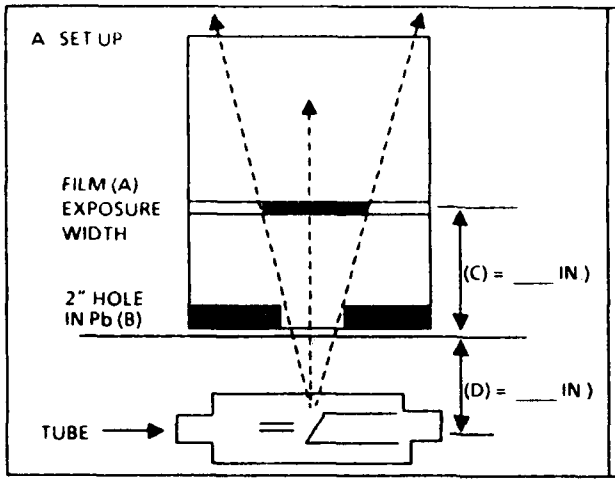
EQUIPMENT SET UP

XIII. **COLLIMATION**

A * SITD	1. MINIMUM SITD MEASURED *(Inches)*	2. MINIMUM SITD GREATER THAN 15 INCHES ☐ YES ☐ NO

* SOURCE TO TABLE TOP DISTANCE

A SET UP



A CALCULATIONS

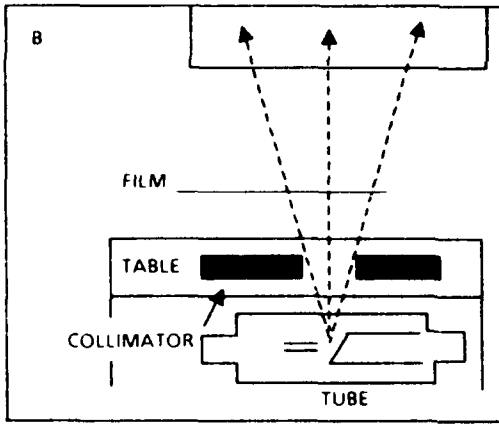
$$\frac{A}{B} = \frac{C + D}{D}$$

B COLLIMATION

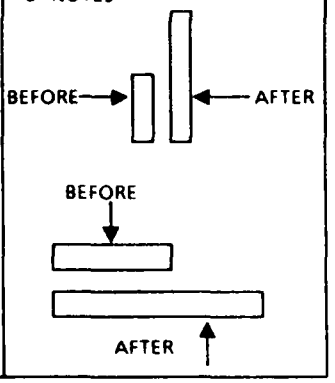
1. MINIMUM ITTD** *(Inches)*	2. X RAY FIELD SIZE AT TABLE TOP WHICH FILLS IMAGE RECEPTOR	3. MAXIMUM X-RAY FIELD SIZE AT TABLE TOP
	_____ IN X _____ IN	_____ IN X _____ IN
4. MAXIMUM X-RAY FIELD SIZE LESS THAN IMAGE RECEPTOR FIELD SIZE ☐ YES ☐ NO	5. AUTO COLLIMATION FIELD SIZE _____ IN X _____ IN	6. AUTO COLLIMATION FIELD SIZE LESS THAN OR EQUAL TO IMAGE RECEPTOR FIELD SIZE _____ IN X _____ IN

** IMAGE RECEPTOR TO TABLE TOP DISTANCE

B



B NOTES



REMARKS

SCOTT MEDICAL CENTER ANNUAL RADIOGRAPHIC SURVEY
(Field Form)

SURVEY PERFORMED BY	REPORT DATE

I. FACILITY AND EQUIPMENT IDENTIFICATION

A. EQUIPMENT IDENTIFICATION (Model or Type)	B. PMEL NUMBER	C. WHAT IS IT?	D. ROOM NO

II. RADIATION PROTECTION	YES	NO	N A
A. Have there been changes in qualities, equipment or procedures since last radiation protection survey?			
B. Personnel shielding stored properly?			
C. Personnel shielding tested? ☐ Semi Annual ☐ Yearly			
D. Are personnel shields used routinely?			
E. Personal dosimeters worn?			
F. Personnel shielding available?			
Aprons			
Gloves			
Gonadal			
G. Operators do not routinely hold patients?			
H. Operators use shielding when holding patients?			
III. SAFETY			
A. GENERAL			
1. Are Warning Signs posted?			
"Knock before Entering"			
B. Fluoroscopic Equipment			
1. Drapes or hinged or sliding panels intercept scattered radiation			
2. X Rays interupted if image receptor removed			
3. Timer's audible signal sounds at end of 5 minutes without turning off			
4. The shutter restricts the useful beam to the diameter of the input phosphor			
5. Minimum field size at greatest SSD is less or equal to 2" X 2"			
C. Fixed Radiographic Equipment			
1. Collimating devices coned to size of useful beam			
2.* X Ray field dimensions agree with light field dimensions to within 2% of SID			
3.* X Ray field dimensions agree with collimator field size settings to within 2% of SID			
4.* Center of X Ray field aligned with center of light field to within 2% of SID			

*Use for Numbers 2, 3, and 4 *above*

SOURCE TO TABLE TOP (film on table top)	COLLIMATOR FIELD SIZE SETTING	LIGHT FIELD DIMENSIONS	X RAY FIELD DIMENSIONS	SKETCH OF SETUP

IV. ENTRANCE SKIN EXPOSURE

A. 1. MONITORING INSTRUMENTS(s)

NAME	SSN	DATE OF CABLIBRATION

2. ENVIRONMENTAL CONDITIONS	2A. MDH PULSE FRACTION THRESHOLD	2B. BAROMETRIC PRESSURE

B. MEDICAL X RAY	FILMS PER WEEK	kVp	mA(s)	TIME (seconds)	SFD (inches)	SIZE	EXPOSURE IN mR * MEASURE	ESE (calculated)	GUIDE
1. CHEST						9			30
2. SKULL						6			300
3. ABDOMEN						9			750
4. CERVICAL SPINE						5			250
5. THORACIC SPINE						9			900
6. LUMBO SACRAL SPINE						9			1000
7. RETROGRADE PYELOGRAM									900
8. OTHER									

*SOURCE TO CHAMBER DISTANCE (SCD) inches

USAF MED CEN SCOTT Form 215-1, NOV 87

C. DENTAL DATA	FILMS PER WEEK	kVp	mA(s)	TIME (seconds)	SFD (inches)	EXPOSURE IN mR * MEASURED	ESE (Calculated)	GUIDE
BITEWING/PERIAPICAL								700

*SOURCE TO CHAMBER DISTANCE (SCD) ______ inches

D. FLUOROSCOPIC DATA	NOTE: Make with sufficient Phantom material to maximize AERC		SOURCE TO CHAMBER DISTANCE (SCD) ______ INCHES
	kVp	mA	AERC[1] EXPOSURE R/min
VIEW			

1. Without HLC* and without AERC**, Limit is 10R/min. Within Limits ☐ YES ☐ NO
* High level control. ** Automatic water exposure rate control

V. SHIELDING, SKETCH AND SCATTER

A. SKETCH *(NOT TO SCALE)*

N

B. DOORS AND WINDOWS EQUAL SHIELDING OF WALLS

	YES		N/A
	NO (Comments)		

NOTE: SEE PREVIOUS SURVEY FOR SHIELDING LOCATION/THICKNESS

C. SCATTER

TECHNIQUE	kVp	mA( )	TIME (SEC)	PHANTOM TYPE	***STTD	SIZE OF FIELD ______ in X ______ in

LOCATION ON SKETCH	SECONDARY SCATTER DESCRIPTION (LOCATION)	EXPOSURE mR/hr * TT	mR/hr ** CH	FLUOROSCATTER LOCATION kVp	mA	mR/hr
A						
B						
C						
D						
E						
F						

* TT – X rays Directed at Phantom on Table Top
** CH – X rays Directed at Phantom on Chest Cassette Holder
*** Source to Table Top Distance

D. Is Shielding Adequate? ☐ YES ☐ NO (Comments)

VI. COMMENTS/RECOMMENDATIONS

PROCESSOR MONITORING LOG

PROCESSOR NUMBER

MONTH | YEAR | TECHNICIAN(s)

BASELINE DAY 1 2 3 4 5 6 7 8 9 10 12 14 16 18 20 22 24 26 28 30 31

BASE PLUS FOG

0.20
0.15
0.10
0.05
Normal ___D
0.05
0.10
0.15
0.20
0.25
0.30

NOTE: Measure ***FOG*** in an area away from ***STEP*** wedge.

1 2 3 4 5 6 7 8 9 10 12 14 16 18 20 22 24 26 28 30 31

SPEED INDEX *(Medium density)*

0.20
0.15
0.10
0.05
Normal ___D
0.05
0.10
0.15
0.20
0.25
0.30

1 2 3 4 5 6 7 8 9 10 12 14 16 18 20 22 24 26 28 30 31

CONTRAST INDEX *(Subtract low density from high density)*

0.20
0.15
0.10
0.05
Normal ___D
0.05
0.10
0.15
0.20
0.25
0.30

NOTE:
Example:
Day one
Step 10 = 1.90
Step 8 = -1.00
DENSITY DIFF = .90

Day Two
Step 10 = 2.02
Step 8 = -1.02
DENSITY DIFF = 1.00

1 2 3 4 5 6 7 8 9 10 12 14 16 18 20 22 24 26 28 30 31

ADDITIONAL QC CHECKS

DEVELOPER TEMPERATURE F

1 2 3 4 5 6 7 8 9 10 12 14 16 18 20 22 24 26 28 30 31

Dev Replenishment Flow Rate

100
50
0

1 2 3 4 5 6 7 8 9 10 12 14 16 18 20 22 24 26 28 30 31

Fixer Replenishment Flow Rate *(in CC)*

100
50
0

USE REVERSE FOR COMMENTS

USAF MED CEN, SCOTT Form 253, SEP 86

COMMENTS

USAF MED CEN, SCOTT Form 253, SEP 86 (Reverse)

NUCLEAR MEDICINE MONTHLY SELF-INSPECTION CHECKLIST				MONTH	YEAR	
LOCATION LOG/CHECKLIST	TEST/RECORD	FREQUENCY	INTERVAL ACCOMPLISHED	DISCREPANCIES NOTED		INITIALS
1 Book 1 *(D-14)* Nuc Med	Dose Calibrator Constancy	Daily				
2 Book 1 *(D 14)*	Dose Calibrator Linearity	Quarterly				
3 Book 1 *(D 14)*	Dose Calibrator Accuracy	Semi-annually				
4 Book 1 *(D 14)*	Dose Calibrator Geometrical Variation	Initially				
5 Book 1 *(D 14)*	Gamma Auto Well Constancy	Daily				
6 Book 2 *(D-14)*	Liquid RAD Waste Log	Daily				
7 Book 2 *(D-14)*	Solid RAD Waste Log	Weekly *(or as produced)*				
8 Book 2 *(D-14)*	RAD Waste Level Survey	Weekly				
9 Book 2 *(D 6)*	Xenon Exhaust	After each use				
10 Book 2 *(D 14)*	Xenogard Filters Cleaned *(CO2/Moisture)*	Monthly				
11 Book 2 *(D 14)*	Tc 99 Generator Shipment *(Swipe)* Survey	Weekly				
12 Book 3 *(D 14)*	Room Level Surveys	Daily				
13 Book 3 *(D-14)*	Personnel Surveys	Daily				
14 Book 4 *(D 14)*	Laboratory Swipes	Weekly				
15 Book 4 *(D 14)*	Hallway Swipes	Monthly				
16 Book 4 *(D 14)*	RAD Storage Area Swipes	Monthly				
17 Book 37 *(D 14)*	Uptake Probe Chi Square	Monthly				
18 Book 38 *(D 14)*	Chi Square Auto Well	Weekly				
19 Book 35 *(D 10)*	Radiochromatography Co57-Co60	Daily				
20 File 4 10 5 in RSO Office	Gamma Ref Sources *(4) (Visual inspection)*	Daily				
21 File cards in Nuc Med *(D 10)*	Molybdenum Breakthrough	After each elution				
22 Book 34 & 34 1 in Entry to D 10	Package Surveys/Receipt	Daily				
23 File 4 10 5 in RSO Office	Sealed Source Inventory	Quarterly				
24 File 4 10 5 in RSO Office	Leak tests	Semi annually				
25 Book 36 Rm D 6 Nuc Med	Xenon-133 Monitor MPC Level after use/log check	Quarterly				
26 File 4 10 11 in RSO Office	Ventilation Survey	Quarterly				

LOCATION LOG/CHECKLIST	TEST/RECORD	FREQUENCY	INTERVAL ACCOMPLISHED	DISCREPANCIES NOTED	INITIALS
27 Book 10 Rm D6-D13	Gamma Flood Uniformity	Check daily			
28 Book 10 Rm D6 D13	Gamma Flood Resolution	Weekly			
29 Book 10 Rm D6-D13	Unified Calibration	Daily			
30 Book 11 Rm D16	Uptake Unit Log *(CS 137)*	As Used			
31 File 4-1-3 in RSO Office	Personnel Radiation Safety Training	Annually			
32 File 4-9-4 in RSO Office	Radiation Safety Committee	Quarterly			
33 Blue Books in RSO Office	Personnel Dosimetry Review *(AF 1499)*	Monthly			
34 Wall Chart and Book 25 in RSO Office	Radiac Battery Check and calibration	NOTE: Bat check is every 2 weeks			
	a Victoreen 740F	Semi-annual			
	b Victoreen 440	Semi-annual			
	c E-520 SN 2774	Semi-annual			
	d E-520 SN 2754	Semi-annual			
	e Ludlum 12 SN22728	Semi-annual			
	f Ludlum 12 SN17058	Semi-annual			
	g Victoreen 470A *(Panoramic)* 3291	Semi-annual			
	h Victoreen 470A *(Panoramic)3063*	Semi-annual			
	i 541L Dosimeters	Quarterly			
	j Ludlum 61s	Yearly			
	k E-520	Semi-annual			
	l E-520	Semi-annual			
	m E-520	Semi-annual			
35 Book 25 in Rm D-14	Radiation Detection Equip Repair	Monthly			
36 Book 9 in RSO Office	Radiation Mat Chronological Record	Monthly			
OTHER *(NON NUC MED)*					
1 Book 6 in Rm D-14	Mammographic Phantom Check	Monthly			
2 Book 7 in Console Rm D-23	CT Uniformity	Daily			

INSPECTION PERFORMED BY	DATE

SCOTT MEDICAL CENTER ANNUAL RADIOGRAPHIC SURVEY

TYPE: BAGGAGE INSPECTION UNIT

SURVEY PERFORMED BY	REPORT DATE
SURVEY PERFORMED BY	REPORT DATE

FACILITY IDENTIFICATION

A. ORGANIZATION	B. BUILDING NO.	C. ROOM NO.	D. PHONE NO.
375 TRNSS TROP	P 8	MAIN	62014

I. EQUIPMENT IDENTIFICATION

	MANUFACTURER	MODEL NO	SERIAL NO
A. CONSOLE			
B. COLLIMATOR			
C. TUBE INSERT			
D. TUBE HOUSING			
E. OTHER			

1. PHASE: ☐ SINGLE ☐ THREE PHASE ☐ CONSTANT POTENTIAL

2. ☐ MOBILE ☐ FIXED ☐ LUGGAGE ☒ SPECIAL PURPOSE (*Specify*)

3. DATE OF LAST SURVEY: N/A

II. PERSONNEL CONTACTED

	NAME	RANK	TITLE
A			
B			
C			
D			
E			

III. ENVIRONMENTAL CONDITIONS AND MDH SETTINGS

A. BAROMETRIC PRESSURE (*Millibars*)	B. MDH PULSE FRACTION THRESHOLD

IV. RADIOGRAPHERS

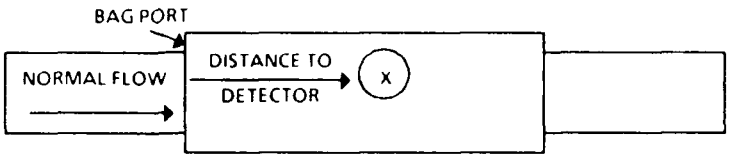
	NAME	RANK	COURSE NUMBER	DATE GRADUATED
A				
B				
C				
D				
E				
F				
G				
H				
I				
J				

V	MONITORING INSTRUMENTS *(Used During Survey(s))*		
MANUFACTURER	MODEL	SERIAL NUMBER	CALIBRATION DATE
1			
2			
3			
4			

DOSIMETERS	YES	NO	N A
1 Required			
2 Type used ☐ TLD ☐ POCKET ☐ OTHER *(Specify)*			
3 One per operator?			
4 Worn during operation?			
5 Stored properly with control?			
VI SAFETY REQUIREMENTS			
A EMISSIONS			
1 Any point the outside external surface does not exceed 0 5 mR/hr (Also see scatter measurements, Pages 2 3 and 4)			
2 Above measurements made a maximum X ray exposure/including open door(s)			
B DOORS			
1 Has permanent floor			
C PORTS AND APERTURES			
1 Insertion of any part of human body, through any port into 1° beam is not possible			
2 Through any aperture is not possible			
D INTERLOCKS			
1 Each door has a minimum of 2 safety interlocks *(one, when door opens, causes disconnection to high voltage generator)*			
2 Each access panel has at least one safety interlock			
3 X-rays cannot be resumed except by initialing control(s) *(Not safety interlock or main power control)*			
4 One safety interlock will always continue working, not withstanding the failure of any single component in the cabinet system			
E GROUND FAULT			
1 Ground fault will not result in generation of X-rays			
F CONTROLS AND INDICATORS			
1 A keyed activated control is present *(Without key, X-rays are not possible)*			
2 A control is present to initiate and terminate the generation of X rays			
3 Two independent "X-ray on" indicators are present			
a One may be mA indicator labeled "tube current"			
b Other(s) must be labeled X-Ray ON			
4 One indicator *(No 3 above)* is visible from each door, panel and post (The indicator must also be labeled X RAY ON)			
G WARNING LABELS			
1 At "control location" is label saying **CAUTION** X-RAYS PRODUCED WHEN ENERGIZED			
2 At each part is a label saying **CAUTION** DO NOT INSERT ANY PART OF THE BODY WHEN SYSTEM IS ENERGIZED-X-RAY HAZARD			
H OPERATOR PRESENCE			
1 Operator can see all parts/doors during X ray operation			
2 Operator can terminate the exposure at any time			
I MODIFICATION			
1 Modification of unit must be performed by certified manufacturer and rectify unit in accordance with 1016 2 and 1010 3 of 21 CFR			
J ADDITIONAL REQUIREMENTS			
1 Operating instructions provided by manufacturer **NOTE:** Must include information regarding kVp, mA, duty cycle, safety, precautions and maintenance times			

VI. SAFETY REQUIREMENTS *(Continued)*	YES	NO	N A
J ADDITIONAL REQUIREMENTS *(Continued)*			
2 X-ray tube utilization log *(for maintenance purposes)*			
a Date of first/last usage			
b Date(s) of maintenance conducted			
3 Interlocks tested			
a All function properly			
b Interval tested ☐ Daily ☐ Weekly ☐ Monthly ☐ Yearly			

VII .TUBE OUTPUT



X-RAY UNIT TRIAL	kVp	mA	TIME *(seconds)*	* SCD *(inches)*	PHANTOM USED	DISTANCE TO DETECTOR (X)	mR/hr *(Exposure)*
1							
2							
3							
4							

INSTRUMENT USED:

* Source to Chamber Distance

VIII. WORKLOAD *(Estimated)*

MAX kVp	TYPICAL mA	BEAM-ON TIME/WEEK
		HRS.

IX. LOCATION OF EQUIPMENT AND EMISSIONS

1 **NOTE**: Show location of baggage handler, permanent staff and general public. Also show position of labels, controls, tube, monitor, indicators and warning lights

SHOW NORTH

LOCATION SKETCH *(Not to Scale)*

IX. **LOCATION OF EQUIPMENT AND EMISSIONS** (Continued)

2 **NOTE:** B - E shows location of emissions by side

B WHICH WALL? ☐ N ☐ S ☐ E ☐ W	kVp	mA

FRONT VIEW SEEN FROM OUTSIDE

C WHICH WALL? ☐ N ☐ S ☐ E ☐ W	kVp	mA

FRONT VIEW SEEN FROM OUTSIDE

IX. **LOCATION OF EQUIPMENT AND EMISSIONS** (Continued)

2 **NOTE**: B - E shows location of emissions by side (Continued)

D WHICH WALL? ☐ N ☐ S ☐ E ☐ W	kVp	mA

FRONT VIEW SEEN FROM OUTSIDE

E WHICH WALL? ☐ N ☐ S ☐ E ☐ W	kVp	mA

FRONT VIEW SEEN FROM OUTSIDE

X. **OBSERVATIONS AND REMARKS FOR FACILITY IN BLDG _____, ROOM _____.**

DATA FOR THIS FACILITY ARE PROVIDED IN ATTACHMENT _____.

FREQUENCY: Leak Tests (✓) conducted January and July semi-annually Scheduled within 2 weeks of 1st day of the Month

LEAK TESTS AND SUMMATION OF SOURCE ACTIVITY

ACTION LEVEL C14 = < 5 pCi
ALL OTHERS = < 50 pCi

SOURCE AND TYPE	CALIB. DATE	ACTIVITY	ID NUMBER	ROOM	OCT 1987	ACTIVITY SUM MATION	JAN 1988	APR 1988	JUL 1988	OCT 1988	ACTIVITY SUM MATION	JAN 1989	APR 1989	JUL 1989	OCT 1989	ACTIVITY SUM MATION	JAN 1990	APR 1990	JUL 1990	OCT 1990	ACTIVITY SUM MATION
1 Flood Source Co-57	4-15-78	2 mCi	2071	D-10																	
2 LEOV Fld Source Co-57	10-15-84	5 mCi	3911084E -01	D-10																	
3 Calib Source Co-57	5-25-82	1 09 mCi	3520582A -05	D-10																	
4 LEOV Fld Source Co-57	3-15-81	2 mCi	3900381B -01	D-10																	
5 LEOV Fld Source Co-57	7-15-82	2 mCi	3900782C -03	D-10																	
6 Calib Source Co-57	1 29 79	299 uCi	3510179A -24	D-10																	
7 Calib Source Co-57	7 30-84	5 0 mCi	2060784A -26	D-10																	
8 Calib Source Cs 137	2 1 79	210 uCi	3560279A -47	D-10																	
9 Calib Source Cs-137	6-1-72	1 mCi	2FA	D-10																	
10 Calib Source Ba-133	2-22-79	274 uCi	3580279B -08	D-10																	
11 Calib Source Ba 133	3 1 85	1 043 mCi	130-112	D-10																	
12 Night Vision Tester C 14		1 6 mCi	1310	Flight Surgeon's Office																	
13 Calib Source Co-60	2 2 79	51 uCi	340279A -15	D-10																	
14																					
15																					
16																					
17																					
INITIALS OF SURVEYOR ⟶																					

FREQUENCY: Quarterly, Jan, Apr, Jul, Oct, within 2 weeks of first of month

QUARTERLY INVENTORY OF SEALED SOURCES

SOURCE	CALIB. DATE	ACTIVITY (uCi)	ID NUMBER	OCT 1987	JAN 1988	APR 1988	JUL 1988	OCT 1988	JAN 1989	APR 1989	JUL 1989	OCT 1989	JAN 1990	APR 1990	JUL 1990	OCT 1990	JAN 1991	APR 1991	JUL 1991	OCT 1991	JAN 1992	APR 1992	JUL 1992	OCT 1992
1 Cs 137	No Date	0 8 1 0	162068																				
2 Cs-137	No Date	0 8-1 0	162068																				
3 Cs 137	No Date	0 8-1 0	251194																				
4 Cs-137	Apr 1971	0 1	184642																				
5 Co-57 (2)	9-1-72	9 5	188041																				
6 Co 57 (3)	10-15-79	9 5	188041																				
7 Eu 152 (4)	No Date	0 5	3CG/4CN 152/154																				
8 I-129	No Date	0 1	Z900																				
9 I-129	No Date *(Broken Tip)*	0 1	C2372																				
10 I-129	No Date	0 1	A265B																				
11 Ba-133	8-26-82	0 1070	138S																				
12 Am-241	1-1 83	10 7	10132																				
13 Cs-137	8-1-83	10 617	10788-2																				
14 Am-241	8-1 83	10 045	10788-1																				
15 Cs-137	8-1-83	11 321	10788-3																				
16 I-125	8-15-83	10 05	10788-4																				
17 I-125 (NBS)	10-15-83	11 48	10948																				
18 I 129	12-1-83	4 38	10803																				
19 Co-57	9-17-86	0 121	NES-137A																				
20 I-129	3 3-86	0 0142	NES-222-030386																				
21 I-129	3-3-86	0 0148	NES-222-030386																				
22 Cs-137	4 22-86	0 101	NES 139A-042286-005																				
23 ba 133	9 15 87	0 103	No # *(Browntip)*																				
INITIALS OF SURVEYOR →																							

FREQUENCY Quarterly, Jan, Apr, Jul, Oct, within 2 weeks of first of month

QUARTERLY INVENTORY OF SEALED SOURCES

SOURCE AND TYPE	CALIB DATE	ACTIVITY	ID NUMBER	ROOM	JAN 1988	APR 1988	JUL 1988	OCT 1988	JAN 1989	APR 1989	JUL 1989	OCT 1989	JAN 1990	APR 1990	JUL 1990	OCT 1990	JAN 1991	APR 1991	JUL 1991	OCT 1991	JAN 1992	APR 1992	JUL 1992	OCT 1992
1 Flood Source Co-57	4-15-78	2 mCi	2071	D-10																				
2 LEOV Fld Source Co-57	10-15-84	5 mCi	3911084E-01	D-10																				
3 Calib Source Cs-137	2-1-79	2 10 uCi	3560279A-47	D-10																				
4 Calib Source Ba-133	2-22-79	274 uCi	35802798-08	D-10																				
5 Calib Source Co-60	2-2-79	51 uCi	340279A-15	D-10																				
6 Calib Source Co-57	5-25-82	1 09 uCi	3520582A-05	D-10																				
7 Calib Source Cs-137	6-1-72	1 mCi	2FA	D-10																				
8 LEOV Fld Source Co-57	3-15-81	2 mCi	39003818-01	D-10																				
9 LEOV Fld Source Co-57	7-15-82	2 mCi	3900782C-03	D-10																				
10 Calib Source Co-57	1-29-79	299 uCi	3510179A-24	D-10																				
11 Calib Source Co-57	7-30-84	5 0 mCi	2060784A-26	D-10																				
12 Calib Source Ba-133	3-1-85	1 043 mCi	130-112	D-10																				
13 Night Vision Tester C-14		1 6 mCi	1310	Flight Surgeon's Office																				
14																								
15																								
16																								
17																								
INITIALS OF SURVEYOR →																								

USAF MED CEN SCOTT Form 300/2, NOV 87

INVENTORY OF SEALED SOURCES EQUAL TO/OR GREATER THAN 100 uCi

SMALL SOURCE RADIOACTIVE MATERIAL PERMIT(S) REPORT *(In House Inspection)*	PERMIT NUMBER			DATE	MEDICAL FACILITY USAF MEDICAL CENTER, SCOTT SCOTT AFB IL 62225-5300

	N/A	YES	NO	REFERENCE	COMMENTS
1 Was permit documentation in order?				AFR 161 16	
a Was a current complete set of original documents on file with each user?				AFR 161 16	
b Were operating instructions and procedures manuals available and current?				Specific conditions of permit (*10CFR30 34*)	
2 Were facilities adequate in workplaces where sources were used?					
a Were facilities configured as required?				10CFR30 34	
b Was access to radiation/source storage areas controlled as required, e g , limited to authorized persons and locked when unattended?				10CFR30 34 10CFR20 203 10CFR20 204	
3 Were radioactive sources properly controlled and accounted for?				10CFR30 34 10CFR20 203 10CFR20 204 10CFR20 207	
a Were periodic inventories of all sources properly conducted and documented (*normally quarterly*)?				10CFR30 34 10CFR35 14 10CFR34 26	
b Were procedures available to ensure only authorized quantities of radioactive materials were received and maintained?				10CFR30 34	
4 Did the management programs include a self-inspection program?				AFR 123-1	
a Were self-inspections documented?				AFR 123 1	
b Were deficiencies found in self-inspection corrected?				AFR 123-1, para 1-4p(3)(d)	
5 Had a formal ALARA program been established?				10CFR20 1(c) AFMSC/SGPA Ltr 17 Oct 84	
a Was there written program documentation?				AFMSC/SGPA Ltr 17 Oct 84	
b Did it include annual review of the radiation safety program, personnel monitoring results, and RPO surveys?				AFMSC/SGPA Ltr 17 Oct 84	
6 Were posting and labeling requirements complied with?				10CFR19 11 10CFR20 203 10CFR20 204 10CFR21 6	
a NRC Form 3?				10CFR 19 11	
b Notice of availability of license/regulations/procedures?				10CFR19 11	
c Radiation area radioactive material signs/labels on rooms/cabinets/containers?				10CFR20 203 10CFR20 408	
7 Were workers properly instructed?				10CFR19 12 10CFR20 206	
a Were training programs adequate to keep all proficient in radiation protection practices?				10CFR30 34 10CFR19 12 10CFR20 206	
b Were training records kept for persons requiring instruction?				10CFR30 34	

SMALL SOURCE RADIOACTIVE MATERIAL PERMIT(S) REPORT *(In House Inspection) (Continued)*					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
8 Were workers provided radiation exposure results in writing?				10CFR19 13	
a Were worker exposures within limits?				10CFR20 101 10CFR20 103 10CFR20 104	
b Was a prior radiation history review documented on new workers?				10CFR20 102	
9 Were annual surveys of sources accomplished by the RPO?				AFR 161-33, para 4-4a(2) AFOSH 161-17, para B3 10CFR20 201	
10 Were required operator logs kept?				10CFR30 34	
11 Were incidents and accidents properly documented and reported?				AFR 161 16 10CFR19 13 10CFR20 402 10CFR20 403 10CFR20 404 10CFR21 21	
12 Was radiation monitoring adequate?				10CFR30 34 10CFR20 201 10CFR20 202 10CFR20 203 10CFR20 205	
a Was required equipment available?				10CFR30 34	
b Was equipment properly maintained?				10CFR30 34	
c Were appropriate radiation survey instruments available and properly calibrated?				10CFR30 34	
d Were adequate numbers of pocket dosimeters available if required?				10CFR30 34	
e Were area surveys done in all required locations and documented?				10CFR30 34 10CFR20 103 10CFR20 201 10CFR20 203 10CFR20 401	
f Were radiation levels in restricted and unrestricted areas within limits?				10CFR20 101 10CFR20 105 10CFR20 203	
g Were leak tests made at required intervals and results recorded?				10CFR30 34	
h Was proper notification and disposition made of leaking sources?				10CFR30 34 10CFR20 205 10CFR20 301 10CFR20 311	
i Were containers of radioactive materials properly labeled (*nuclide, activity, date*)?				10CFR20 203	
13 Were personnel resources adequate?				Information	
a Was the radiation protection officer *(RPO)* properly designated?				Information	
b Was staffing adequate to satisfy requirements?				10CFR30 34	

SMALL SOURCE RADIOACTIVE MATERIAL PERMIT(S) REPORT *(In House Inspection) (Continued)*					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
14 Was radioisotope receipt proper?				10CFR20 205	
a Were written procedures available for receiving and opening packages?				10CFR30 34	
b Was documentation of package receipt and survey available?				10CFR20 401 10CFR30 51 10CFR40 61 10CFR70 51	
15 Were packages of radioisotopes properly prepared and shipped?				10CFR20 311 10CFR71 49CFR	
a Were proper containers used?				10CFR71	
b Were containers properly marked and labeled?				10CFR20 311 10CFR71	
c Were surveys conducted to document proper labeling?				10CFR71	
d Were shipping documents prepared and a copy kept of confirmation that materials were received?				10CFR20 311 10CFR 71	
e Was shipment by an appropriate mode and carrier *(government or commercial carrier other than US mail)*?				10CFR71	
16 Was disposal of radioisotopes proper?				10CFR30 34 10CFR20 301 10CFR20 302 10CFR20 303 10CFR20 305 10CFR20 306 10CFR20 311	
a Were there written procedures for radioactive waste disposal?				10CFR30 34	
b Was a disposal log kept to show quantity, type, and method of disposal *(decay, transfer)*?				10CFR20 301 10CFR20 302 10CFR20 311 10CFR20 401 10CFR30 51 10CFR40 61 10CFR70 51	
17 Were the administrative aspects of radioactive material transfer proper?				10CFR20 311 10CFR20 401 10CFR30 41	
a Was transfer only to authorized recipients *(only to other permit or NRC license holders)*?				10CFR30 41 10CFR40 61 10CFR70 51	
b Were records of transfers kept?				10CFR30 51 10CFR40 61 10CFR70 51	
18 Were devices/outer containers, storage containers and source changers locked?				10CFR34 22	

INSPECTORS NOTES:

1 Be sure to identify specifics of noncompliance

2 Assess noncompliances as to NRC severity levels, levels I-III automatically - 1 unsatisfactory

3 References to 10CFR30 34 reflect the requirement to comply with specific conditions of license/permit including representations made in application

GENERAL USAF RADIOACTIVE MATERIAL PERMITS *(In House Inspection)*	PERMIT NUMBER		DATE	MEDICAL FACILITY USAF MEDICAL CENTER, SCOTT SCOTT AFB IL 62225-5300

	N.A	YES	NO	REFERENCE	COMMENTS
1. Were facilities adequate?					
a. Were facilities configured as required?				Specific conditions of permit *(10CFR 30.34)*	
b. Was access to radiation source storage areas controlled as required (e.g., limited to only authorized persons and locked when unattended)?				10CFR30.34 10CFR20.203 10CFR20.204	
c. Were alarm devices and interlocks functioning properly?				10CFR30.34 10CFR20.203	
d. Were records kept of periodic tests of alarms and interlocks?				10CFR30.34 10CFR20.203	
2. Were radioactive sources properly controlled and accounted for?				10CFR30.34 10CFR20.203 10CFR20.204 10CFR20.207	
a. Were periodic inventories of all sources properly conducted and documented *(normally quarterly)*?				10CFR30.34 10CFR35.14 10CFR34.26	
b. Were procedures available to ensure only authorized quantities of radioactive materials were received and maintained?				10CFR30.34	
3. Did the management programs include a self-inspection program?				AFR 123-1	
a. Were self-inspections documented?				AFR 123-1	
b. Were deficiencies found in self-inspections corrected?				AFR 123-1 para 1-4p(3)(d)	
4. Had a formal ALARA program been established?				10CFR20.1(c) AFMSC/SGPA Ltr 17 Oct 84	
a. Was there written program documentation?				AFMSC/SGPA Ltr 17 Oct 84	
b. Did it include annual review of the radiation safety program, personnel monitoring results, and RPO surveys?				AFMSC/SGPA Ltr 17 Oct 84	
5. Were operating instructions and procedure manuals available and current?				10CFR30.34 Recommended practice	
6. Was permit documentation available and current?				AFR 161-16	
7. Were posting and labeling requirements complied with?				10CFR19.11 10CFR20.203 10CFR20.204 10CFR21.6	
a. NRC Form 3?				10CFR19.11	
b. Notice of availability of license/regulations/procedures?				10CFR19.11	
c. Radiation area/radioactive material signs/labels on rooms/cabinets/containers?				10CFR20.203 10CFR20.408	

GENERAL USAF RADIOACTIVE MATERIAL PERMITS *(In House Inspection) (Continued)*					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
8 Were workers properly instructed?				10CFR19 12 10CFR20 206	
a Were training programs adequate to keep all proficient in radiation protection practices?				10CFR30 34 10CFR19 12 10CFR20 206	
b Were training records kept for persons requiring instruction?				10CFR30 34	
9 Were workers provided radiation exposure results in writing?				10CFR19 13	
a Were worker exposures within limits?				10CFR20 101 10CFR20 103 10CFR20 104	
b Was a prior radiation history review documented on new workers?				10CFR20 102	
10 Were annual surveys of sources accomplished by the RPO?				AFR 161-33 para 4-4a(2) AFOSH 161-17 para B3 10CFR20 201	
11 Were required operator logs kept?				10CFR30 34	
12 Were incidents and accidents properly documented and reported?				AFR 161-16 10CFR19 13 10CFR20 402 10CFR20 403 10CFR20 404 10CFR21 21	
13 Was radiation monitoring adequate?				10CFR30 34 10CFR20 201 10CFR20 202 10CFR20 203 10CFR20 205	
a Was required equipment available?				10CFR30 34	
b Was equipment properly maintained?				10CFR30 34	
c Were appropriate radiation survey instruments available and properly calibrated?				10CFR30 34	
d Were adequate numbers of pocket dosimeters available if required?				10CFR30 34	
e Were area surveys done in all required locations and documented?				10CFR30 34 10CFR20 103 10CFR20 201 10CFR20 203 10CFR20 401	
f Were radiation levels in restricted and unrestricted areas within limits?				10CFR20 101 10CFR20 105 10CFR20 203	
g Was air sampling performed and documented as required?				10CFR30 34 10CFR20 103 10CFR20 401	
h Was any required bioassay program properly conducted and results documented?				10CFR30 34 10CFR20 103 10CFR20 108	
i Was any required respiratory protection program properly conducted and documented?				10CFR20 103 AFOSH Std 161-1	

GENERAL USAF RADIOACTIVE MATERIAL PERMITS *(In House Inspection) (Continued)*					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
13 Was radiation monitoring adequate? *(Continued)*					
j Were environmental monitoring requirements met and documented?				10CFR30 34 10CFR20 106 10CFR20 401	
k Were leak tests made at required intervals and results recorded?				10CFR30 34	
l Was proper notification and disposition made of leaking sources?				10CFR30 34 10CFR20 205 10CFR20 301 10CFR20 311	
m Were containers of radioactive materials properly labeled *(nuclide, activity, date)*?				10CFR20 203	
14 Were personnel resources adequate?				Information	
a Was the radiation protection officer *(RPO)* properly designated?				Information	
b Was staffing adequate to satisfy requirements?				10CFR30 34	
15 Was radioisotope receipt proper?				10CFR20 205	
a Were written procedures available for receiving and opening packages?				1-CFR30 34 10CFR20 205	
b Was documentation of package receipt and survey available?				10CFR20 401 10CFR30 51 10CFR40 61 10CFR70 51	
16 Were packages of radioisotopes properly prepared and shipped?				10CFR20 311 10CFR71 49CFR	
a Were proper containers used?				10CFR71	
b Were containers properly marked and labeled?				10CFR20 311 10CFR71	
c Were surveys conducted to document proper labeling?				10CFR71	
d Were shipping documents prepared and a copy kept of confirmation that materials were received?				10CFR20 311 10CFR71	
e Was shipment by an appropriate mode and carrier? *(Government or commercial carrier other than US Mail)*?				10CFR71	
17 Was disposal of radioisotopes proper?				10CFR30 34 10CFR20 301 10CFR20 302 10CFR20 303 10CFR20 305 10CFR20 306 10CFR20 311	
a Were there written procedures for radio active waste disposal?				10CFR30 34	
b Was a disposal log kept to show quantity, type, and method of disposal *(decay, sewer, transfer)*?				10CFR20 301 10CFR20 302 10CFR20 311 10CFR20 401 10CFR30 51 10CFR40 61 10CFR70 51	

GENERAL USAF RADIOACTIVE MATERIAL PERMITS *(In House Inspection) (Continued)*					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
17. Was disposal of radioisotopes proper? *(Continued)*					
c. If disposal made to sewer, were release quantities and concentrations properly computed based on sewage flows?				10CFR30.34 10CFR20.303	
18. Were the administrative aspects of radioactive material transfer proper?				10CFR20.311 10CFR20.401 10CFR30.41	
a. Was transfer only to authorized recipients *(only to other permit or license holders)*?				10CFR30.41 10CFR40.61 10CFR70.51	
b. Were records of transfers kept?				10CFR30.51 10CFR40.61 10CFR70.51	
19. Were devices/outer containers, storage containers and source changers locked?				10CFR34.22	
20. Were source changes made only by licensed individuals?				10CFR34.25	
21. Were facility alarm tests done at 3-month intervals?				10CFR34.29	
22. Were radiation levels from devices within limits *(200mR/hr surface, 50mR/hr@6")*				10CFR34.21	
23. Were pocket dosimeters read daily *(when source in use)* and results documented?				10CFR34.33	
24. Were written emergency/operating procedures available and review by radiographers/assistants documented?				10CFR34.31 10CFR34.32	
25. Were annual tests of pocket dosimeter response documented?				10CFR34.33	
26. Were daily and 3-month internal inspections, to include maintenance and servicing of equipment documented?				10CFR34.11 10CFR34.28 10CFR34.32	
27. Was there documentation of written examinations for radiographer training?				10CFR34.31	
28. Were source utilization logs kept documenting each radiographer site dates used and field survey results?				10CFR34.27	
29. Were shipping documents prepared each time source transported to work sites?				10CFR71	
30. Was transport vehicle properly placarded?				10CFR71	

INSPECTORS NOTES

1. Be sure to identify specifics of noncompliance
2. Assess noncompliances as to NRC severity levels. Levels I, II automatically = unsatisfactory
3. References to 10CFR30.34 reflect the requirement to comply with specific conditions of license/permit including representations made application
4. Items 19-30 apply to industrial radiography only

PERMIT COMPLIANCE IN NUCLEAR MEDICINE *(In House Inspection)*	PERMIT NUMBER		DATE	MEDICAL FACILITY USAF MEDICAL CENTER, SCOTT SCOTT AFB IL 62225-5300

	N/A	YES	NO	REFERENCE	COMMENTS
1 Were facilities adequate?				JCAH Nuc Med Svc Std II	
a Was space configured as required?				Specific conditions of permit *(10CFR 30 34)* JCAH Nuc Med Svc Std II	
b Was access to radiation/source storage areas controlled as required, e g , limited to only authorized persons and locked when unattended?				10CFR30 34 10CFR20 203 10CFR20 204	
c Was the hot lab separated from the patient area?				10CFR30 34 JCAH Nuc Med Svc Std II	
d Was a suitable waste storage area provided *(shielded, secured, etc)*?				10CFR30 34 JCAH Nuc Med Svc Std II, III	
e Were patient restrooms provided?				10CFR30 34 JCAH Nuc Med Svc Std II	
f Were patient dressing rooms available if required?				10CFR30 34 JCAH Nuc Med Svc Std II	
g Was the dose preparation area shielded to include a body shield for the technician?				10CFR30 34 JCAH Nuc Med Svc Std II, III	
h Was adequate provision made for storage of generators and brachytherapy sources?				10CFR30 34 10CFR20 203 10CFR20 207	
2 Did the management programs include a self-inspection program?				AFR 123-1	
a Were self inspections documented?				AFR 123/1	
b Were deficiencies identified in self-inspections corrected?				AFR 123-1 AFR 123-1, p 1-4p(3)(d)	
3 Did a formal ALARA program exist?				10CFR20 1 JCAH Nuc Med Svc Std III AFMSC/SGPA Ltr 1 7 Oct 84	
a Were annual reviews adequately documented in radiation safety committee minutes?				10CFR35 11	
b Did reviews address personnel dosimetry results, status of the radiation safety program, and area survey results?				10CFR 35 11 10CFR20 20 AFR 161-33 AFMSC/SGPA Ltr 17 Oct 84	
4 Were personnel resources adequate?				Information	
a Were authorized vs assigned numbers of personnel appropriate for the workload?				Information	
b Was the RPO appropriately appointed?				10CFR35 14	
c Was an attending medical physicist identified?				JCAH Nuc Med Svc Std I	
d Were technicians properly trained *(phase II nuc med graduates)*?				10CFR 35 14 JCAH Nuc Med Svc Std I	

PERMIT COMPLIANCE IN NUCLEAR MEDICINE *(In House Inspection) (Continued)*					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
5 Was the radiation safety committee properly functioning?				10CFR30 33 10CFR35 11(b) JCAH Nuc Med Svc Std III, V	
a Was it properly composed with user, nursing and executive management representatives, and RPO?				10CFR35 11(b) JCAH Nuc Med Svc Std III	
b Had it reviewed and approved individual users by name if authorized by permit?				10CFR35 11(b) JCAH Nuc Med Svc Std III	
c Reviewed and approved requests for use of isotopes?				10CFR35 11(b) JCAH Nuc Med Svc Std III	
d Reviewed radiation safety program and procedures annually?				10CFR35 11(b) JCAH Nuc Med Svc Std III, V	
e Met at least quarterly?				JCAH Nuc Med Svc Std III	
6 Was permit documentation readily available and in order?				10CFR35 2 10CFR20 401 JCAH Nuc Med Svc Std I	
7 Was there an NRC compliance inspection since the last HSMI?				Information	
8 Were all noncompliances corrected?				10CFR30 34	
9 Were operating instructions and procedures manuals available and current?				10CFR30 34	
a Was pipeting by mouth prohibited?				10CFR35 14 JCAH Nuc Med Svc Std III	
b Were smoking and eating prohibited in radiation controlled areas?				10CFR35 14 JCAH Nuc Med Svc Std III	
10 Were radioactive sources properly controlled and accounted for?				10CFR30 34 10CFR20 203 10CFR20 204 10CFR20 207	
a Were sources properly labeled and dated *(isotope, curies and assay date)*?				10CFR35 14 10CFR20 203 JCAH Nuc Med Svc Std III	
b Were quarterly source inventories documented?				10CFR35 14	
c Were procedures available to ensure only authorized quantities of radioactive materials were received and maintained?				10CFR30 34 JCAH Nuc Med Svc Std I	
11 Was radioisotope receipt proper?				10CFR20 205	
a Were written procedures available for receiving and opening packages?				10CFR30 34 10CFR20 205	
b Were isotopes delivered direct to nuclear medicine?				10CFR30 34 10CFR20 205	
c After duty hours, were adequate security procedures available for receipt of isotopes?				10CFR30 34 10CFR20 203 10CFR20 207	

PERMIT COMPLIANCE IN NUCLEAR MEDICINE *(In House Inspection) (Continued)*					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
11 Was radioisotope receipt proper? *(Continued)*					
d Was documentation of package receipt and survey available?				10CFR20 401 10CFR30 51 10CFR40 61 10CFR70 51 JCAH Nuc Med Svc Std IV	
12 Were posting and labeling requirements complied with?				10CFR19 11 10CFR20 203 10CFR20 204 10CFR21 6	
a NRC Form 3?				10CFR19 11	
b Notice of availability of license/regulations/ procedures?				10CFR19 11	
c Radiation area/radioactive material signs/labels on rooms/cabinets/containers?				10CFR20 203 10CFR20 408	
13 Were workers properly instructed?				10CFR19 12 10CFR20 206	
a Were training programs adequate to keep all proficient in radiation protection practices?				10CFR30 34 10CFR19 12 10CFR20 206	
b Were training records kept for persons requiring instruction?				10CFR30 34	
14 Were workers provided radiation exposure results in writing?				10CFR19 13	
a Were worker exposures within limits?				10CFR20 101 10CFR20 103 10CFR20 104	
b Was a prior radiation history review documented on new workers?				10CFR20 102	
15 Were monthly surveys of sources accomplished by the RPO?				AFR 161-33 para 4-4a(2) AFOSH 161 17 para B3 10CFR20 201	
16 Were area surveys performed?				10CFR30 34 10CFR20 201 JCAH Nuc Med Svc Std III	
a Were daily surveys performed by technicians for elution, preparation, and injection areas?				10CFR30 34 Recommended Practice	
b Were weekly surveys performed by technicians of waste storage and lab areas?				10CFR30 34 Recommended Practice	
c Did documentation exist showing swipe results, survey meter readings, as well as actions taken to decontaminate any area over 200dpm/100cm2				10CFR30 34 1-CFR20 401 JCAH Nuc Med Svc Std IV	
d Was gas proportional or liquid scintillation available for swipe analysis?				10CFR30 34 Recommended Practice	
e If swipe analysis was not available locally, was a certified lab service available?				10CFR30 35	
17 Was personal protective equipment used when required?				10CFR30 34	

PERMIT COMPLIANCE IN NUCLEAR MEDICINE *(In House Inspection) (Continued)*					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
18 Were syringe shields used when appropriate?				10CFR30 34 10CFR35 14(a)(3) JCAH Nuc Med Svc Std III	
19 Were patient doses assayed?				10CFR30 34 10CFR35 14(a)(3)	
20 Was measurement made for Mo-99 breakthrough?				10CFR35 14(b)(4)	
21 Was the dose calibrator properly calibrated?				10CFR30 34 JCAH Nuc Med Svc Std III	
a Daily constancy using 2 sources?				10CFR30 34 10CFR35 14 10CFR35 31 JCAH Nuc Med Svc Std III	
b Biannual accuracy with 3 NBS traceable sources?				10CFR30 34 10CFR35 14 10CFR35 31 JCAH Nuc Med Svc Std III	
c Quarterly linearity using decay?				10CFR30 34 10CFR35 14 10CFR35 31	
d Geometric variation?				10CFR30 34 10CFR35 14 10CFR35 31	
22 Was diagnostic equipment *(gamma camera, thyroid probe, well counter, etc.)* calibrated?				10CFR30.34 10CFR35 14 10CFR35 31 JCAH Nuc Med Svc Std III	
23 Were procedures for control of radioactive gases proper?				10CFR30 34	
a Were ventilation surveys made?				10CFR30 34	
b Were charcoal traps surveyed?				10CFR30 34	
c Were emergency procedures posted in case of accidental Xe-133 release?				10CFR30 34	
24 Were incidents and accidents *(including misadministrations) properly documented and reported?*				AFR 161-16 10CFR19 13 10CFR20 402 10CFR20 403 10CFR20 404 10CFR21 21 10CFR35 41-35 44	
25 Was radiation monitoring adequate?				10CFR30 34 10CFR20 201 10CFR20 202 10CFR20 203 10CFR20 205	
a Was required equipment available and proper for operations?				10CFR30 34 10CFR35 14 JCAH Nuc Med Svc Std II	
b Was equipment upkeep proper?				10CFR30 34 10CFR35 14	

PERMIT COMPLIANCE IN NUCLEAR MEDICINE *(In House Inspection) (Continued)*					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
25 Was radiation monitoring adequate? *(Continued)*					
c Were proper radiation survey instruments available and in calibration *(daily consistency and annual accuracy)*?				10CFR30 34	
d Were adequate numbers of pocket dosimeters available, if required?				10CFR30 34	
e Were area surveys accomplished and documented for all required locations?				10CFR30 34 10CFR20 103 10CFR20 201 10CFR20 203 10CFR20 401	
f Were radiation levels in restricted and unrestricted areas within limits?				10CFR20 101 10CFR20 105 10CFR20 203	
g Was air sampling performed and documented as required?				10CFR30 34 10CFR20 103 10CFR20 401	
h Was any required bioassay program properly documented?				10CFR30 34 10CFR20 103 10CFR20 108	
i Was any required respiratory protection program properly conducted and documented?				1-CFR20 103 AFOSH Std 161-1	
j Were environmental monitoring requirements met and documented?				10CFR30 34 10CFR20 106 10CFR20 401	
k Were leak tests made at required intervals and documented?				10CFR30 34	
l Was proper notification and disposition made of leaking sources?				10CFR30 34 10CFR20 205 10CFR20 301 10CFR20 311	
m Were personal dosimeters properly issued and used?				AFR 161-28 OEHL Dosimetry Manual JCAH Nuc Med Svc Std III	
26 Were packages of radioisotopes properly prepared and shipped?				10CFR20 311 10CFR71 49CFR	
a Were proper containers used?				10CFR71	
b Were containers properly marked and labeled?				10CFR20 311 10CFR71	
c Were surveys conducted to document proper labeling?				10CFR71	
d Were shipping documents prepared and a copy kept of confirmation that materials were received?				10CFR20 311 10CFR71	
e Was shipment by an appropriate mode and carrier *(government or commercial carrier other than US Mail)*?				10CFR71	
27 Was disposal of radioisotopes proper?				10CFR30 34 10CFR20 301 10CFR20 302 10CFR20 303 10CFR20 305 10CFR20 306 10CFR20 311 JCAH Nuc Med Svc Std III	

PERMIT COMPLIANCE IN NUCLEAR MEDICINE *(In House Inspection) (Continued)*					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
27 Was disposal of radioisotopes proper? *(Continued)*					
a Was an adequate waste storage area designated?				10CFR30 34 JCAH Nuc Med Svc Std III	
b Were materials stored for decay to background properly marked and dated?					
c Were there written procedures for radioactive waste disposal?				10CFR 30 34	
d Was a disposal log kept to show quantity, type, and method of disposal *(decay, sewer, transfer)*?				10CFR20 301 10CFR20 302 10CFR20 311 10CFR20 401 10CFR30 51 10CFR40 61 10CFR70 51 JCAH Nuc Med Svc Std IV	
e If authorized, were liquid wastes properly disposed of in a designated hot sink?				10CFR30 34 10CFR20 203	
f If disposal was via sewer, sewer release quantities and concentrations properly computed based on sewage flow?				10CFR30 34 10CFR20 303	
28 Were the administrative aspects of radioisotope transfer proper?				10CFR20 311 10CFR20 401 10CFR30 41	
a Was transfer only to authorized persons?				10CFR30 41 10CFR40 61	
b Were records of transfer kept?				10CFR70 51	
29 Was the therapeutic use of radiopharmaceuticals controlled?				10CFR35 21 JCAH Nuc Med Svc Std III	
a Were written procedures available for I-131, Au-198 and P-32 administration?				10CFR30 34 10CFR35 14	
b Was proper shielding available for the transport and storage of sources on wards?				10CFR30 34 10CFR20 101 10CFR20 105 10CFR20 203 10CFR20 207 JCAH Nuc Med Svc Std III	
c Were there nursing service instructions for "hot" patients?				10CFR30 34 JCAH Nuc Med Svc Std III	
d Were proper isolation procedures established				10CFR30 34 JCAH Nuc Med Svc Std III	
e Was the patient area surveyed by the RPO periodically?				10CFR30 34 JCAH Nuc Med Svc Std III	
f Were radioactive wastes on wards properly managed?				10CFR20 301- 20 305 JCAH Nuc Med Svc Std III	
g Were there written procedures for patient release?				10CFR30 34 10CFR35 14 JCAH Nuc Med Svc Std III	

PERMIT COMPLIANCE IN NUCLEAR MEDICINE *(In House Inspection) (Continued)*					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
29 Was the therapeutic use of radiopharmaceuticals controlled? *(Continued)*					
h Were considerations made for limiting dose rates in unrestricted areas?				10CFR30 34 10CFR20 101 JCAH Nuc Med Svc Std III	
30 Was the therapeutic use of sealed sources properly managed?				10CFR30 34 10CFR35 21 JCAH Nuc Med Svc Std III JCAH Rad Svc Std III	
a Were there written procedures on handling and use of sources?				10CFR30 34 10CFR35 14 JCAH Nuc Med Svc Std III JCAH Rad Svc Std III	
b Were rooms properly posted and surveys documented?				10CFR30 34	
c Was consideration given to limiting dose rates in unrestricted areas?				10CFR30 34 10CFR20 201 10CFR20 105 JCAH Nuc Med Svc Std II, III	
d Were there adequate nursing service instructions?				10CFR30 34 JCAH Nuc Med Svc Std III JCAH Rad Svc Std III	
e Were there written procedures for recovery of implant sources?				10CFR30 34 10CFR35 14 JCAH Nuc Med Svc Std III	
f Were there written instructions for lost sources, deaths, or emergency surgery in patients?				10CFR30 34 10CFR35 11 JCAH Nuc Med Svc Std III JCAH Rad Svc Std III	
31 Were written emergency spill plans or procedures available?				10CFR30 34 JCAH Nuc Med Svc Std III	
a Were cleanup equipment and materials available?				10CFR30 34	
1b Were appropriate MTF Personnel aware of emergency procedures?				10CFR30 34 JCAH Nuc Med Svc Std III	
c Was an evacuation plan written, if required?				10CFR30 34	
d Were names of responsible individuals posted?				10CFR30 34	
32 Was there a written quantity assurance plan?				AFR 168-13 JCAH Nuc Med Svc Std V	
a Were quality assurance activities documented?				AFR 168-13 JCAH Nuc Med Svc Std V	
b Were daily flood sources used and results documented?				10CFR30 34	

PERMIT COMPLIANCE IN NUCLEAR MEDICINE *(In House Inspection) (Continued)*					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
32 Was there a written quality assurance plan? *(Continued)*					
c Was a multichannel analyzer used to assay isotope purity?				10CFR30 34	
d Was liquid chromatography used to verify chemical purity?				10CFR30 34	
e Had patient doses been evaluated to identify the lest dose consistent with quality images?				10CFR20 1	

COMMENTS

PEER REVIEW FOR NUCLEAR MEDICINE

1. REVIEWER/TITLE

2. DATE OF REVIEW

3. EXAMINATION (*NAME*)/ISOTOPE

4. NUMBER WITHIN TYPICAL DOSE
± 5% = ± 15% =
± 10% =

N = [ ]

TYPICAL DOSE = _____ mCi

NO. / DATE	5. 519 INFORMATION			6. SPECIAL STUDY				7. APPROPRIATENESS OF EXAMINATION	8. AGREE WITH ORIGINAL INTERPRETATION
	PATIENT ID	REFERRING PHYSICIAN	CLINICAL HISTORY	PATIENT CHILD ☐ TEEN ☐ ADULT ☐	DOSE (*mCi*)	IS THIS A DIAG-NOSTIC STUDY?	COULD THIS STUDY BE DONE WITH LESS RADIO ACTIVITY?		

END

DATE

FILMED

DTIC

7-88