BUILDING 89

CLOSEOUT SURVEY REPORT

ENCLOSURE (1)

Section I

HISTORICAL

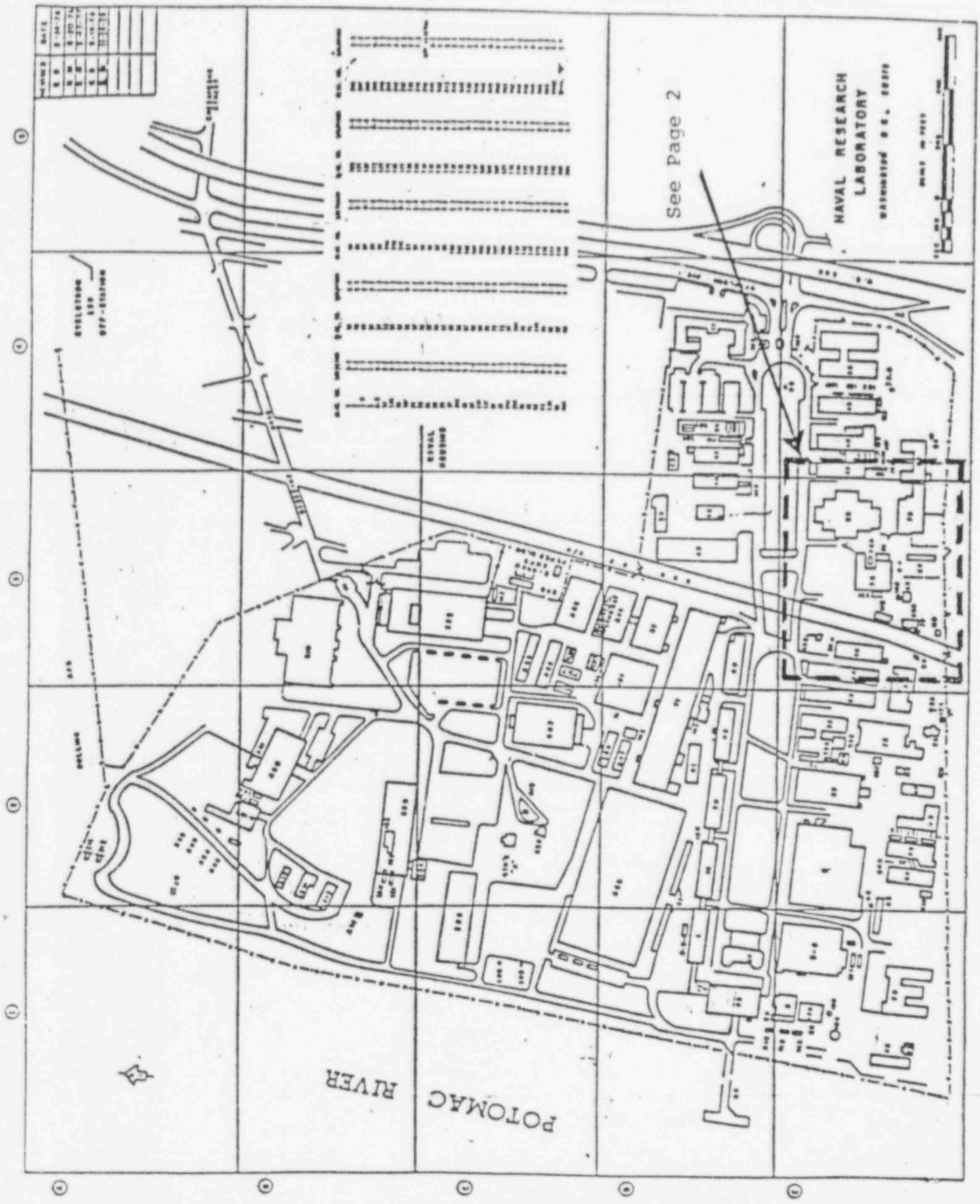
A. From July, 1985 to October, 1985, Afftrex, Ltd. worked at the Naval Research Laboratory, Washington D.C. under Contract no. N00014-85-C-2289. The purpose of this contract was to decontaminate the inactive areas known as Building 89 and "Building 100". The location of these areas are shown in Attachment I.

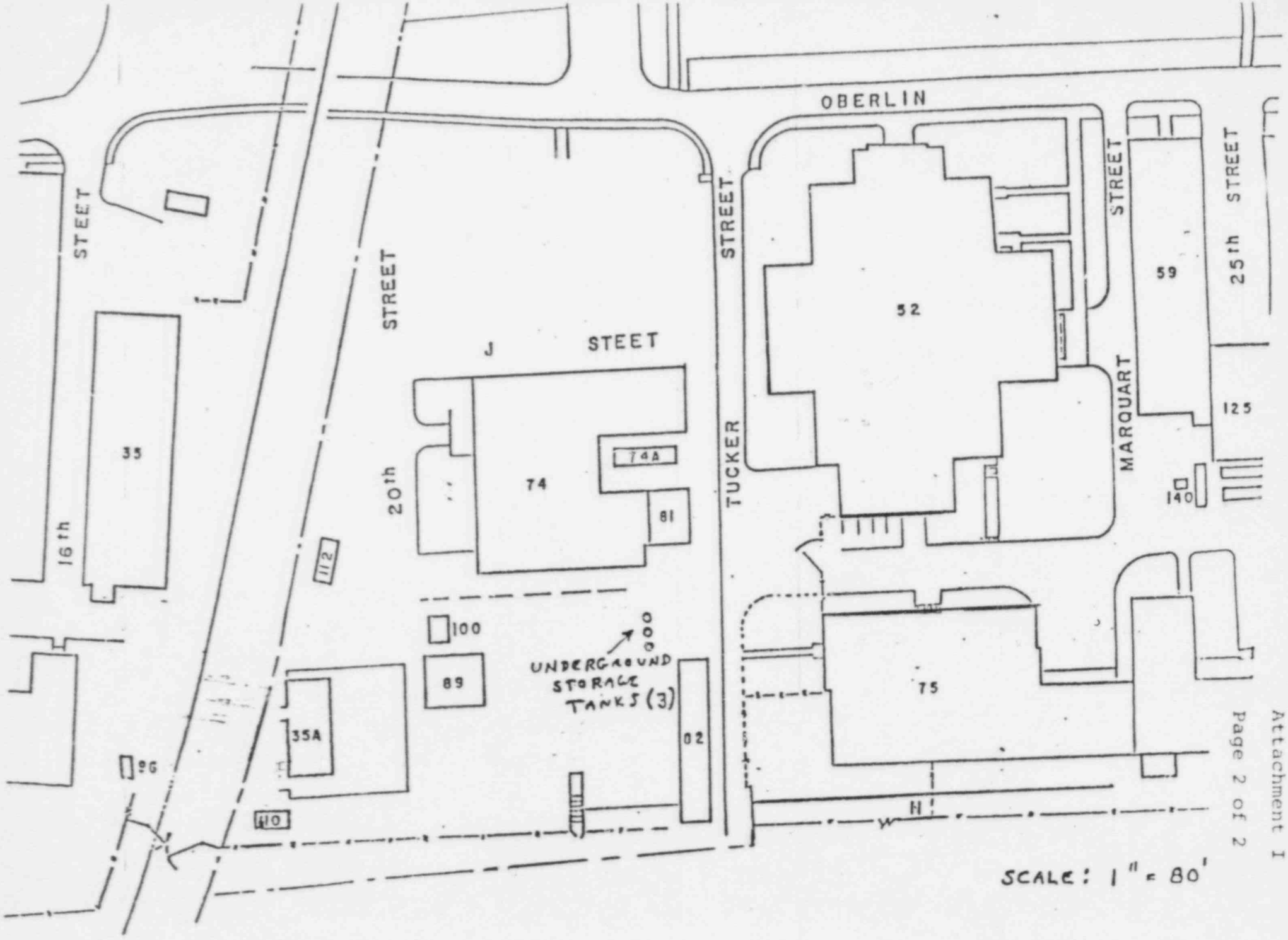
B. "Building 100" was a term which referred to an area, outdoors, which consisted of forty-one (41) steel storage tubes, ten feet deep and various diameters from four to twelve inches. The tubes were flush-mounted at ground level and were contained within an 8 x 12 ft. concrete slab. This was located within the fenced compound surrounding Building 89. These underground tubes were no longer used for radioactive material storage.

C. Building 89 contained two interconnected Hot Cells, as well as an Operating, or Control Room, a Change Room containing sanitary facilities, and a Loading Room which contained the only access doors to the two hot cells. Located in this Loading Room was a laundry facility for anti-contamination clothing. The laundry facility and floor drains from the hot cells all drained into a 600 gallon steel holding tank buried under the concrete outside Building 89. Also located inside the Loading Room were twenty-eight (28) 2.5 inch diameter by 8 feet deep underground storage tubes, flush-mounted in the concrete floor. The two hot cells were connected to a 4000 CFM ventilation system located on the roof of Building 89.None of the facilities of Building 89 were in active use when the decontamination work was begun.

D. Also included in this contract was the removal of three (3) 650 gallon liquid radioactive waste storage tanks located outside the northwest corner of Building 82, also shown in Attachment I. These three tanks had previously been isolated from all other systems in Building 82. The tanks were not connected to the decommissioning of Building 89 / 100 in any way, but were included in this contract because of their proximity to the Building 89 compound.

TABLE OF CONTENTS


See Page 2
NAVAL RESEARCH LABORATORY
POTOMAC RIVER



Attachment I
Page 2 of 2

BUILDING 89
CLOSEOUT SURVEY REPORT

I. INTRODUCTION

The Naval Research Laboratory (NRL) intends to demolish Building 89 and to utilize it, and part of the surrounding area, as a parking lot. In order to prepare the site for unrestricted use, the following objectives were established:

A. Completely decontaminate Building 89 and the associated equipment located within it.

B. Remove and dispose of 28 inground storage tubes inside of Building 89.

C. Remove and dispose of 41 inground storage tubes outside of Building 89. This area is referred to as Building 100.

D. Remove and dispose of 4 underground liquid hold-up tanks (HUT) outside of Building 89.

E. If necessary, remove and dispose of drain lines associated with the various HUTs.

F. No residual contamination exceeding the limits established in paragraph IV shall be left in place. Soil and equipment exceeding the limits shall be disposed of as radiological waste.

Preliminary studies indicated that it would be advantageous to have the required work done by an outside contractor. Afftrex, Ltd., of Finleyville, Pennsylvania, a company specializing in decontamination and health physics services, was awarded a contract to:

A. Survey all areas and equipment associated with the facility.

B. Where possible, decontaminate all areas and associated equipment to levels below established limits.

C. Dispose of all items (including soil) that could not be decontaminated below established limits.

D. Provide a final report to NRL covering the completed work (Appendix B).

II. FACILITIES

A. Building 89

This building was constructed in 1957 and used as a hot cell facility to test irradiated metallurgical specimens until 1965 (page 1 of Appendix A). In addition, the building was also used, at various times, as a radioactive source repository by the Health Physics Staff from 1965 to 1985, and as a laundry facility for contaminated clothing from 1973 to 1985. The building is a one-story structure, 36.5 feet by 41 feet. The exterior walls are hollow concrete blocks, the roof is of flat composition construction, and the floors are concrete covered with fiberglass/epoxy sheathing. Two hot cells within the building are constructed of solid concrete slabs approximately 36 inches thick. In addition to the cells, the building contains two work rooms and restroom facilities. Behind Cell No. 2 were 28 inground steel tubes 8 feet long and 2.5 inches in diameter. These tubes were used for storage of irradiated metallurgical specimens.

B. Building 100

This building was located on the north side of Building 89 (page 2 of Appendix A), and consisted of 41 steel tubes buried in the ground. These tubes were 10 feet in length and varied in diameter from 4 to 12 inches. These tubes were also used to store irradiated metallurgical specimens. Although referred to as a building, there were no structural parts (roof or walls) above ground.

C. Liquid Hold-Up Tanks

1. HUT-89

A 600-gallon steel tank used for holding liquid waste generated in Building 89 operations (page 2 of Appendix A). This tank was located underground on the north side of Building 89. It was rectangular in shape and measured 6 feet x 6 feet x 3 feet. Three penetrations on the sides of the tank served as drain lines for Building 89, and one penetration at the top provided access for a hose line when the contents of the tank were pumped to the sanitary sewer.

2. HUT-82

Three 650-gallon steel tanks were located underground about 100 feet northeast of Building 89 (page 2 of Appendix A). Although these tanks were never associated with activities at 89, they did contain liquids generated inside Building 82. This building was intended to be used as a facility for decontaminating

equipment used in atmospheric weapons testing. Cessation of atmospheric testing occurred before Building 82 was used. Since its construction, the only work in this building involving radioactive material was the laundering of contaminated clothing, decontamination of equipment, and the packaging of rad waste. The decision to remove these tanks was made because the proposed parking lot would be installed over them. The tanks were cylindrical in shape and each measured 4 feet in length and 5 feet in diameter. Each tank had several penetrations that permitted one to select different filling and discharging schemes depending on valve settings. These tanks were emptied and sealed from further use in 1973.

III. CONTAMINATION

In general, the contamination levels observed throughout Buildings 89 and 100, and the HUTS prior to decontamination were:

A. Removable -- less than 200 dpm/100 cm^2 for beta-gamma, less than 1 dpm/100 cm^2 for alpha, and radiation levels equal to instrument background.

B. Fixed -- less than 5000 dpm/100 cm^2 for beta-gamma, less than 100 dpm/100 cm^2 for alpha, and radiation levels less than 0.1 mrad/hr at 1 cm.

The only exceptions from the general levels were found in the drain lines connecting Cells No. 1 and 2 to HUT-89, and Building 100. In the drain lines, the maximum radiation level was 15.0 mrad/hr at 1 cm with contamination levels being less than 1000 dpm/100 cm^2. In Building 100, one tube had a radiation level of 4.5 mRad/hr at the top surface of the tube. This level was the result of a small steel slug found at the bottom of the tube. Instrument readings at the surface of the slug indicated radiation levels of 1.5 Rad/hr. The slug was removed from the tube with tongs, placed in a lead container, and transported to our hot cells in Building 71 for storage.

IV. RELEASABLE LIMITS

Buildings, HUTs, and associated equipment were considered releasable if contamination levels were less than 1000 dpm/100 cm^2 beta-gamma, 100 dpm/100 cm^2 alpha, and radiation levels were less than 0.2 mRad/hr at 1 cm. Release of liquid effluents to the sanitary sewer was based on limits found in 10 CFR Part 20, Appendix B, Table II, Column 2. **Soil with contamination levels greater than 1 x 10^{-6} μCi/gm was excavated and disposed of as radwaste.**

What basis?

V. INSTRUMENTATION

A. Dose rates were measured with an end window G-M survey meter. The G-M tube has a mica window with a thickness of 1.4-2.0 milligrams per square centimeter. This instrument is calibrated every 90 days and has a typical background of 0.03 mRad/hr.

B. Smear surveys were taken with Whatman #50 filter paper. The filters were counted in a gas flow proportional counter for one minute. Efficiencies for this counter were determined with standards traceable to the National Bureau of Standards (NBS).

C. Gamma-ray analysis of samples were made with a germanium-lithium (GeLi) detector. Counting times for samples varied from 100 to 1000 minutes. Efficiencies for the GeLi detector and associate equipment were determined with a mixed gamma-ray reference standard having energies ranging from 88 Kev to 1.836 Mev. The standard is traceable to NBS.

VI. RESULTS

A. Building 89

The hot cells, walls, ceiling, and floors of the building were surveyed, and, where necessary, decontaminated to releasable limits (see pages 4 through 14 of Appendix A). The 28 storage tubes were excavated and surveyed. Levels exceeding releasable limits were found inside the bottom portions of 20 tubes. These tubes were sawed in half and the bottom sections disposed of as radwaste. The top halves, along with the other 8 tubes, were disposed of as regular waste after surveys indicated contamination levels were below releasable limits. Soil samples taken from the outside of the tubes indicated no contamination.

B. Building 100

The 41 storage tubes were excavated and surveyed (pages 15 through 17 of Appendix A). Contamination above releasable limits was detected inside the bottom section of each tube. All of these tubes were sawed in half and the bottom sections were disposed of as radwaste. The top halves were resurveyed, found free of contamination, and disposed of as regular waste. Soil samples taken from around these tubes showed no contamination.

C. HUT-89

Prior to excavating this tank, about 400 gallons of liquid waste, collected during the decontamination of Building 89, were pumped from the tank to the sanitary sewer. Samples taken of the liquid prior to discharging showed activity levels of 9.7×10^{-7} μCi/cc for Co-60 and 6.2×10^{-7} μCi/cc for Cs-137. Total activity released for all decon operations was 2.85 Ci.

After excavation, the tank was cut into smaller pieces and the majority of it was disposed of as radwaste. Surveys made on the pieces of the tank designated for regular waste were below releasable limits (page 18 of Appendix A).

Soil samples from various locations around and under the tank were collected and analyzed. The analysis of the samples taken from the bottom of the excavated pit detected Co-60 (4.7×10^{-5} µCi/gm) and Cs-137 (4.1×10^{-3} µCi/gm) contamination. An inspection of the tank revealed several small rust holes in the tank that matched the location of the contamination in the pit.

A 12-inch layer of soil was removed from the bottom of the pit and packed in 55-gallon drums for disposal as radwaste. The bottom of the pit was resurveyed and the analysis of the samples indicated that all activities were less than 9.3×10^{-7} µCi/gm.

D. Drain Lines

An inspection of the drain lines from Building 89 revealed plastic liners were inside two of the lines. The liner in the pipe running from the back room to the tank was removed and surveyed for contamination. No activities were detected in the liner and it was disposed of in regular waste. Smear and instrument surveys taken on the inside of the drain line did not detect any contamination or radiation levels above releasable limits.

The plastic liner was also removed from the other pipe that ran from inside Cell 2 to HUT-89. Surveys made on this liner detected trace amounts of activity (800 dpm/100 cm^2) so it was disposed of as radwaste. The interior of the drain line was decontaminated and surveyed by attaching cloth rags to the end of a roto-rooter tool and passing the rags through the entire pipe. Analysis of the rag used in the last pass indicated Co-60 and Cs-137 activites of 80 dpm/100cm^2 and 60 dpm/100 cm^2 respectively. Dose rate measurements taken inside the drain line (limited to length of detector cable) were less than 0.07 mRad/hr.

The third drain line, connecting Cell 1 and the laundry drain to the tank, could not be decontaminated to releasable limits. This line was excavated and disposed of as radwaste. Soil samples were collected at various points along the excavated drain system for analysis. Soil contaminated with Co-60 (900 dpm/100 cm^2) and Cs-137 (8000 dpm/100 cm^2) was detected in Cell 1 where the drain line was punctured. The contaminated soil was excavated and disposed of as radwaste. The excavated area was resurveyed and results of samples were below releasable limits. The excavated area from which the drain lines were removed was not backfilled and remains open for inspection.

E. HUT-82

Before excavating the three tanks, the sludge from each was pumped into drums and solidified for disposal as radwaste. After excavation, the tanks were surveyed, decontaminated where necessary, and then disposed of as regular waste (pages 19 through 22 of Appendix A). Soil samples collected from around the three tanks were analyzed and, except for one sample, were found to be free of contamination. The one sample showing trace amounts of Co-60 (4.4×10^{-5} μCi/gm) was taken from an area where a rupture occurred in a drain line during excavation of the tank. Although the tanks were pumped before excavation, some residual liquids (about 1 gallon) remained in the tank. This liquid was the source of contamination. The soil around the ruptured pipe was collected and disposed of as radioactive waste. Resurveys of this area did not detect any residual contamination in the soil.

VII. SUMMARY

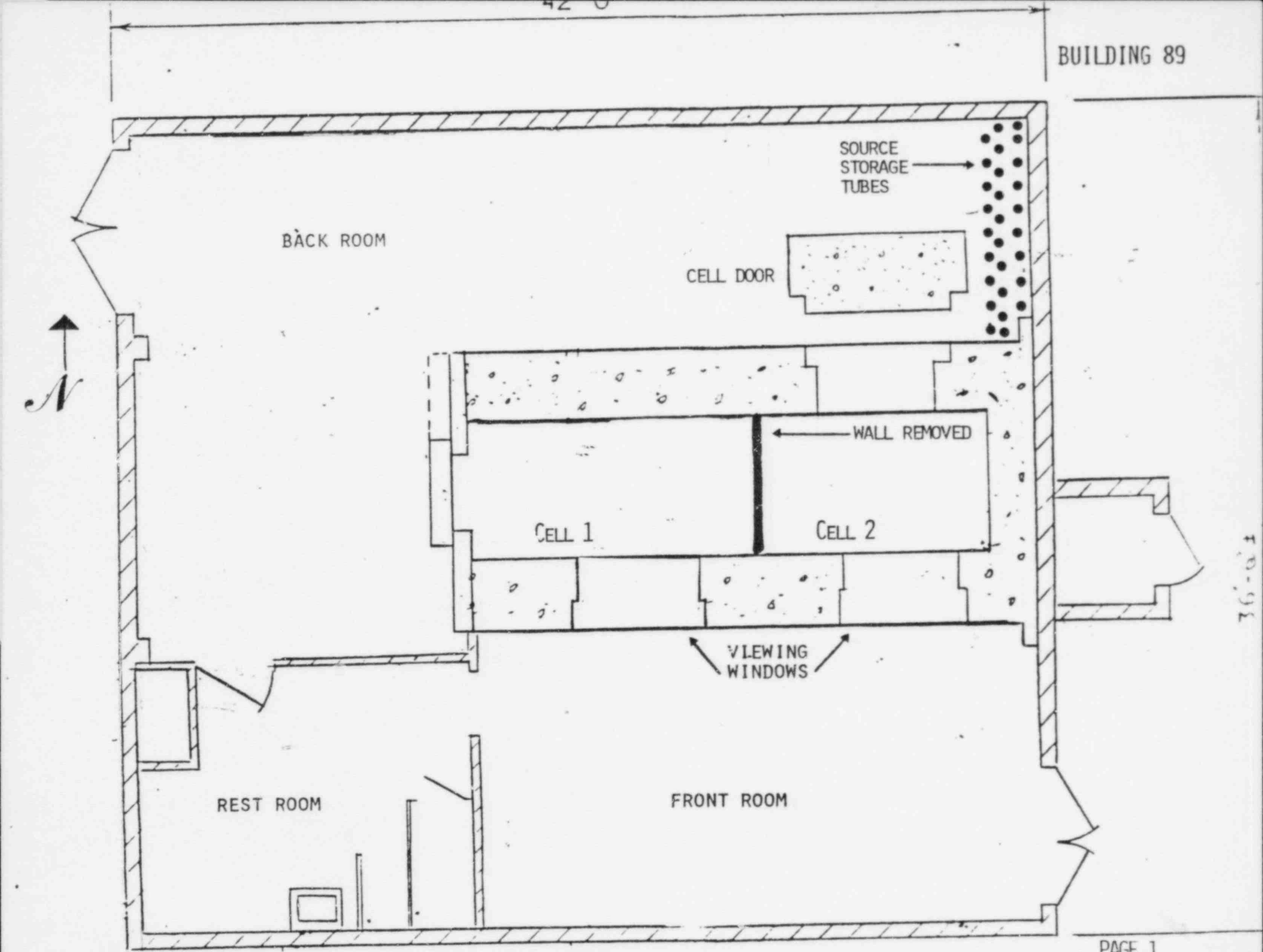
In order to prepare Building 89 for unrestricted use, certain objectives were established by NRL. They were to decontaminate Building 89 and associated equipment, remove and dispose of source storage tubes, remove and dispose of liquid waste hold-up tanks, and decontaminate or remove drain lines associated with the HUTs. The task of meeting these objectives was contracted to Afftrex, Ltd., a company specializing in decontamination and health physics services.

Acceptable contamination and radiation limits were established to determine if areas and/or items were releasable as regular waste. Items that could not be decontaminated to releasable limits were disposed of as radioactive waste.

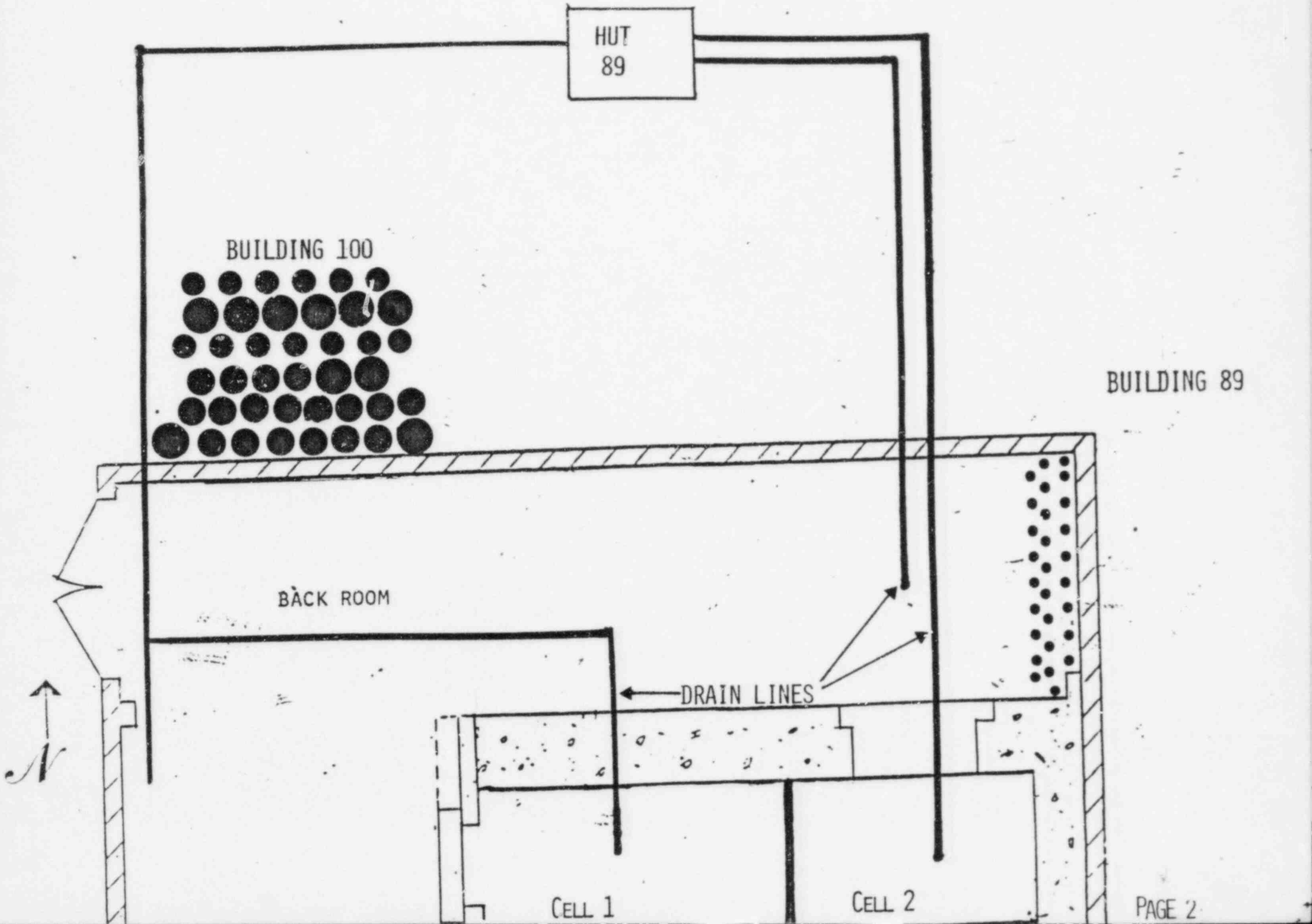
Survey results of all items disposed of as regular waste are available at NRL for review. The results of items disposed of in radwaste are also available for review. All soil and liquid samples were retained and are available for additional analysis, if necessary. Appendix A of this report is a closeout survey of the area conducted by NRL, while Appendix B is a copy of the final report submitted by Afftrex to NRL.

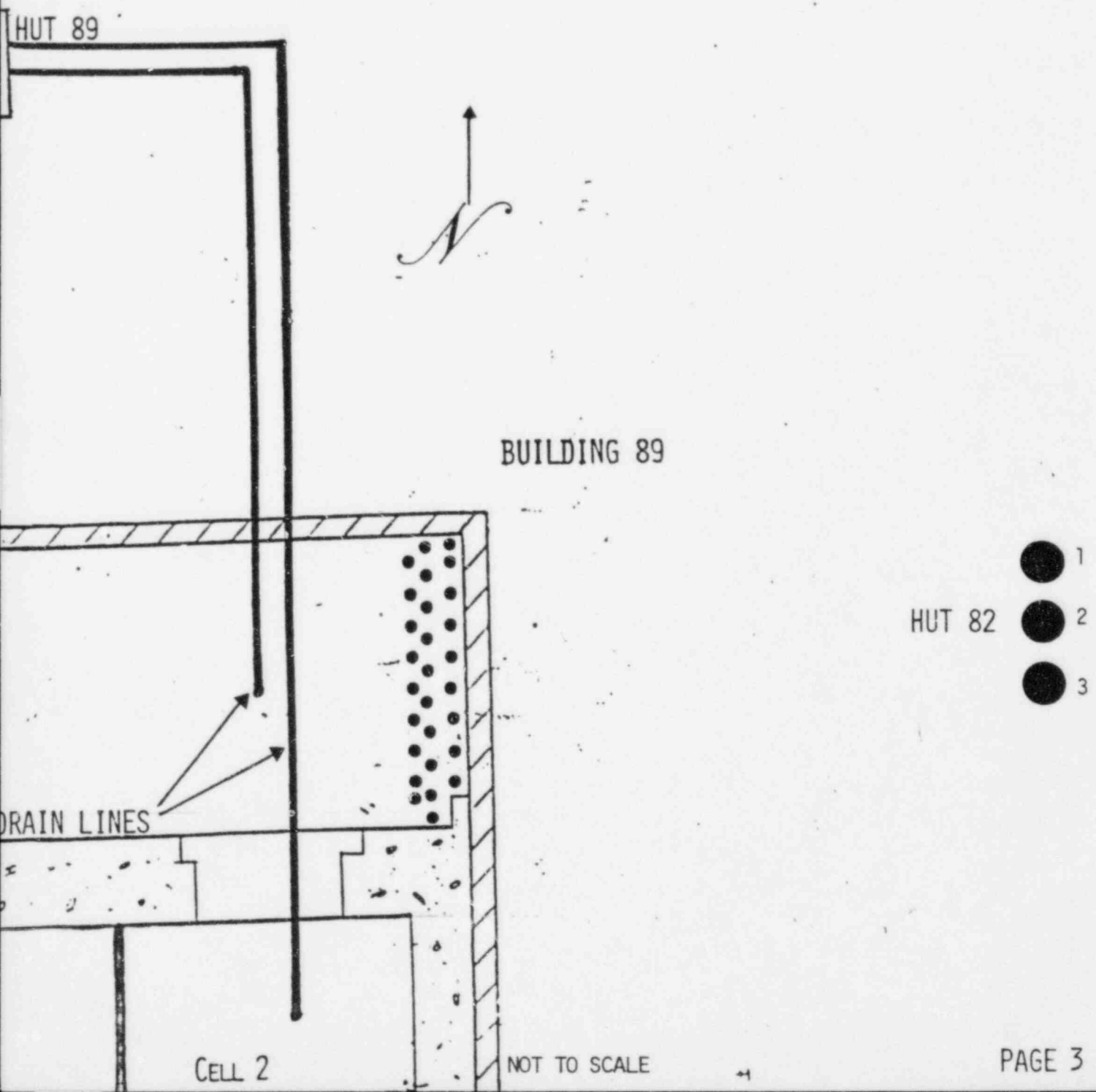
BUILDING 89
CLOSEOUT SURVEY

APPENDIX A



SCALE 3/16-inch = 1 ft.


HUT
89
BUILDING 100
BUILDING 89
BACK ROOM
DRAIN LINES
N
CELL 1
CELL 2


HUT 89
N
BUILDING 89
1
HUT 82
2
3
DRAIN LINES
CELL 2
NOT TO SCALE

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

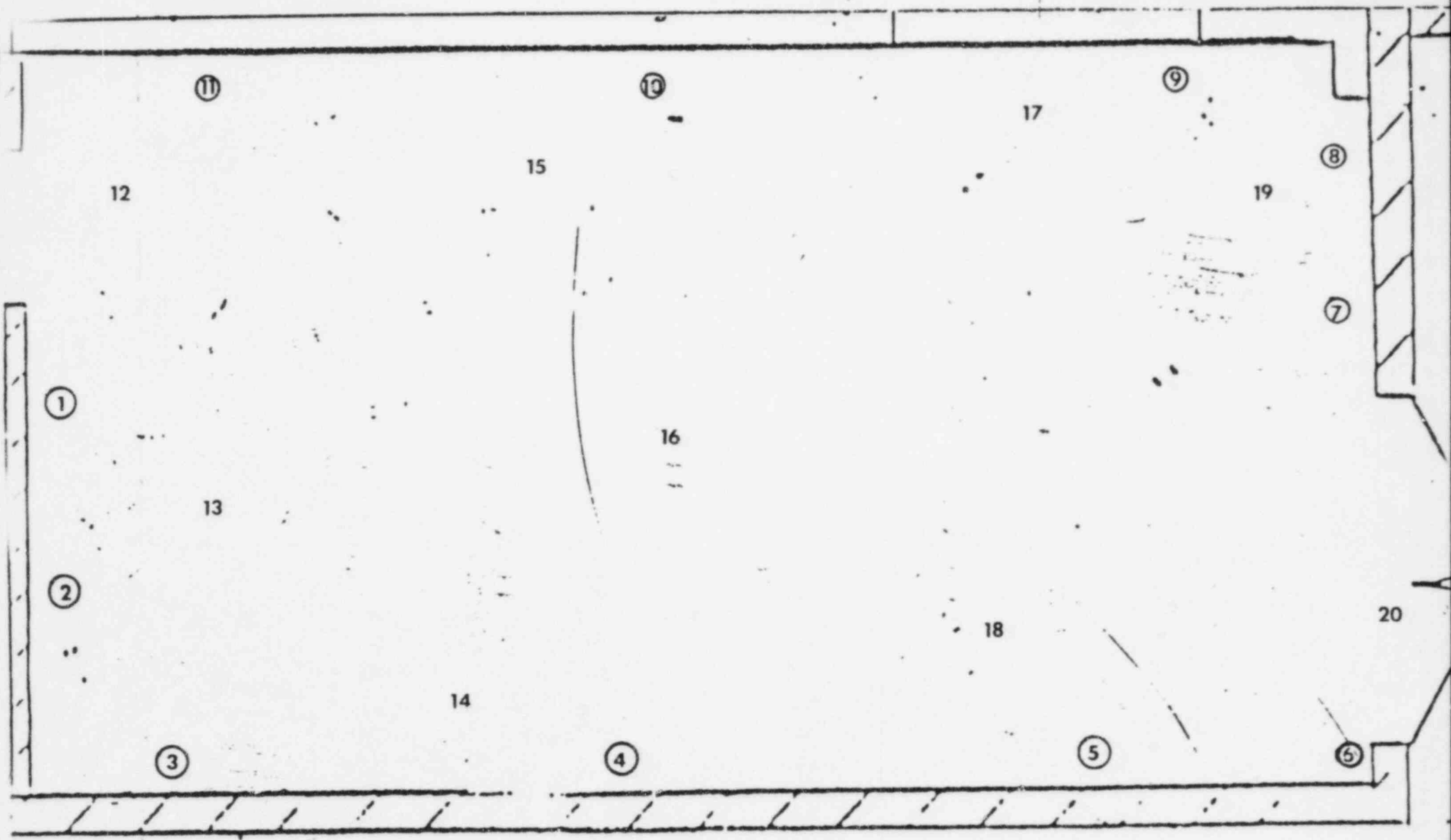
BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	Front Rm.	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	P. K.	PC-5	7	Bβ	40.4	17	49.8	Copy to	✓	File	
DATE	10/28/85	PC-5	7	α	.15	1.02	28	Copy to	✓	R. Davis (6073)	
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED				COUNTED BY SS	DATE 10/31/85	COUNTS PER MINUTE (Above background)			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND	SAMPLE NO.	DESCRIPTION OF SAMPLE	β γ	SOFT x or βγ	α	REMARKS
Bicron AJ373	AJ373	Bβ	0.03 mR/Hr	1	FRONT Room	*		*	FINAL SURVEY
				2		*		*	
				3		*		*	
Cal:	8/22/85			4		*		*	
				5		*		*	~~Contamination~~ Check of Area
				6		*		*	
				7		*		*	
				8		*		*	~~Decontamination~~ is not necessary
				9		*		*	
				10		*		*	
				11	FRONT ROOM	*		*	
				12		*		*	
				13		*		*	
				14		*		*	
				15		*		*	
				16		*		*	
				17		*		*	
				18		*		*	
				19		*		*	
				20		*		*	
				21					
				22					
				23					
				24					*Indicates that the sample count is not statistically different from background
				25					
				26					
				27					
				28					

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
See Map (page 5)		

GPO 873-818



BUILDING 89 - FRONT ROOM

DOSE RATES - BACKGROUND RADIATION

0 - INDICATES SMEAR OF WALL

N

NOT TO SCALE

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

BUILDING	29	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	Rest Room	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	PK	PC-5	7	B,γ	43.9	18	44.8	Copy to	✓	FILE	
DATE	11/28/05	"	"	"	0.1	0.83	25	Copy to	✓	R. SMITH (Q73	
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
Bicron	A5338	βγ	0.03 mR/hr
Cal.	3/22/05		

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
See Map (page 7)		

COUNTED BY HS DATE 11-30-05

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or βγ	α
1	Rest Room	*		*
2		*		*
3		*		*
4		*		*
5		*		*
6		*		*
7		*		*
8		*		*
9		*		*
10		*		*
11		*		*
12		*		*
13		*		*
14		*		*
15		*		*
16		*		*
17		*		*
18		*		*
19		*		*
20		*		*
21				
22				
23				
24				
25				
26				
27				
28				

REMARKS

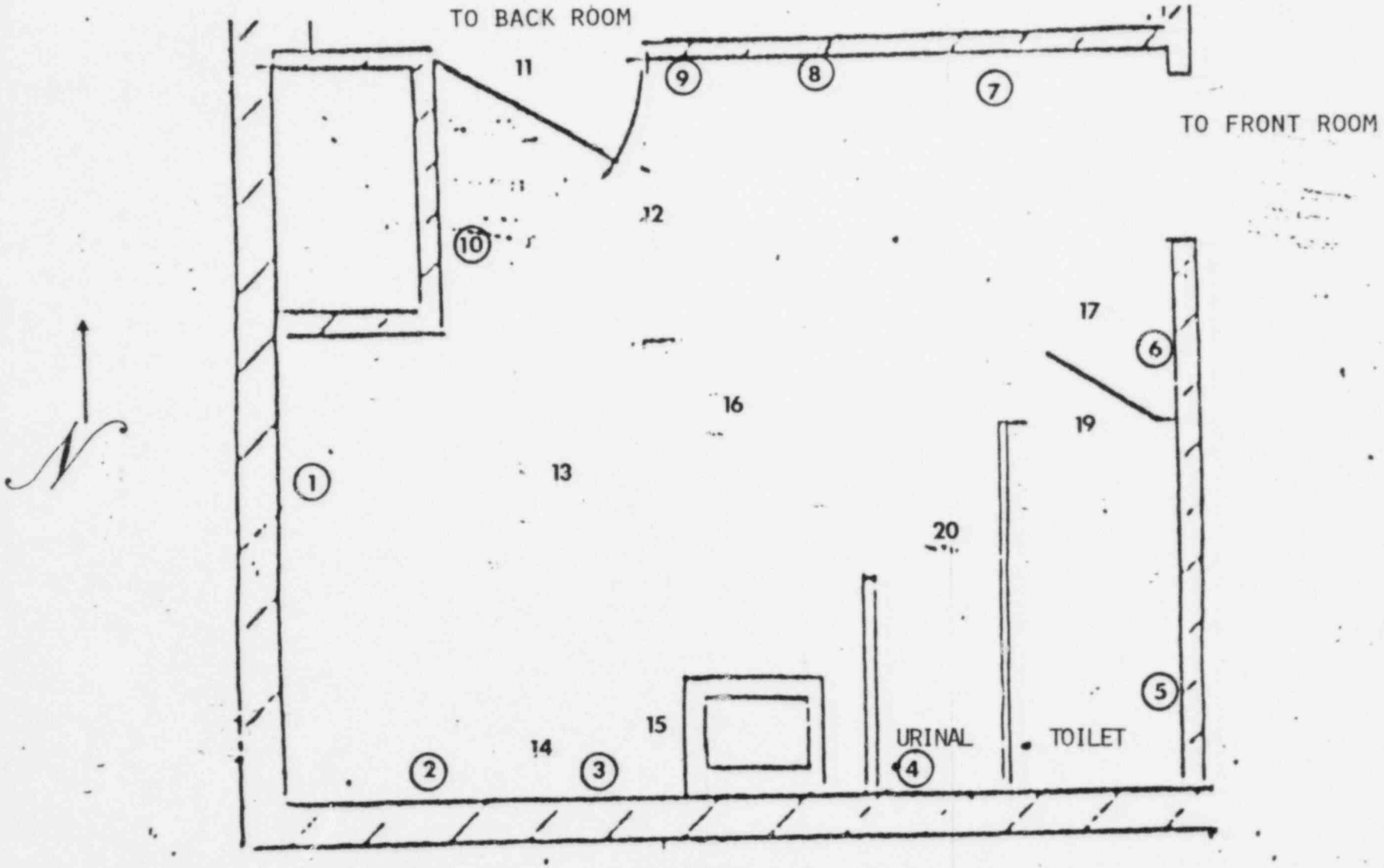
Final Survey

~~Contamination Check of Area~~

~~Decontamination is not necessary~~

*Indicates that the sample count is not statistically different from background

GPO 873-815



BUILDING 89 - REST ROOM

DOSE RATES - BACKGROUND RADIATION

0 - INDICATES SMEAR OF WALL

NOT TO SCALE

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
		Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
ROOM NO.	Back Rm							Copy to	✓	File	
TAKEN BY	PK	PC-5	7	B,γ	43.9	18	49.8	Copy to	✓	R. Davis 6073	
								Copy to			
DATE	10/29/85	"	"	α	0.1	0.93	28	Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
Bicron	A393B	βγ	0.03 mr/hr
Calibrated: 8/22/85			

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
See Map (page 9)		

COUNTED BY [illegible] DATE 11-5-85

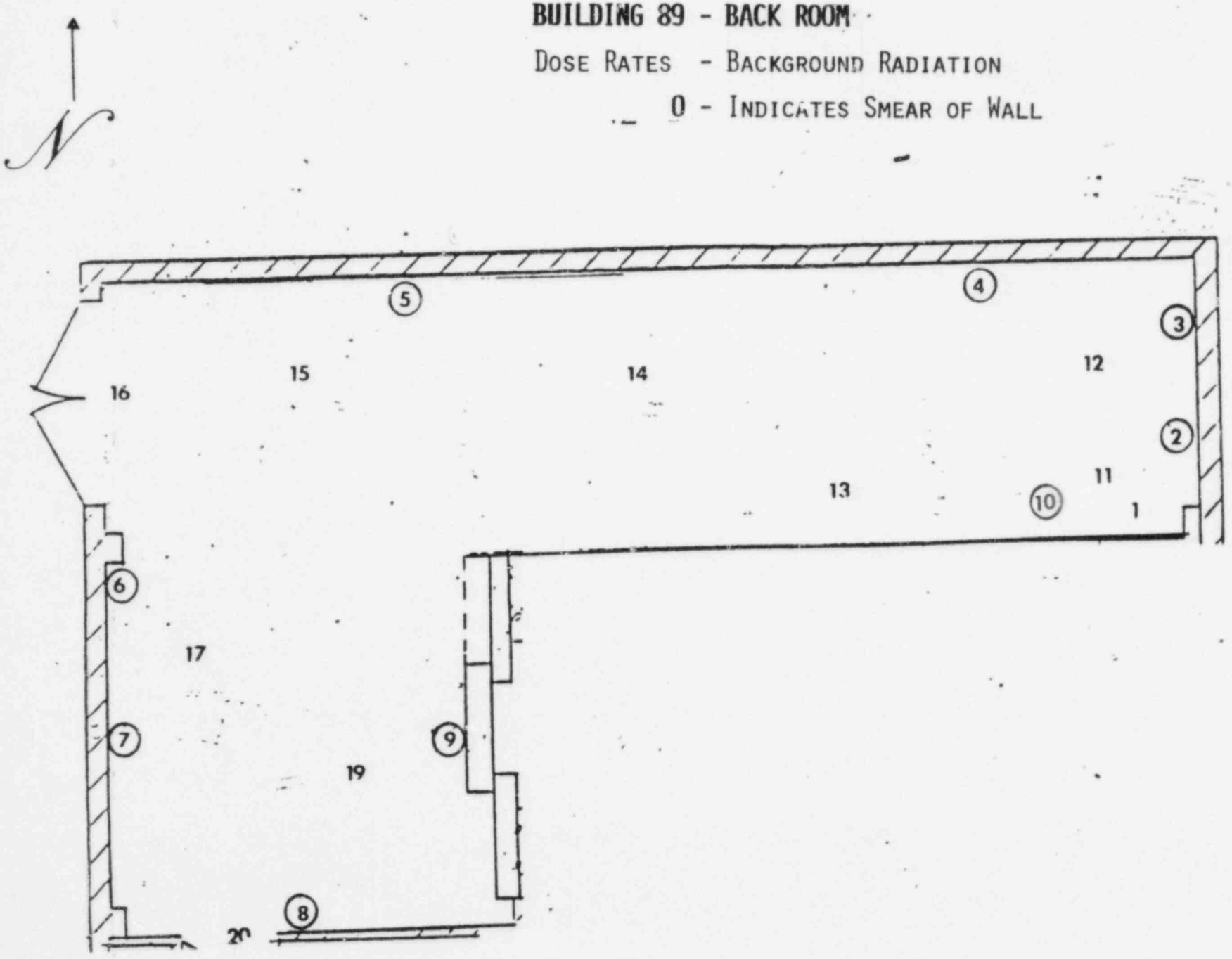
SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	Back Rm	*		*	FINAL Survey
2	↓	*		*	
3		*		*	
4		*		*	
5		*		*	
6		*		*	
7		*		*	Contamination Check of Area
8		*		*	
9		*		*	
10		*		*	Decontamination is not necessary
11		*		*	
12		*		*	
13		*		*	
14		*		*	
15		*		*	
16		*		*	
17		*		*	
18		*		*	
19		*		*	
20		*		*	
21					
22					
23					
24					*Indicates that the sample count is not statistically different from background
25					
26					
27					
28					

GPO 873-815

BUILDING 89 - BACK ROOM

DOSE RATES - BACKGROUND RADIATION

0 - INDICATES SMEAR OF WALL



NOT TO SCALE

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	Cell #1	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	P.K.	PC-5	7	BS	43.1	17	49.8	Copy to	✓	File	
DATE	10-28-85	PC-5	7	α	.30	.26	28	Copy to	✓	R. Davis (6073)	
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED				COUNTED BY SS	DATE 11/1/85	COUNTS PER MINUTE (Above background)			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND	SAMPLE NO.	DESCRIPTION OF SAMPLE	β γ	SOFT x or βγ	α	REMARKS
Bicron	A3958	BS	0.03 mR/HR	1	Cell #1				FINAL SURVEY
				2					
Cal:	8/22/85			3					
				4					
				5					
				6					
				7					Contamination Check of Area
				8				70	
				9					
				10					Decontamination is not necessary
				11	Cell #1				
				12					
				13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					
				21					
				22					
				23					
				24					
				25					
				26					
				27					
				28					

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
See Map (page 11)		

*Indicates that the sample count is not statistically different from background

GPO 873-815

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

BUILDING	E9	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	Cell #2	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	JK	PC-5	7	B,γ	41.5	17	44.8	Copy to	✓	R. DAVIS	
DATE	10/29/85	"	"	D	0.25	1.32	28	Copy to	✓	FILE	
								Copy to			
								Post		Leak Test Records	

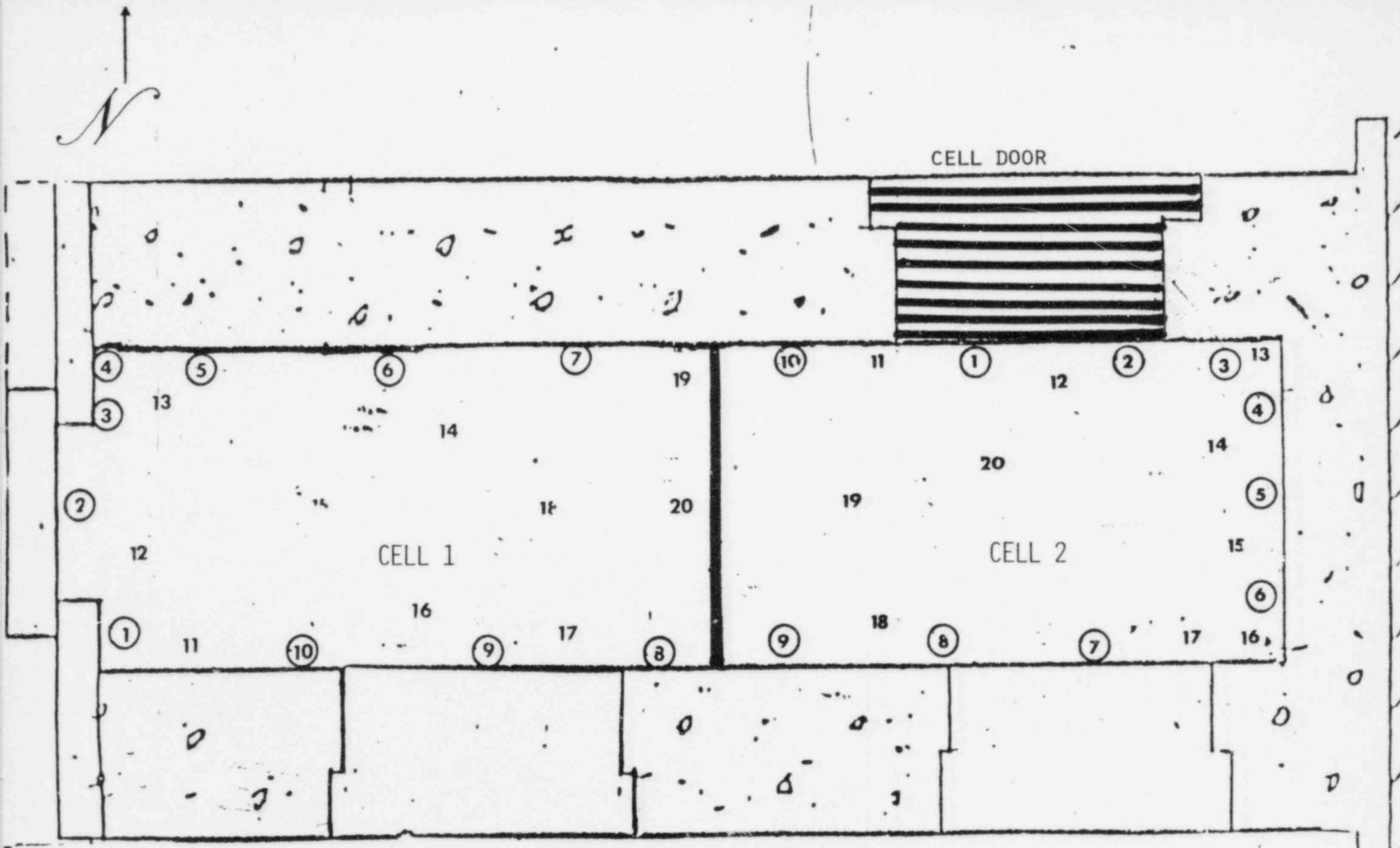
SURVEY INSTRUMENT USED				COUNTED BY JD	DATE 11/4/85	COUNTS PER MINUTE (Above background)			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND	SAMPLE NO.	DESCRIPTION OF SAMPLE	β γ	SOFT x or β γ	α	REMARKS
Bicron	A393A	BS	0.03 mR/Hr	1	Cell #2	*		*	Final Survey
				2		*		*	
				3		*		*	
Cal	8/22/85			4		*		*	
				5		*		*	
				6		*		*	
				7		*		*	
				8		*		*	Contamination Check of Area
				9		*		*	
				10		*		*	
				11		*		*	Decontamination is not necessary
				12		*		*	
				13		*		*	
				14		*		*	
				15		*		*	
				16		*		*	
				17		*		*	
				18		*		*	
				19		*		*	
				20		*		*	
				21					
				22					
				23					
				24					
				25					
				26					
				27					
				28					

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
See Map (page 12)		

*Indicates that the sample count is not statistically different from background

GPO 873-815



BUILDING 39 - CELLS 1 & 2

DOSE RATES - BACKGROUND RADIATION

0 - INDICATES SMEAR OF WALL

NOT TO SCALE

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	—	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	P. K.	PC-5	7	βγ	43.1	17	49%	Copy to	✓	File	
DATE	10-28-85	PC-5	7	α	.30	.26	28	Copy to	✓	R. Davis (6073)	
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
Sierra	A3438	βγ	0.03 mR/hr
Cal.	8/22/85		

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
See Map (page 14)		

COUNTED BY S.S. DATE 10/31/85

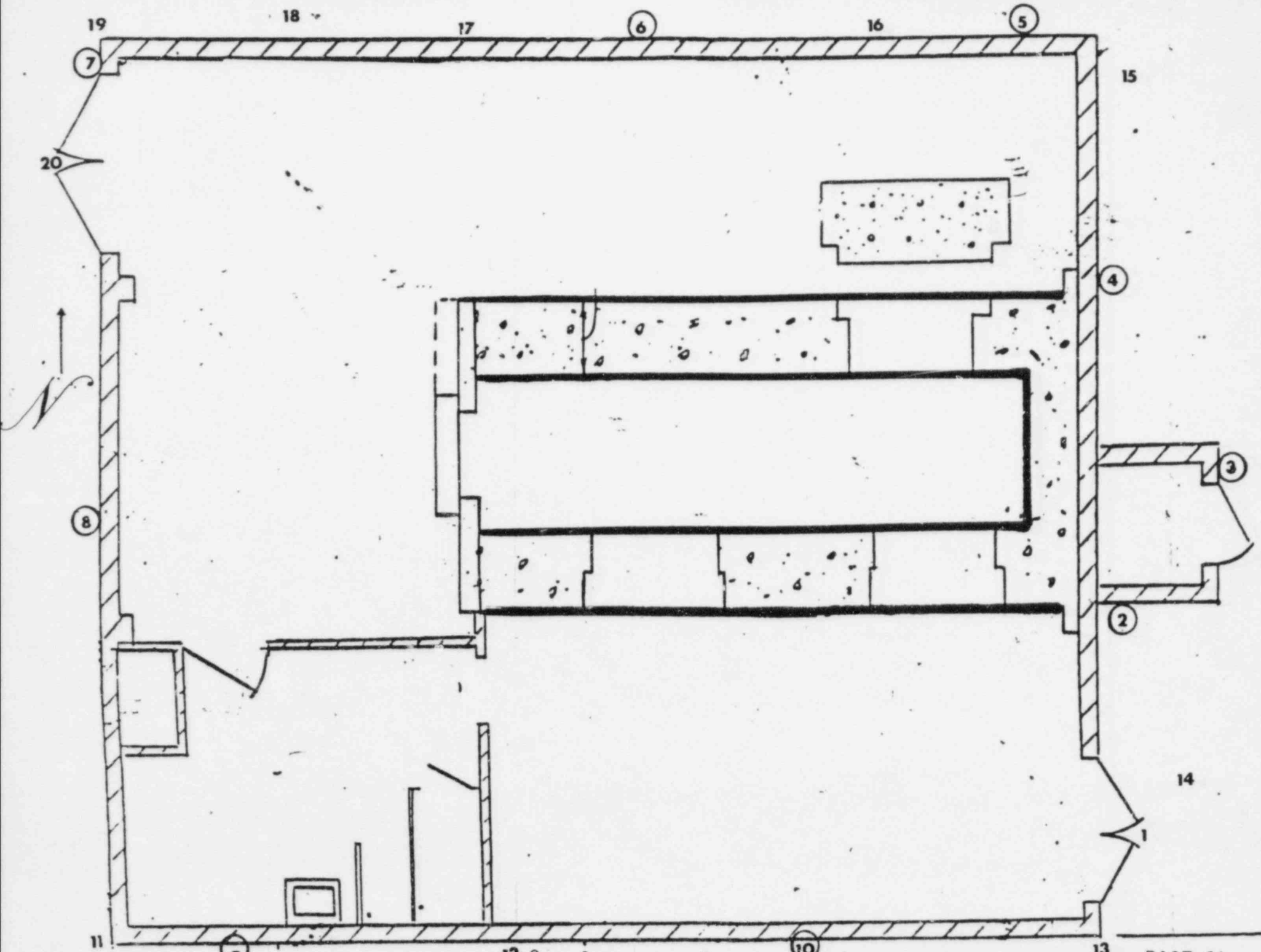
SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SCFT x or βγ	α	REMARKS
1	OUTSIDE	*		*	FINAL SURVEY
2		*		*	
3		*		*	
4		*		*	
5		*		*	
6		*		*	Contamination Check of ~~Area~~
7		*		*	
8		*		.70	~~Decontamination is not necessary~~
9		*		*	
10		*		*	
11		*		*	
12		*		*	
13		*		*	
14		*		.70	
15		*		*	
16		*		*	
17		*		*	
18		*		*	
19		*		*	
20		*		*	
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

GPO 873-815

BUILDING 89

DOSE RATES = BACKGROUND RADIATION



NOT TO SCALE

O - INDICATES SMEAR OF WALL

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.		Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	RND	PC-5	8	B/Y	39.2	17	51	Copy to			
								Copy to			
DATE	9-6-85	PC-5	8	"	.05	0.59	24	Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
Eberline E-120	A394B	B/γ	0.03
Cal 7-30-85			

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
Along the Length and Inside of tubes	contact	< 0.08

COUNTED BY RND DATE 9-6-85

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or βγ	α	REMARKS
1	Tube #1 ~~Top Hole~~	*		*	Contamination check of
2	" " Top Hole	*		*	41 tubes from service
3	" #2	*		*	garden (B.100). ~~Top Hole~~
4	" "	*		*	Pit Tubes
5	" #3	*		*	disposed as general
6	" "	*		*	waste.
7	" #4	*		*	
8	" "	*		*	RND 9-9-85
9	" #5	*		*	
10	" "	*		*	
11	" #6	*		*	
12	" "	*		*	
13	" #7	*		*	
14	" "	*		*	
15	" #8	*		*	
16	" "	*		*	
17	" #9	*		*	
18	" "	*		*	
19	" #10	*		*	
20	" "	*		*	
21	" #11	*		*	
22	" "	*		*	
23	" #12	*		*	
24	" "	*		*	
25	" #13	*		*	
26	" "	*		*	
27	" #14	*		*	
28	" "	*		*	

*Indicates that the sample count is not statistically different from background

GPO 873-815

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED	RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.		Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results		
TAKEN BY	RND	Pc-5	8	βγ	40.9	17	51	Copy to		
								Copy to		
DATE	9-6-85	Pc-5	8	α	0.1	0.83	24	Copy to		
								Post	Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
Eberline E-120 (?)	A314B	βγ	0.03
Cal.	7-30-85		

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
Along length and insides of tubes	Contact	< 0.08

COUNTED BY [initials] DATE 9-10-85

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	Tube # 15 Tef halves	*		*	Contamination Check. Tef halves of tubes disposed as general waste
2	" " "	*		*	
3	" 16	*		*	
4	" "	*		*	
5	" 17	*		*	
6	" "	*		1	
7	" 18	*		*	
8	" "	*		*	
9	" 19	*		*	
10	" "	*		*	
11	" 20	*		*	
12	" "	*		*	
13	" 21	*		*	
14	" "	*		*	
15	" 22	*		*	
16	" "	*		*	
17	" 23	*		*	
18	" "	*		*	
19	" 24	*		*	
20	" "	*		*	
21	" 25	*		*	
22	" "	*		*	
23	" 26	*		*	
24	" "	*		*	*Indicates that the sample count is not statistically different from background
25	" 27	*		*	
26	" "	*		*	
27	" 28	*		*	
28	" "	*		*	

GPO 873-815

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED	RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.		Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results		
								Copy to		
TAKEN BY	RND	PC-5	7	β, γ	42.9	17	50	Copy to		
								Copy to		
DATE	9-6-85	PC-5	7	α	0.2	1.18	21	Post	Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
Dicpen Eal	13142	βγ	0.03
Cal.	7-30-85		

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
Along length and insides of tubes	contact	< 0.08

COUNTED BY [initials] DATE 9-10-85

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α
1	Tube # 29	*		*
2	" "	*		*
3	" 30	*		*
4	" "	*		*
5	" 31	*		*
6	" "	*		*
7	" 32	*		*
8	" "	*		*
9	" 33	*		*
10	" "	*		*
11	" 34	*		*
12	" "	*		*
13	" 35	*		*
14	" "	*		*
15	" 36	*		*
16	" "	*		*
17	" 37	*		*
18	" "	*		*
19	" 38	*		*
20	" "	*		*
21	" 39	*		*
22	" "	*		*
23	" 40	*		*
24	" "	*		*
25	" 41	*		*
26	" "	*		*
27				
28				

REMARKS

Contamination Check. Top halves of Tubes disposed as general waste.

*Indicates that the sample count is not statistically different from background

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	89 HLTT	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	PK	PC-5	7	B/γ	41.2	17	50	Copy to			
DATE	10/8/85			α	0.1	0.83	21	Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
Ludlum 3	p 394B	B/γ	0.03 mR/hr
calibrated		7/30/85	

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
Rusted metal tank	CONTACT	0.03

COUNTED BY [illegible] DATE 10-9-85

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	Rusted Metal TANK	*		*	CONTAMINATION CHECK
2		*		*	
3		*		*	
4		*		*	
5		*		*	Items disposed as
6		*		*	
7		*		*	general waste
8		*		*	
9		*		*	RND 10-9-85
10		*		*	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	H.U.T. 82 #1	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results		89 Close-out file	
TAKEN BY	R.N. DAVIS	PC	14	Bβ	22.9	12	50	Copy to			
DATE	9-5-85	PC	9	α	0	-	27	Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
Ludlum GM meter	A348	Bβ	0.03
Cal 7-30-85			

COUNTED BY RND DATE 9-5-85

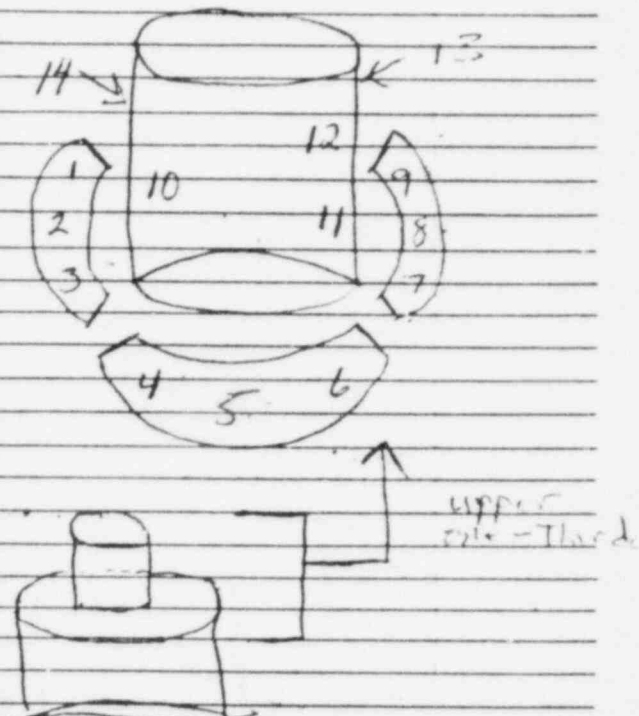
SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α
1	See diagram	*		*
2		*		*
3		*		*
4		*		*
5		*		*
6		*		*
7		*		*
8		*		*
9		*		*
10	INNER TANK	*		*
11		*		*
12		*		*
13	OUTER TANK	*		*
14	" "	*		*
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
Top Third of HUT #1 at all points	Contact	< 0.05

REMARKS

Contamination Check



*Indicates that the sample count is not statistically different from background

Disposed as general waste
RND 9-6-85

GPO 873-815

HEALTH PHYS... MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	H.U.T. 82 #2	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
								Copy to			
TAKEN BY	RND	PC-5	7	B,γ	41.8	17	50	Copy to			
								Copy to			
DATE	9-6-85	PC-5	7	α	.15	1.02	21	Post		Leak Test Records	-

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
Baird [illegible]	A394B	β γ	0.03
Cal. 7-30-85			

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
All parts	contact	< 0.25

COUNTED BY [illegible] DATE 9-9-85

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	Steel Strips	*		*	Contamination Check on
2	" "	*		*	steel parts of H.U.T. #2.
3	" "	*		*	
4	" "	*		*	Parts disposed as general
5	Steel piece	*		*	waste.
6	" "	*		*	
7	" "	*		*	RND 9-1[illegible]
8	LID	*		*	
9	"	*		*	
10	"	*		*	
11	Steel piece	*		*	
12	" "	*		*	
13	" "	*		*	
14	" "	*		*	
15	↓	*		*	
16		*		*	
17		*		*	
18		*		*	
19		*		*	
20		*		*	
21		*		*	
22		*		*	
23		*		*	
24		2		*	
25		*		*	
26		*		*	
27		*		*	
28		*		*	

*Indicates that the sample count is not statistically different from background

GPO 873-115

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

BUILDING	29	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	H.U.T. 82 #2	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	RND	PC-5	8	B,γ	39.2	17	51	Copy to			
DATE	9-6-85	PC-5	8	α	.05	0.59	24	Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
Ludlum GM meter	#31413	B γ	0.03
Cal. 7-30-85			

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
All joints	contact	0.05

COUNTED BY RND **DATE** 9-9-85

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α
1	HUT # 2 (PH.95)	*		*
2		*		*
3		*		*
4		*		*
5		*		*
6	2 plates 8"	*		*
7	" duct	*		*
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				

REMARKS

Contamination check of steel parts of HUT #2. Parts disposed as general waste.

RND 9-11-85

*Indicates that the sample count is not statistically different from background

GPO 873-818

HEALTH PHYS... MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	H.U.T. 82 #3	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	RND	pc-5	7	B,γ	41.8	17	50	Copy to			
DATE	9-6-85	pc-5	7	↓	0.15	1.02	21	Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
Bicron GM Meter	A394B	B	0.02
Cal 7-30-85			

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
All points	contact	< 0.05

COUNTED BY RND DATE 7-9-85

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α
1	Steel parts (6)	*		*
2	↓	*		*
3		*		*
4		*		*
5		*		*
6		*		*
7		*		*
8		*		*
9		*		*
10		*		*
11		*		*
12		*		*
13		*		*
14		*		*
15				
16				
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27				
28				

REMARKS

Contamination Check on steel parts of H.U.T. #3
Parts disposed as general waste
RND 9-10-85

*Indicates that the sample count is not statistically different from background

 GPO 873-818

BUILDING 89

AFFTREX CLOSEOUT SURVEY

APPENDIX B

Afftrex LTD.

412/348-9211

BOX 21 ABER ROAD R.D. 4
FINLEYVILLE, PA 15332

FINAL RELEASE REPORT

DECONTAMINATION OF BUILDING 89

Naval Research Laboratory

Washington D.C.

Section II

WORK PERFORMED

A. Upon mobilization, Afftrex, Ltd. performed contamination surveys in the work areas in order to characaterize the radiological conditions on which to base future decontamination methods and techniques. In order to minimize radioactive waste, decontamination, rather than disposal, was to be used to the greatest extent practicable.

B. Afftrex, Ltd. then began to remove various fixtures inside or connected to the Hot Cells. This included four mechanical manipulators, two in each cell, which were controlled from the Operating Room and one electrically controlled "General Mills" manipulator which was suspended from tracks overhead. Also removed from the Hot Cells were all work tables, light fixtures and conduit, and an overhead door which, when raised, gave access to the "General Mills" manipulator allowing it to be moved along its tracks from one Hot Cell to the other. Cell #1 contained a lead lined cask which was removed. After washing the interior of the two Hot Cells with a steam generator in order to remove any loose contamination, the stainless steel sheets covering the lower portions of the walls were removed and the newly exposed wall areas also decontaminated. The dividing wall between Cell #1 and #2 consisted of solid concrete blocks stacked and then sheathed in plywood; the entire wall was removed when the wood was discovered to be contaminated. The epoxy floor covering in both cells was removed to permit examination of the concrete beneath it. Isolated areas were finally scabbled, removing any remaining contamination.

C. On the roof, the HEPA filters were removed from the ventilation system, and the filter housing and blower disassembled and decontaminated as necessary. The ventilation ducts from the Hot Cells to the filter housing were removed, with the exception of two short sections of duct which were buried in the concrete Hot Cell foundation. These short sections were cleaned out and decontaminated, as necessary. When a hole was discovered in one of these short sections, soil samples were taken under both ducts for analysis by NRL although field instruments could not detect any soil contamination. No soil removal was required, based on the results of these samples.

D. The only contamination found in the Operating Room and the Change Room consisted of one very small spot on the Change Room floor and a 1 foot long section on the threshold of the Operating Room outside door. Extensive surveys in these areas after removal confirmed that no other contamination existed. The suspended ceilings in all rooms were taken down and surveyed, allowing access to the areas above.

E. The Loading Room contained a few isolated spots on its north wall having some alpha contamination - the only alpha contamination found throughout this contract. Historical investigation revealed that there had once been a work table located against that wall on which Radium samples were handled. Paint removal took off most of the contamination, although a few spots finally had to be scabbled. The twenty-eight 2.5 inch diameter storage tubes were each pulled out of the ground after the surrounding concrete was found to be radiologically clean and then broken up. No external contamination was found on the tubes, although most of the pipes were disposed of due to possible internal contamination. Soil samples, analyzed by NRL were taken from each void after tube removal. No additional soil was removed, based on the results of these samples. The suspended ceiling tiles were removed from the Loading Room as in the other rooms, and a few tiles required disposal because of small, but detectable amounts of contamination. Access to the two Hot Cells was controlled by two large shielded doors located in the Loading Room. Some door surfaces facing the Hot Cells required decontamination as well. The laundry facility consisted of a normal washer and dryer, both of which were completely disassembled and all parts either cleaned and released, when possible, or disposed of as radioactive waste. As a result, this greatly decreased the volume of waste generated from the laundry facility.

F. The 600 gallon holding tank described in Section I,C. was fed by three 4 inch pipes leading into Building 89. Two of these pipes, one leading to Cell #2 and the other to the east end of the Loading Room, had been installed with plastic liners which were finally pulled out of the pipes. The pipes were then swiped out by forcing rags, on the end of an auger, through the pipe. Additional rag/swipes were collected for NRL concurrence. When no loose contamination could be found, G-M probes were inserted as far as possible from either end, with no fixed activity detected. The third pipe was highly contaminated as found by swiping out as described above. Therefore, this pipe run was dug out of the ground from the holding tank to its source. This pipe branched off to the washing machine drain, to Cell #1, and eventually to two plugged drains under the Change Room floor.

Two holes were found in this pipe, one under the Cell #1 floor and the other under the south foundation of Cell #1. Soil samples were taken along this pipe with extra samples taken near the two holes as they were discovered, to be analyzed by NRL. Approximately 1 cu. ft. of soil had to be disposed of under Cell #1 as a result of these samples. The holding tank itself was found to be extremely corroded and in very poor condition, although that could not be known until the concrete surface and three feet of soil were removed to uncover it. As a result, the surrounding soil was removed manually, with frequent contamination surveys and soil samples for NRL analysis. Approximately 105 cu. ft. of soil had to be disposed of as a result of these samples. The tank itself, when removed from the excavation, was cut into manageable pieces. Some pieces could be decontaminated while others, most notably the tank bottom, were disposed of as radioactive waste.

G. The concrete pad around "Building 100" was surveyed and then broken up to allow removal of the forty-one storage tubes. One small spot on the northwest corner of the pad was found to be contaminated, and that concrete was disposed of. The storage tubes were each pulled out of the ground, and soil samples for NRL analysis were taken from each void after tube removal. No additional soil was removed, based on the results of these samples. No external contamination was found on any of the tubes, and many of the tubes were found to be clean internally, as well, at least in the upper half. Therefore, in order to minimize radioactive waste, many of the tubes were cut in half with only the contaminated lower half being disposed of as waste. After removal, "Building 100" was restored to original condition, as required by this contract.

H. The Building 82 tanks were in much better condition than the Building 89 holding tank, with no visible corrosion damage to any of the three tanks. After removal of any standing liquids in the tanks, a backhoe was used to dig around the tanks. Frequent contamination surveys and soil samples for NRL analysis were taken during excavation, with no additional soil removed based on the results from these samples. The tanks were cut into manageable pieces after removal and some pieces decontaminated as with the Building 89 tank above. After removal, the excavation was backfilled and the area restored to its orginal condition as required by this contract.

Section III

Release Survey Data

A. Comprehensive contamination surveys were performed in the Operating Room and the Change Room which consisted of one reading per 3 sq. ft. of surface on walls and ceiling, etc. and one reading per 1 sq. ft. on the floors. When the two contaminated spots described in Section II, D. were found, 100% of the floor areas within a 3 ft. radius were surveyed, although no additional contamination was found. Contamination surveys were performed on 100% of the surfaces in the Loading Room and the two Hot Cells, as well as the concrete pad in "Building 100" and the ventilation system housing on the roof. All equipment or items which were released received a 100% survey prior to removal from contaminated areas.

B. Surveys were always performed for both alpha as well as beta-gamma contamination although the emphasis was placed on beta-gamma surveys, as alpha contamination was found only on the north wall of the Loading Room as described in Section II, E. The limit for release of material for uncontrolled use were set at:

1. < 50 pCi/100 cm2, alpha, and < 450 pCi/100 cm2, beta-gamma, for loose surface contamination. Occasionally, larger area wipes were used, but the limits remained at < 50 pCi/swipe, alpha, and < 450 pCi/swipe, beta-gammma.

2. < 50 pCi/probe, alpha, and < 450 pCi/probe, beta-gamma, for fixed activity. This method was used most often and required no additional swipes if the limits were not exceeded.

3. For areas of the building which were inaccessible by probe, swipes were taken as in #1 above and then radiation readings checked to confirm that no fixed activity was present. When objects had areas which were completely inaccessible by any means, the object was disposed of as radioactive waste.

4. Soil was checked as in #2 above during excavation, and soil samples analyzed by NRL to confirm the readings.

It should be noted that no material was released without NRL overcheck and concurrence.

C. Air samples were taken routinely during work in contaminated areas using a Staplex TF1A high volume air sampler, with the samples counted using field instruments and analyzed for activity levels. At no time did airborne contamination levels exceed, or even approach applicable limits. These limits were set at 1E-9 uci/ml for beta-gamma emitters and 2E-11 uci/ml for alpha emitters. Occasionally, readings approached a limit initially, but on recounting later it was confirmed to be due to radon daughters by virtue of the short half-life and the presence of both alpha and beta-gamma emitters. At no time, however, did this exceed 3E-9 uci/ml when radon was identified.

ATTACHMENT II

RELEASE SURVEYS FOR

UNRESTRICTED USE

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

A1

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	OPERATING ROOM	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to		R. DAVIS C073	
DATE	7/17/85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
✓	1246		60
EMON	1217	βγ	60
★			
E520	3852	βγ	002
LUDLUM ★			
MODEL 18	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
HIGH VENT IN WALL	CONTACT	BKGD
LOW VENT IN WALL	CONTACT	BKGD

COUNTED BY CLR DATE 7/17/85

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or βγ	α	REMARKS
1	FLOOR	*		*	DIRECT PROBE SURVEY OF FLOOR
2	DOOR THRESHOLD	8000		*	DOOR THRESHOLD (OUTSIDE DOOR) SEE ON TO FOLLOW (SEE PAGE II)
3					
4	DESK	*		*	DIRECT PROBE
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

★ INSTRUMENTS CALIBRATED ON 5-28-85

GPO 873-815

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

A2

BUILDING	89
ROOM NO.	OPERATING ROOM
TAKEN BY	CLR
DATE	7/17/85

LABORATORY COUNTING INSTRUMENT

Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff

ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
Notice of Results			
Copy to		R. DAVIS 6073	
Copy to			
Copy to			
Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
E140N *	1256		60
	1257	βγ	60
E520 *	3832	βγ	003
LUDLUM * MODEL #18	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
AIR CONDITIONER DUCTS	CONTACT	BKGD

COUNTED BY CLR **DATE** 7/17

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	SOUTH WALL EXCERT	*		*	DIRECT PROBE
2	FOR UNDER RADIATOR				SWIPES USED ON AIR
3	(SEE PAGE A6)				CONDITIONER
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

* CALIBRATED 6-28-85

GPO 873-815

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

A3

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	OPERATING Room	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to		R. DAVIS 6073	
DATE	7/17/85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
* E140N	1296		60
	1297	βγ	60
* E520	3832	βγ	0.03
LUDLUM * MODEL 18	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
INSIDE UPPER VENT	CONTACT	BKGD
INSIDE LOWER VENT	CONTACT	BKGD

COUNTED BY CLR DATE 7/17

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or βγ	α	REMARKS
1	EAST WALL INCLUDING	*		*	DIRECT PROBE PLUS SWIPES TAKEN
2	2 VENTS INTO				ON INSIDE OF VENTS
3	BATHROOM				
4					
5					
6					
7					
8					
9					
10					
11					
12					
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24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

* CALIBRATED 5-28-85

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

A4

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	OPERATING Room	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to		R. DAVIS C073	
DATE	7/17/85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
* FIAU	1296		60
FIAU	1297	βγ	60
* FS90	3832	βγ	0.03
LUDLUM * model 18	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
DOOR FRAME	CONTACT	BKGD

COUNTED BY CLR DATE 7/17

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or βγ	α	REMARKS
1	WEST WALL	*		*	DIRECT PROBE
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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18					
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24					
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27					
28					

*Indicates that the sample count is not statistically different from background

*CALIBRATED 5-28-85

GPO 873-615

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

A5

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	OPERATING ROOM	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to		R. DAVIS 6073	
DATE	8/1/85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACKGROUND
E140N *	1246	βγ	40
E140N *	1277	βγ	40
E520 *	3852	βγ	0.02

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
CENTRAL CEILING	CONTACT	BKGD

COUNTED BY CLR DATE 8/1/85

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	100% SURVEY OF				
2	CEILING ABOVE SUSPENDED				
3	CEILING FRAME INCLUDING	*		*	COMBINATION OF DIRECT PROBE & SWIPES
4	WALL ABOVE FRAME				
5					
6					
7					
8					
9					
10					
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20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background
ALL MATERIALS CALIBRATED 5-28-85

GPO 873-815

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

A6

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	OPERATING Room	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to		R. PAULS 6073	
DATE	7/17/85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
* E140N	1296		60
	1297	BY	60
* FS20	3852	BY	0.03
LUDLUM Model 18		α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
THRESHOLD DOOR BOTTOM (OF DOOR)	CONTACT	1.5
FLOOR INSIDE	CONTACT	BKGD

COUNTED BY CLR **DATE** 7/17/85

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	WALL	*		*	AREAS UNACCESSIBLE BY SMEAR PROBE (SWIPE)
2	"	*		*	SAME AS ABOVE
3	"	*		*	
4	"	*		*	
5	"	*		*	
6	"	*		*	
7	"	*		*	
8	"	*		*	
9	"	*		*	
10	"	*		*	
11	UNDER RADIATOR (SOUTH WALL)	*		*	
12	"	*		*	
13	"	*		*	
14	"	*		*	
15	"	*		*	
16	"	*		*	
17	"	*		*	
18	"	*		*	
19	"	*		*	
20	DOOR THRESHOLD	*		*	
21	DOOR LEFT	*		*	
22	DOOR RIGHT	*		*	
23	ELECTRICAL BOX (NORTH WALL)	*		*	
24	" "	*		*	
25	" "	*		*	
26	" "	*		*	
27	ELECTRICAL CONDUIT	*		*	
28	" "	*		*	

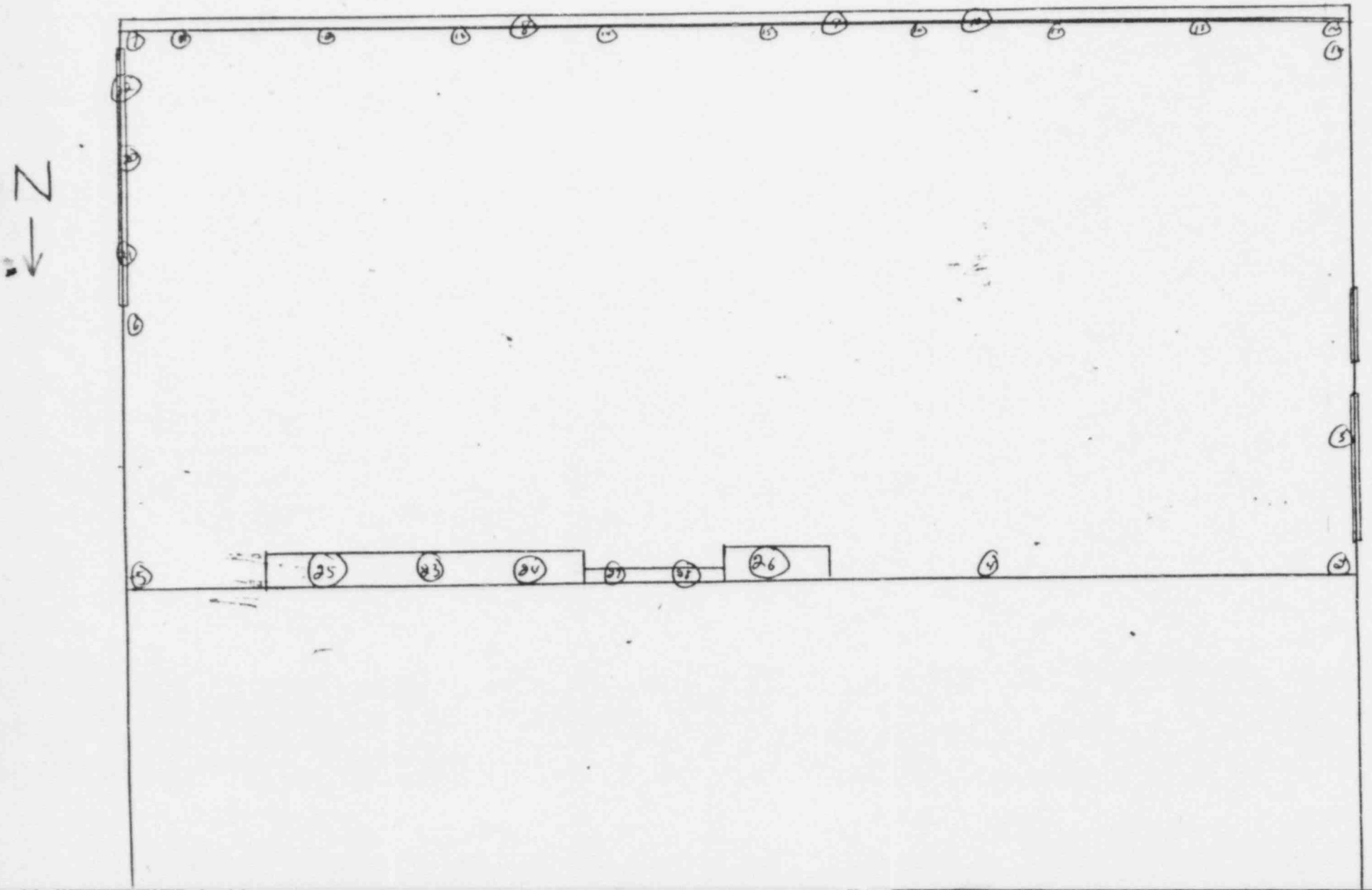
*Indicates that the sample count is not statistically different from background

* INSTRUMENTS CALIBRATED 5-28-85

GPO 873-818

OPERATING ROOM
CLR/ 7/17/85

A 6 A



HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

A7

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	OPERATING ROOM	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLK							Copy to		R DAVIS 6073	
DATE	7/17/85							Copy to			
								Copy to			
								Post		Leak Test Records	-

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
* EMON	1246	BY	60
* EMON	1947	BY	60
* E-520	3852	BY	0.03

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
ROUND CASES		
↓ MANIPULATOR #1	CONTACT	0.03
MANIPULATOR #2	CONTACT	0.03
MANIPULATOR #3	CONTACT	0.03
MANIPULATOR #4	CONTACT	0.03

COUNTED BY | **DATE**

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	BASE OF MANIP #1	*		*	SWIPE + DIRECT PROBE
2	ROUND CASE INTO WALL "	*		*	SWIPE
3	LEGS COMING DOWN "	*		*	DIRECT PROBE
4	ALL EXTERIOR PARTS "	*		*	SWIPE + DIRECT PROBE
5					
6	BASE OF MANIP #2	*		*	SWIPE + DIRECT PROBE
7	ROUND CASE INTO WALL "	*		*	SWIPE
8	LEGS COMING DOWN "	*		*	DIRECT PROBE
9	ALL EXTERIOR PARTS "	*		*	SWIPE + DIRECT PROBE
10					
11	BASE OF MANIP #3	*		*	SWIPE + DIRECT PROBE
12	ROUND CASE INTO WALL "	*		*	SWIPE
13	LEGS COMING DOWN "	*		*	DIRECT PROBE
14	ALL EXTERIOR PARTS "	*		*	SWIPE + DIRECT PROBE
15					
16	BASE OF MANIP #4	*		*	SWIPE + DIRECT PROBE
17	ROUND CASE INTO WALL "	*		*	SWIPE
18	LEGS COMING DOWN "	*		*	DIRECT PROBE
19	ALL EXTERIOR PARTS "	*		*	SWIPE + DIRECT PROBE
20					
21					
22					
23					
24					
25					
26					
27					
28					

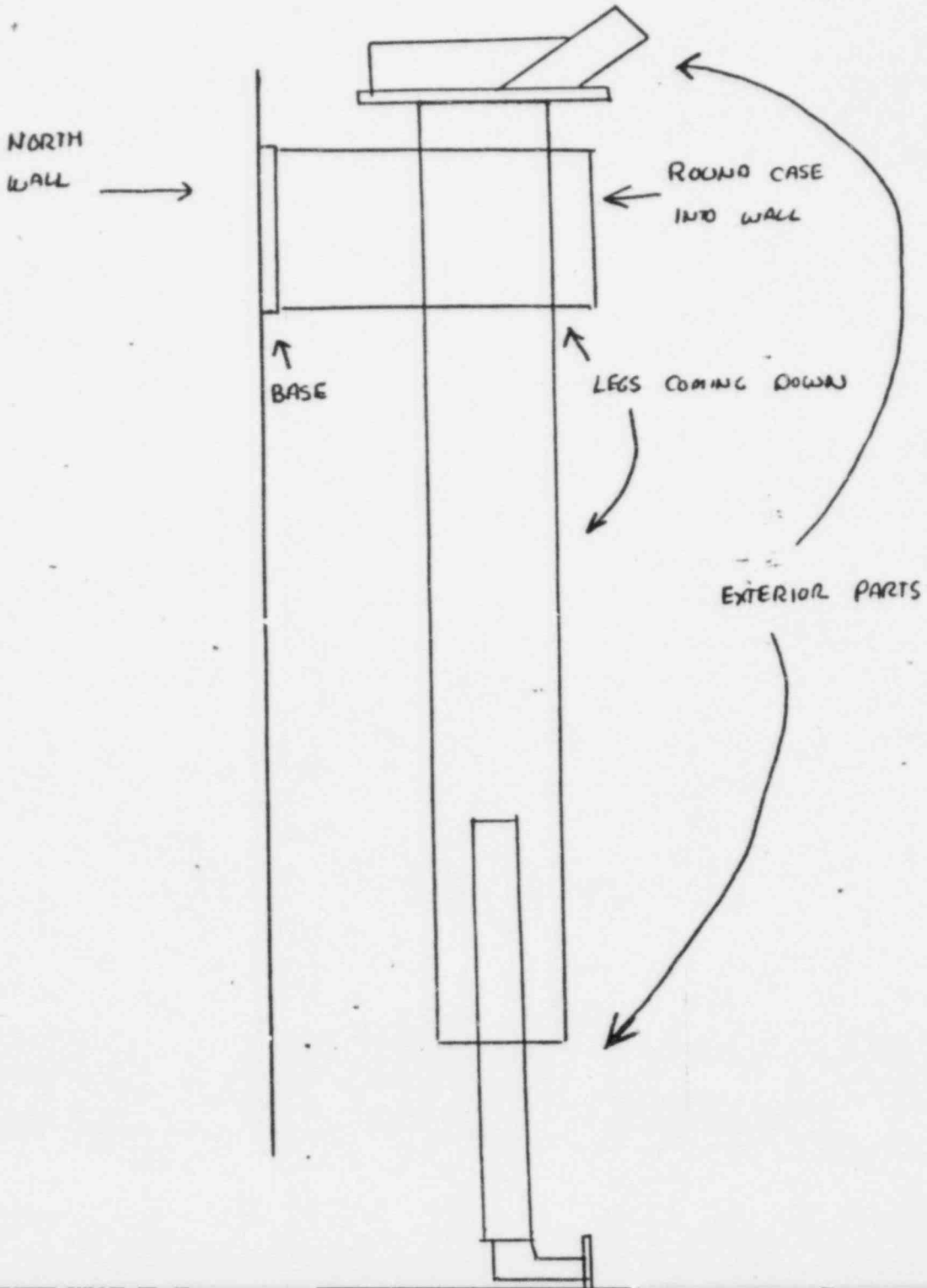
*Indicates that the sample count is not statistically different from background

* ALL INST. CAL ON 5-01-85

GPO 873-818

A7A

REPRESENTATION OF 4 MANIPULATING ARM CONTROLLERS IN OPERATING ROOM



HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

B1

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	BATH Room	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to		R. DAVIS 6073	
DATE	7/16/85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
EIYON	1296	BY	40
	1297		40
E520	3832	BY	0.02
LUALM model 18	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
VENT	CONTACT	BKGD
RADIATOR	CONTACT	BKGD
DOOR [redacted] FRAME	CONTACT	BKGD

COUNTED BY CLR DATE 7/16

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	NORTH WALL	*		*	DIRECT PROBE PLUS SWIPE
2					DOME OF VENT + RADIATOR
3					
4					
5					
6					
7					
8					
9					
10					
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28					

*Indicates that the sample count is not statistically different from background

* CALIBRATED 5-21-85

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

B2

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	BATH ROOM	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to		N. DAVIS G073	
DATE	7/16/85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
* EI40N	1296	βγ	40
	1297		40
* E520	3832	βγ	003
LUCIUM * MODEL 18	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
SINK PIPES	CONTACT	BKGD
FLOOR BOARD	CONTACT	BKGD

COUNTED BY CLR DATE 7/16

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x α-βγ	α	REMARKS
1	SOUTH WALL	*		*	DIRECT PROBE ON WALL, SWIPES
2					TAKEN AROUND SINK, TOILET &
3					URINAL
4					
5					
6					
7					
8					
9					
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12					
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28					

*Indicates that the sample count is not statistically different from background

* CALIBRATED 5-28-85

GPO 873-815

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

B3

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	WASH Room	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to		R. DAVIS 6073	
DATE	7/16/85							Copy to			
								Copy to			
								Post		Leak Test Records	-

SURVEY INSTRUMENT USED				COUNTED BY CLR	DATE 7/16	COUNTS PER MINUTE (Above background)			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND	SAMPLE NO.	DESCRIPTION OF SAMPLE	$\beta\ \gamma$	SOFT x or $\beta\ \gamma$	α	REMARKS
* E140N	1296	BY	40	1	EAST WALL	*		*	DIRECT PROBE
	1297		40	2					
* E520	3852	BY	0.03	3					
* LUDLUM MODEL 18	30709	α	0	4					
				5					
				6					
				7					
				8					
				9					
				10					
				11					
				12					
				13					
				14					
				15					
				16					
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				19					
				20					
				21					
				22					
				23					
				24					
				25					
				26					
				27					
				28					

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
GENERAL AREA	CONTACT	BKGD

*Indicates that the sample count is not statistically different from background

* CALIBRATED 5-28-85

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

B4

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	WASH Room	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to		R. DAVIS 6073	
DATE	7/16/85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
EMON	1296 1297	βγ	40 40
ESDO	3832	βγ	0.03
LUCAS MODEL 18	30722	α	6

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
VENT	CONTACT	BKGD

COUNTED BY CLR DATE 7/16

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	WEST WALL	*		*	DIRECT PROBE PLUS SWIPE OF VENT
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
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27					
28					

*Indicates that the sample count is not statistically different from background

* CALIBRATED 5-2F-85

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

B5

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	WASH Room	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to		R. DAVIS 6073	
DATE	7/16/85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
EMON	1296	βγ	40
	1297		40
FS20	3832	βγ	0.03
LUDLUM MODEL 18	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
MIDDLE OF FLOOR SOUTH	CONTACT	0.04
OTHER PART OF FLOOR	CONTACT	BKGD

COUNTED BY CLR DATE 7/16

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	FLOOR	*		*	DIRECT PROBE
2	MIDDLE OF FLOOR	500		*	DIRECT PROBE (SEE MAP - BSA)
3	" " "	*		*	SWIPE & DECON TO FOLLOW - PG II
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
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28					

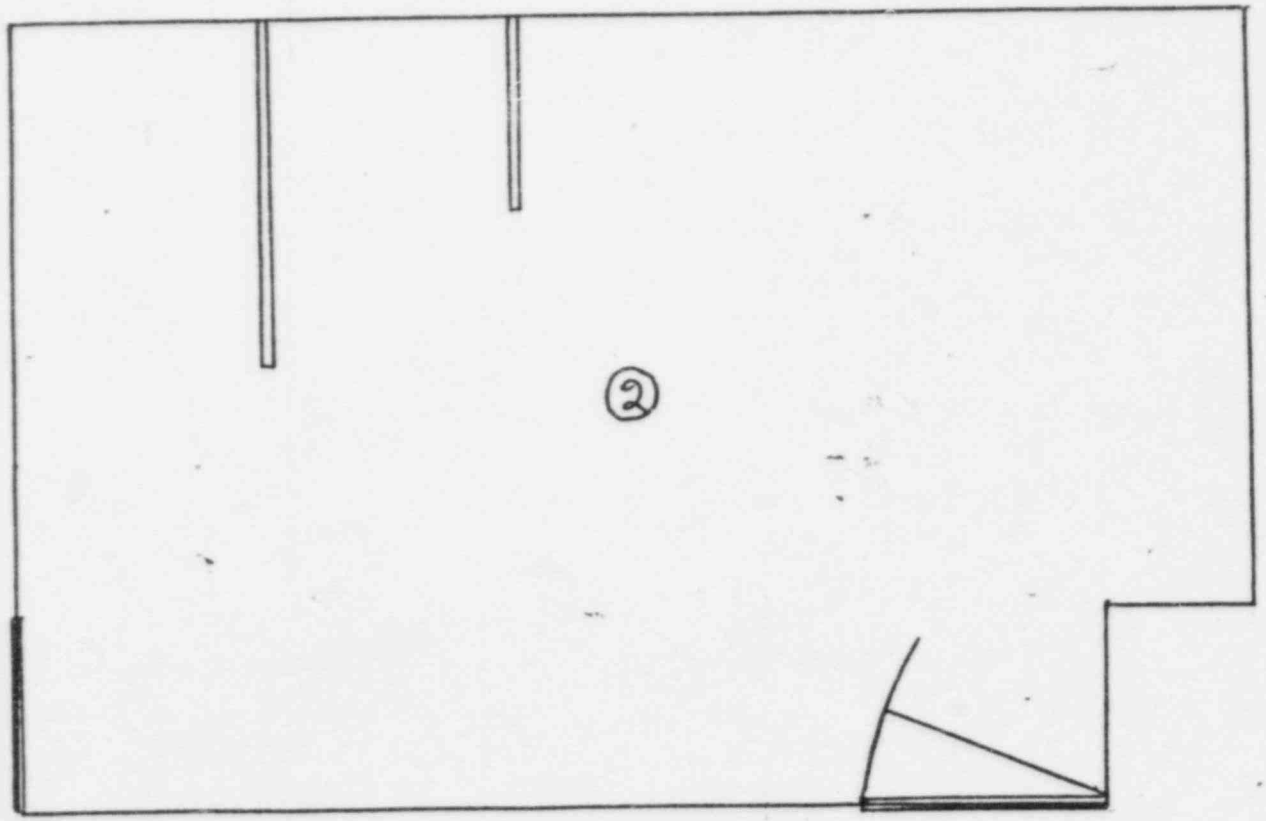
*Indicates that the sample count is not statistically different from background

* CALIBRATED 5-8-85

GPO 873-818

B5A

WASH ROOM
FLOOR
OLA 7/11/85



HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

B6

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	BATH ROOM CEILING	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to		R. DAVIS 6073	
DATE	8/6/85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED				COUNTED BY CLR	DATE 8/6	COUNTS PER MINUTE (Above background)			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND	SAMPLE NO.	DESCRIPTION OF SAMPLE	β γ	SOFT x or βγ	α	REMARKS
*	1296			1	WALLS + CEILING ABOVE				
E140N	1297	βγ	60	2	SUSPENDED CEILING, INCLUDING				
*				3	HEATER + DUCTWORK	*		*	COMBINATION OF DIRECT PROBE, SWIPES.
E520	3832	βγ	002	4					
LUDLUM * MODEL #18	30722	α	0	5					
				6					
				7					
				8					
				9					
				10					
				11					
				12					
				13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					
				21					
				22					
				23					
				24					
				25					
				26					
				27					
				28					

DOSE RATE MEASUREMENTS (mR/hr)

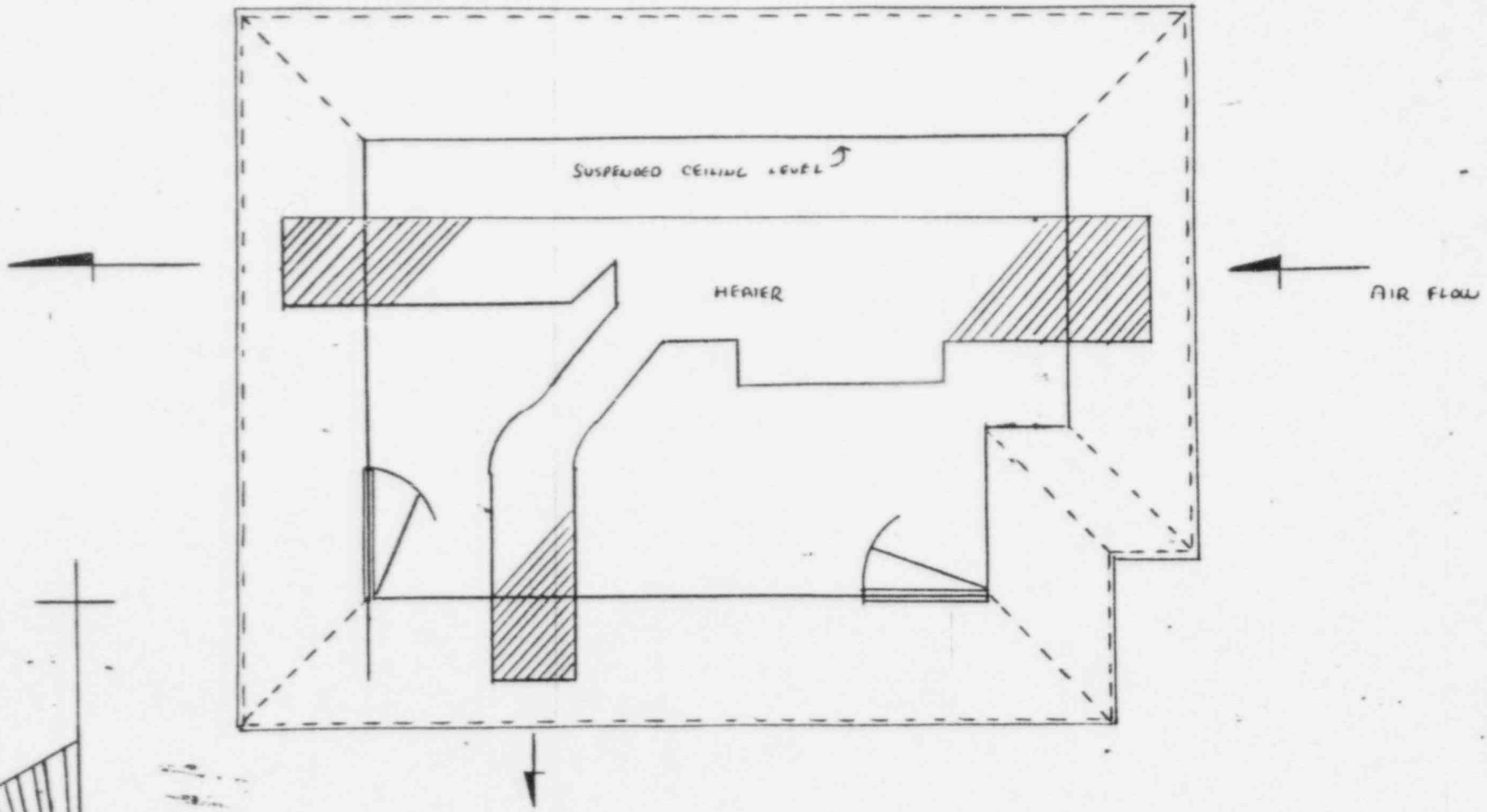
POINT MEASURED	DIST	READING
HEATER INTAKE	CONTACT	BKGD
GENERAL AREA	CONTACT	BKGD

*Indicates that the sample count is not statistically different from background

* ALL INSTRUMENTS CALIBRATED 5-28-85

GPO 873-815

B6A



BATHROOM

ALPHA/BETA-GAMMA SURVEY

ABOVE SUSPENDED CEILING

INCLUDING FURNACE + DUCTS

N

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

C1

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	BACK ROOM NORTH WALL	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR, DDT, PFT							Copy to		R. PAVIS 6673	
DATE	8/1/85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
* EIMON	1296	BY	80
* E520	3832	BY	0.02
VICTOREEN * MODEL 18	015368	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
THIN PIPE ON WALL	CONTACT	.044
ABOVE FAT PIPE ON WALL	CONTACT	.03
SEE DIAGRAM NO 13	CONTACT	BKGD
NO 3	CONTACT	.03
NO 15	CONTACT	BKGD
NO 17	CONTACT	BKGD
NO 81	CONTACT	BKGD

COUNTED BY CLR **DATE** 8/1/85

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	SEE DIAGRAM	600		220	DIRECT PROBE
2		*		30	SWIPE / DECON TO FOLLOW (PAGE II)
3		2000		1400	DIRECT PROBE
4		*		20	SWIPE / DECON TO FOLLOW
5		2000		600	DIRECT PROBE
6		*		*	SWIPE
7		2000		1000	DIRECT PROBE
8		*		40	SWIPE / DECON TO FOLLOW
9		2800		1400	DIRECT PROBE
10		*		100	SWIPE / DECON TO FOLLOW
11		2000		1600	DIRECT PROBE
12		*		60	SWIPE / DECON TO FOLLOW
13		1000		350	DIRECT PROBE
14		*		*	SWIPE
15		320		*	DIRECT PROBE
16		*		*	SWIPE
17		*		600	DIRECT PROBE
18		*		20	SWIPE / DECON TO FOLLOW
19		*		400	DIRECT PROBE
20		*		*	SWIPE
21		*		1600	DIRECT PROBE
22		*		100	SWIPE / DECON TO FOLLOW
23					
24					
25					
26					
27					
28					

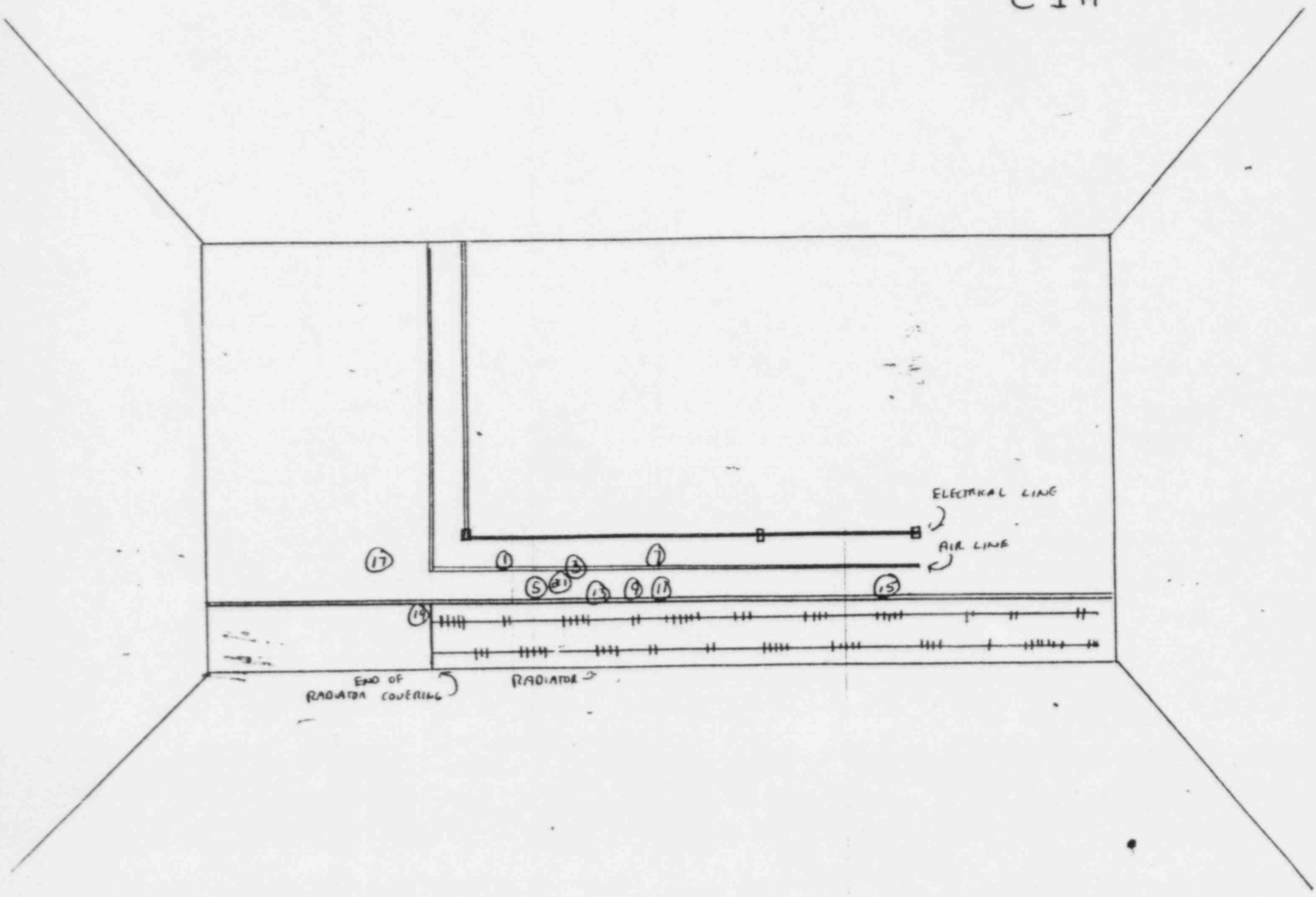
*Indicates that the sample count is not statistically different from background

* ALL INSTRUMENTS CALIBRATED 5-28-85

GPO 873-615

NORTH WALL
BACK ROOM
CLR 8/1/85

C 1 A



HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

C2

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	Back Room	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to		R. DAVIS 6073	
DATE	7/24/85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
* EMON	1296	βγ	80
	1257		80
* E520	3832	βγ	0.03
LUCAS * MODEL II	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
VENT	CONTACT	BKGD
CORNER WALL NEAR CELL #1	CONTACT	BKGD

COUNTED BY CLR **DATE** 7/25

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or βγ	α	REMARKS
1	SOUTH WALL	*		*	DIRECT PROBE
2	VENT	*		*	SWIPE
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

* CALIBRATED 5-28-85

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

C3

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	BACK ROOM	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to		R. DAVIS	
DATE	7/24/85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
*	1296		80
EIKON	1297	βγ	86
*			
ESO	3832	βγ	0.03
CALCIUM *			
MODEL 18	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
NEAR FIRE EXT.	CONTACT	BKGD

COUNTED BY CLR **DATE** 7/24

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	EAST WALL	*		*	DIRECT PROBE
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

* CALIBRATED 5-28-85

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

C4

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	BACK Room	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to		R. DAVIS 6073	
DATE	7/24/85							Copy to			
								Copy to			
								Post		Leak Test Records	-

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
	1296		80
E140N	1277	βγ	80
E520	3832	βγ	0.03
LUDLUM MODEL 18	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
DOOR INTO CELL (OPEN)	CONTACT	0.45
DOOR INTO CELL (CLOSED)	CONTACT	BKGD

COUNTED BY CLR DATE 7/24

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	WEST WALL	*		*	DIRECT PROBE
2	DOOR THRESHOLD LEADING				
3	INTO CELL #1	100		*	DIRECT PROBE (DECON TO FOLLOW)
4		*		*	SWIPE
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

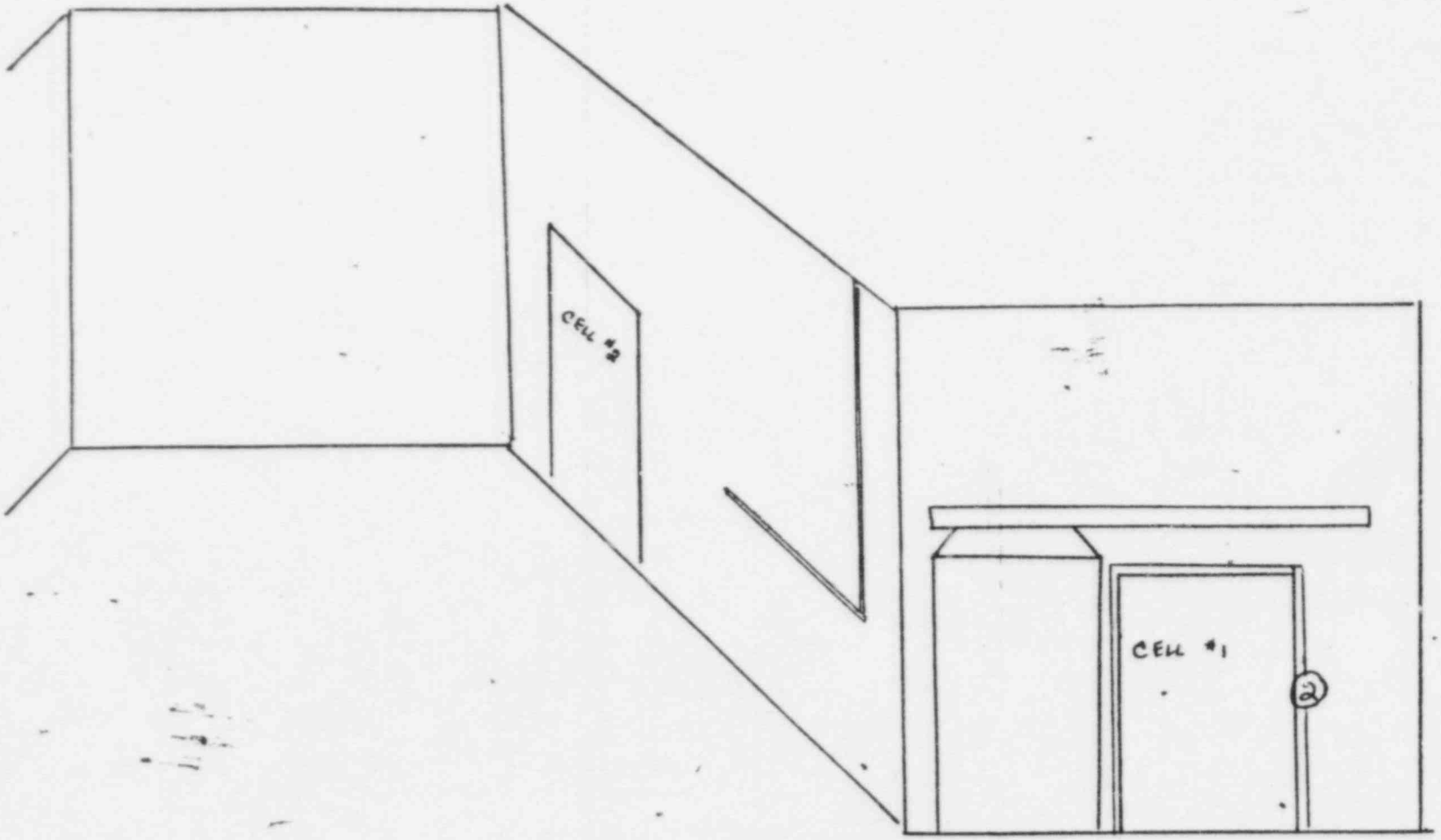
* CALIBRATED 5-28-85

GPO 873-818

[redacted]

C 4 A

BACK ROOM
WEST WALL
7/24/85
CLA



HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

C5

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	BACK ROOM	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
								Copy to		R. DAVIS 6073	
TAKEN BY	CLR							Copy to			
								Copy to			
DATE	7/24/85							Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
	1296		80
EIMON	1297	βγ	80
E520	3832	βγ	0.02
LUDLUM MODEL 12	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING

COUNTED BY CLR **DATE** 7/24

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	CEILING ABOVE				
2	SUSPENDED CEILING RACK	*		*	DIRECT PROBE
3	CEILING TILE	60		*	DIRECT PROBE (PECON TO FOLLOW) (A)
4	CEILING TILE	140		*	DIRECT PROBE (PECON TO FOLLOW) (A)
5		*		*	SWIPES ON ABOVE CEILING TILES
6					
7					
8					SAMPLES OF ABOVE TILE SENT
9					TO LABORATORY FOR ANALYSIS
10					SEE PAGE II
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

* CALIBRATION OF METERS 5-28-85

(A) CONTAMINATED CEILING TILES DISPOSED OF AS RAD WASTE

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

C6

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	BACK ROOM	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to	✓	R. DAVIS 6073	
DATE	8-7-85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
* EIHON	1296 1297	βγ	80
* E520	3832	βγ	0.02
ECOLUM MODEL #18	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING

COUNTED BY CLR DATE 8/7

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	100% βγ SURVEY ON				
2	CEILING & WALLS ABOVE				
3	SUSPENDED CEILING RACK	*		—	COMBINATION OF DIRECT PROBE & SWIPE
4				—	
5					
6					
7	SPOT CHECK FOR α				
8	ON CEILING & WALLS ABOVE				
9	SUSPENDED CEILING RACK	—		*	DIRECT PROBE SURVEY
10					
11					
12					
13	100% α SURVEY OF	*		20	HIGHEST READING OF α DIRECT PROBE
14	LIGHT FIXTURES	*		*	SWIPE
15					
16					SAMPLE OF LIGHT FIXTURES TAKEN TO
17					NRL LAB. RESULTS WERE LIGHTS
18					ARE HAVE NATURALLY OCCURRING α ON
19					THEM
20					
21					
22					
23					
24					
25					
26					
27					
28					

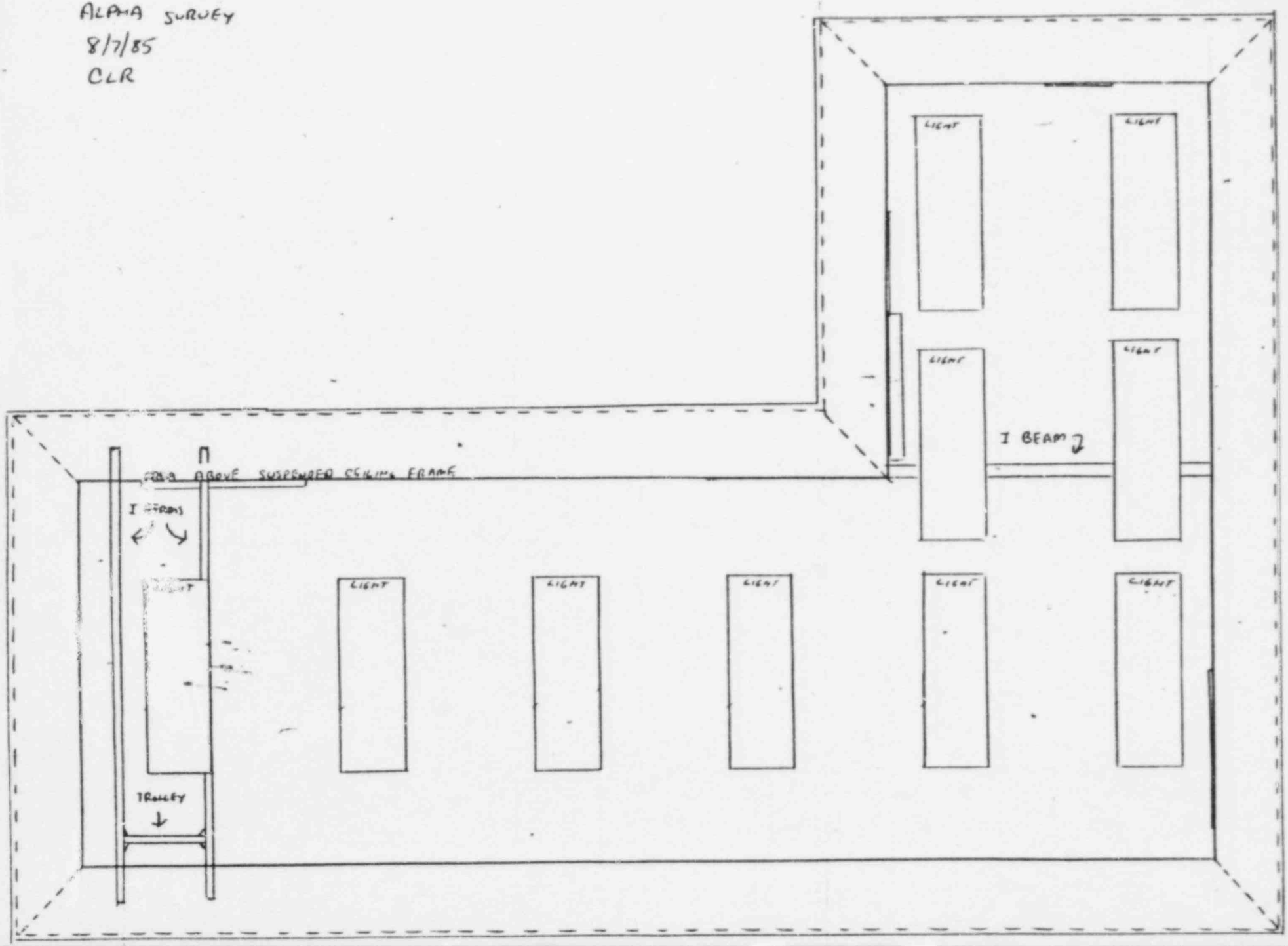
*Indicates that the sample count is not statistically different from background

* LAST CALIBRATED 5-28-85

GPO 873-815

C 6 A

BACK ROOM
ALPHA SURVEY
8/7/85
CLR



HEALTH PHYSICS MONITORING REPORT
NRW-NRL-5101/6064 (Rev. 9-80)

C7

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	BACK Room	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR/ODT							Copy to		R. DAUB C073	
DATE	7/19/85							Copy to			
								Copy to			
								Post		Leak Test Records	-

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
* E140N	1296	βγ	80
	1297		80
* E520	3332	βγ	003
LUDLUM * MODEL 18	20222	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
SAMPLE NO. 1	CONTACT	0.04
7	"	0.09
9	"	BKGD
13	"	0.05
15	"	0.09
21	"	0.04

COUNTED BY ODT **DATE** 7/19

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	CONCRETE NEXT TO TUBE	180		*	DIRECT PROBE (DECON TO FOLLOW) SEE PAGE I1
2		*		*	SWIPE
3	CONCRETE NEXT TO TUBE	220		*	DIRECT PROBE (DECON TO FOLLOW)
4		*		*	SWIPE
5	CONCRETE NEXT TO TUBE	180		*	DIRECT PROBE (DECON TO FOLLOW)
6		*		*	SWIPE
7	TRACKS	600		*	DIRECT PROBE
8		*		*	SWIPE
9	CONCRETE FLOOR	200		*	DIRECT PROBE
10		*		*	SWIPE
11	CONCRETE FLOOR NORTH SIDE	380		*	DIRECT PROBE
12		*		*	SWIPE
13	FLOOR/FRONT OF CELL #1	600		*	DIRECT PROBE
14		*		*	SWIPE
15	" " " "	700		*	DIRECT PROBE
16		*		*	SWIPE
17	" " " "	260		*	DIRECT PROBE
18		*		*	SWIPE
19	" " " "	300		*	DIRECT PROBE
20		*		*	SWIPE
21	RIGHT CORNER OF FLOOR (CELL)	480		*	DIRECT PROBE
22		*		*	SWIPE
23					
24					
25					
26					
27					
28					

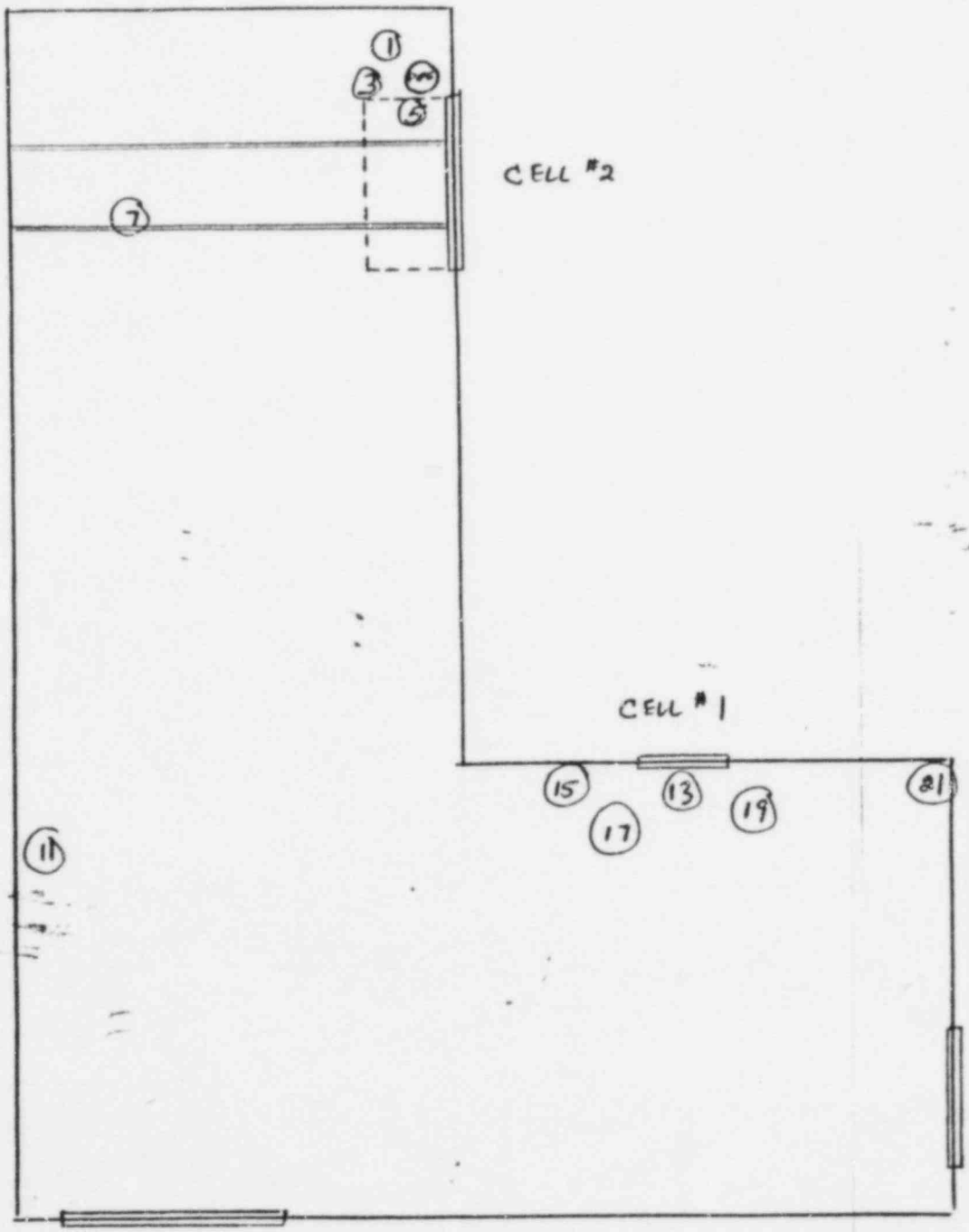
*Indicates that the sample count is not statistically different from background

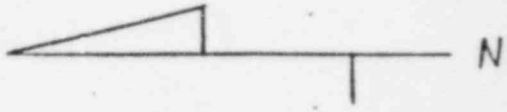
* CALIBRATED 5-25-85

GPO 873-818

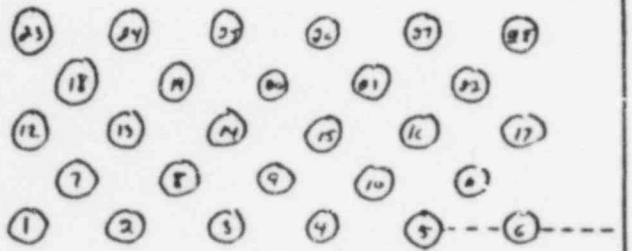
C7A

BACK ROOM
FLOOR SURVEY
7/19/85
DOT





C 8 A
BACK ROOM
STORAGE TUBES



DOOR TO
CELL #2

NOTE: 20 of 28 tubes were empty - these tubes were cut in half with top half surveyed, decon as necessary, and released, and lower half disposed of as rad waste

8 storage tubes were concrete-filled - these were cut open at bottom cap and surveyed for residual contamination, then released - NRC retained 8 bottom caps

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

C8

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
		Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
ROOM NO.	BACK ROOM							Copy to		R. DAVIS 6073	
TAKEN BY	OH/CLR							Copy to			
DATE	8/13/85							Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
	1296		80
EI40N	1297	BY	80
E520	3832	BY	0.03
LUDLUM MODEL 18	20722	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
TUBE NO. 3	CONTACT	1.5
TUBE NO. 16	"	0.25
TUBE NO. 26	"	1.0
TUBE NO. 27	"	1.5
ALL OTHERS	—	<0.1

COUNTED BY CLR DATE 8/13

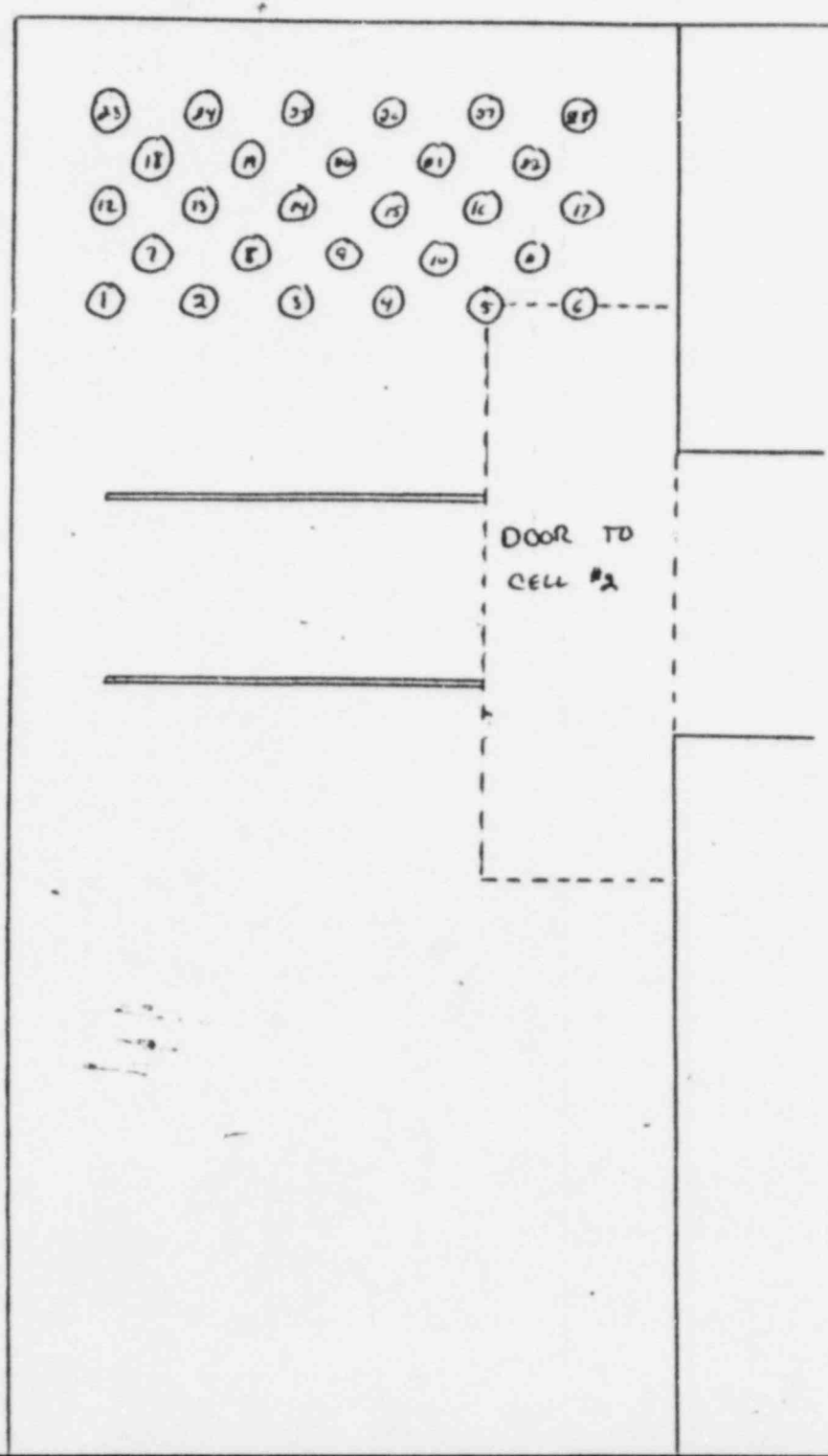
SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	STORAGE TUBE	*		*	EXTERIOR DIRECT PROBE
2	" "	*		*	
3	" "	8000		*	DECON TO FOLLOW
4	" "	*		*	
5	" "	*		*	
6	" "	*		*	
7	" "	*		*	
8	" "	*		*	
9	" "	*		*	
10	" "	10000		*	DECON TO FOLLOW
11	" "	*		*	
12	" "	*		*	
13	" "	*		*	
14	" "	*		*	
15	" "	*		*	
16	" "	*		*	
17	" "	*		*	
18	" "	*		*	
19	" "	*		*	
20	" "	*		*	
21	" "	*		*	
22	" "	*		*	
23	" "	*		*	
24	" "	*		*	
25	" "	*		*	
26	" "	7000		*	
27	" "	1.5 mR/hr		*	
28	" "	*		*	

*Indicates that the sample count is not statistically different from background

CALIBRATED 5-28-85

GPO 873-818

C 8 A
BACK ROOM
STORAGE TUBES



NOTE: 20 of 28 tubes were empty - these tubes were cut in half with top half surveyed, decon as necessary, and released, and lower half disposed of as rad waste

8 storage tubes were concrete-filled - these were cut open at bottom cap and surveyed for residual contamination, then released - NRL retained 8 bottom caps

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

01

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	CELL #1	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	D. TYBOR							Copy to		R. DAVIS 6073	
DATE	9-6-85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
E140	1398	βγ	100
LUDLUM MODEL 18	30799	α	0
E-520	3832	βγ	.04

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
SOUTH WALL WEST CORNER	CONTACT	0.07
EXHAUST DUCT IN FLOOR	CONTACT	0.13
WINDOW EDGE	CONTACT	BKGD
ENTRYWAY	CONTACT	BKGD
LEDGE	CONTACT	BKGD

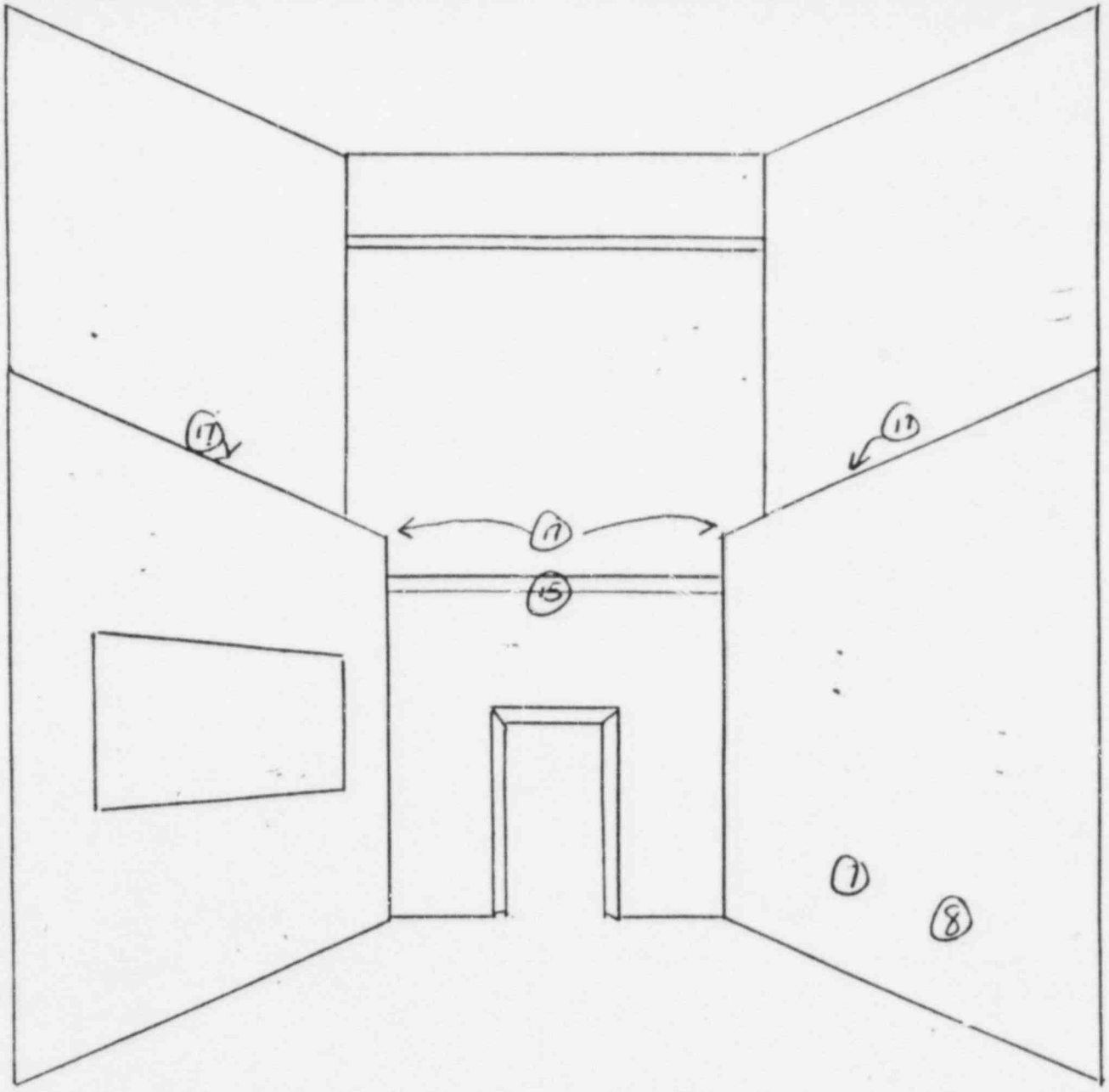
COUNTED BY OOT DATE 9-6

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	WINDOW RIM	*		*	DIRECT PROBE
2	ENTRY WAY	*		*	" "
3	WEST WALL TO [illegible]				
4	LEDGE	*		*	" "
5	NORTH WALL UP TO	*		*	" "
6	LEDGE →				
7	EXCEPT FOR SPOT #1	600		*	" " / DECON TO FOLLOW (PAGE I1)
8	" " " #2	600		*	" " / DECON TO FOLLOW (PAGE I1)
9	SPOT #1	*		*	SWIPE
10	SPOT #2	*		*	SWIPE
11	SOUTH WALL UP TO				
12	LEDGE	*		*	DIRECT PROBE
13	EAST WALL EXCEPT FOR				
14	I - BEAM	*		*	" "
15	I-BEAM	1000		*	" " / DECON TO FOLLOW
16	" "	*		*	SWIPE
17	COMPLETE LEDGE AROUND				
18	ROOM	250		*	DIRECT PROBE / DECON TO FOLLOW
19	" " "	*		*	SWIPE
20	COMPLETE ROOM ABOVE				
21	LEDGE	*		*	DIRECT SWIPE
22	CEILING	*		*	" "
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

GPO 873-818

D1A



BLDG 89
CELL #1
3 SIDES

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

02

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	Cell #1	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	D Tybor							Copy to		R DAVIS 6073	
DATE	9-3-85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
E 140N AP210T	1377	BY	100
E-520 HP 270	3832	BY	.02
Ludlum 18 435	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
Stainless Steel	Contact	.02

COUNTED BY DOT DATE 9-3

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	Stainless Steel	260		*	Was decon'd And Released Clean
2	" "	*		*	
3	" "	*		*	
4	" "	*		*	
5	" "	*		*	
6	" "	*		*	
7	" "	*		*	
8	" "	*		*	
9	" "	*		*	
10	" "	*		*	
11	" "	*		*	
12	" "	*		*	
13	" "	*		*	
14	" "	*		*	
15	" "	*		*	
16	" "	*		*	
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

Instruments Calibrated 8-24-85

GPO 873-615

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

03

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	CELL #1	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to			
								Copy to			
								Copy to			
DATE	9-26-85							Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
F140	1398	βγ	60
E520 Ludlum	3832	βγ	0.04
Model #3	34898	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
DIVIDER TOP	CONTACT	0.08
FLOOR UNDER WALL	CONTACT	0.10

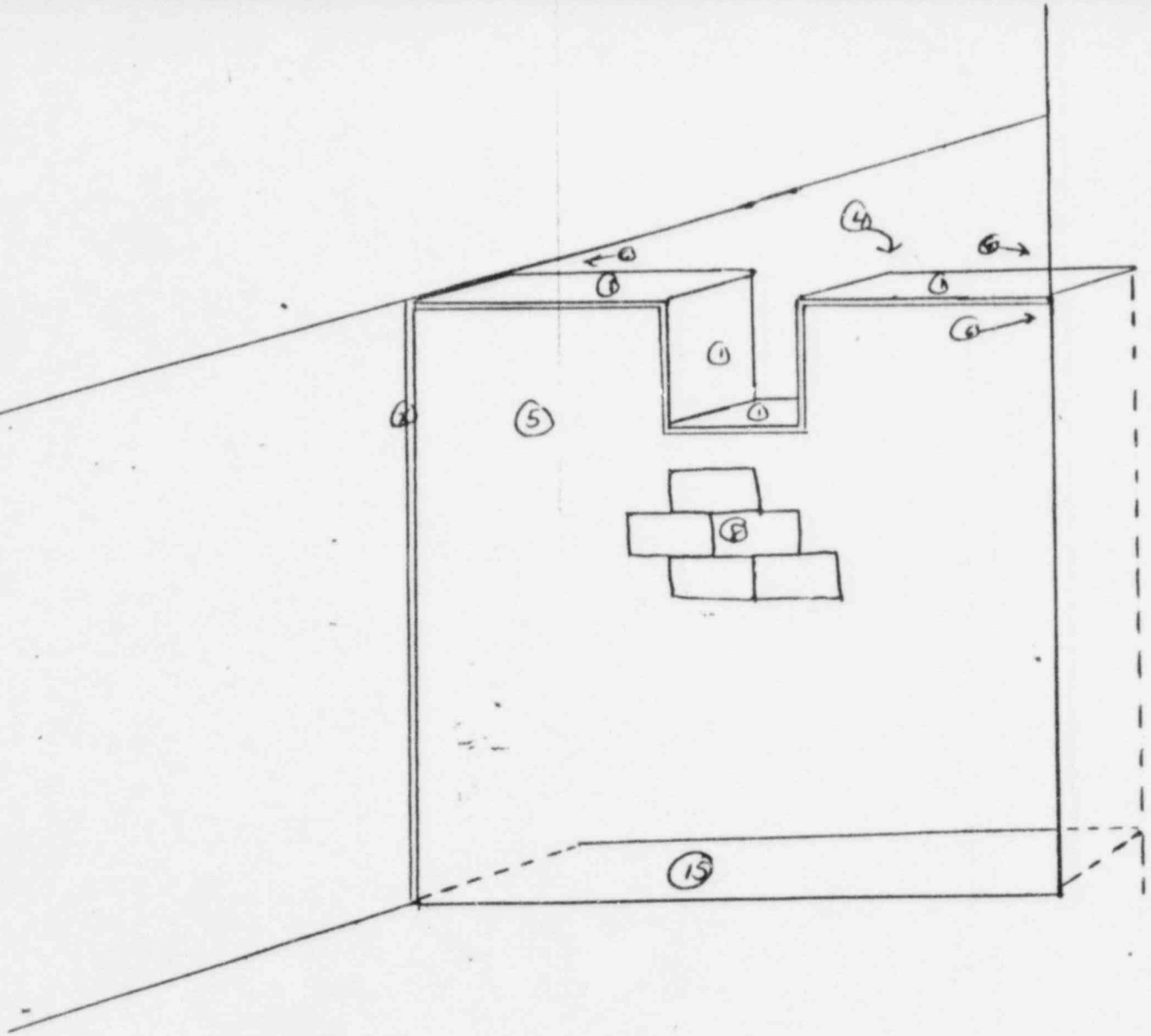
COUNTED BY CLR DATE 9/26

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	DIVIDER TOP BETWEEN				
2	CELL #1 + CELL #2	600		*	DIRECT PROBE – DECON TO FOLLOW
3					
4	WALL CELL #1	*		*	DIRECT PROBE
5	WALL CELL #2	*		*	"
6	IRON WALL RETAINERS	*		*	"
7					
8	CEMENT BLOCKS IN WALL:				
9	14 BLOCKS CONTAINED				
10	FIXED CONTAMINATION				
11	HIGHEST READING —	700		*	DIRECT PROBE & SWIPE - DECON TO FOLLOW
12					
13	OTHER BLOCKS	*		*	DIRECT PROBE
14					
15	FLOOR UNDER BLOCKS	200		*	DIRECT PROBE & SWIPE: LOOSE CONTAMINATION
16					
17					
18					
19					
20					
21					
22					
23					
24					*Indicates that the sample count is not statistically different from background
25					
26					
27					
28					

GPO 873-818

D 3 A

CELL DIVIDING WALL



HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

E1

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED	RECIPIENT (NAME & CODE)	ACTION COMPLETE
		Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results		
ROOM NO.	CELL #2							Copy to	R. DAVIS 6073	
TAKEN BY	C L ROHM							Copy to		
DATE	9-6-85							Copy to		
								Post	Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
E140	1398	βγ	40
LUDLUM MODEL 18	30722	α	0
E520	3832	βγ	0.02

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING

COUNTED BY CLR DATE 9-6

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	ENTRYWAY EXCEPT FOR				
2	FLOOR	*		*	DIRECT PROBE
3	ENTRYWAY FLOOR	1000		*	" "
4	" "	200			SWIPE
5	NORTH WALL				SEE MAP
6	JUST BELOW LEDGE	170		.	DIRECT PROBE (FIXED) DECON TO FOLLOW (PG I1)
7	" " "	200		.	" " "
8	" " "	220			" " "
9	" " "	180			" " "
10	" " "	250			" " "
11	" " "	180			" " "
12	ABOVE LEDGE ROD	250			" " "
13	WEST WALL UP TO				
14	LEDGE	*			DIRECT PROBE
15	SOUTH WALL				
16	(AS INDICATED ON MAP E1B)	180			DIRECT PROBE - FIXED - DECON TO FOLLOW (PG I1)
17		200			
18		200			
19		160			
20		200			
21		250			
22		300			
23		500			
24		500			*Indicates that the sample count is not statistically different from background
25					
26	CONTINUED ON				
27	NEXT PAGE (E1A)				
28					

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

E1A

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	CELL #2	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to			
DATE	9-6-85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING

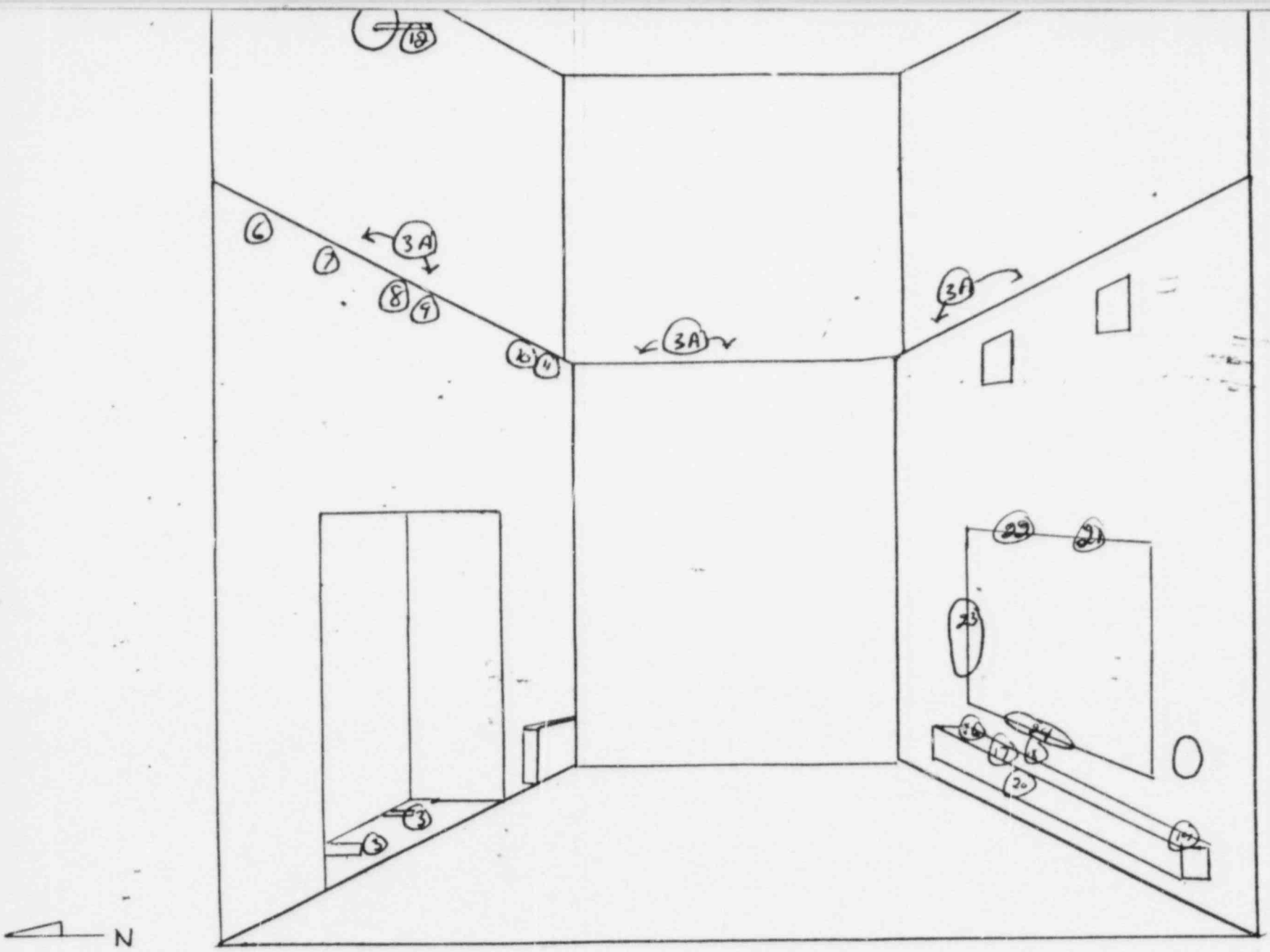
COUNTED BY _____ DATE _____

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	CONTINUED FROM E1				
2					
3A	LEDGE AROUND ROOM	400			DECON TO FOLLOW
4	ROOM ABOVE LEDGE	*			
5	CIELING	*			
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

GPO 872-616

E / B



BLOG 89
CELL #2
3 SIDES

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

E2

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	Cell #2	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	D Tyler							Copy to		R DAW 3 6073	
DATE	9-4-85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
E140N NP210T	1377	B/γ	80
E520 NP200	3832	B/γ	.02
Ludlum 18 1/3-5	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
STAINLESS STEEL	CONTACT	NO HIGHER THAN BKGD
SMALL PIECES + STRIPS	"	" "

COUNTED BY DDT DATE 9-4

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	Stainless Steel	*		*	3-full sheets - DIRECT PROBE
2	" "	*		*	
3	" "	*		*	
4	partial steel sheets	*		*	
5	" " "	*		*	
6	" " "	*		*	
7	" " "	*		*	
8	" " "	*		*	
9	" " "	*		*	
10	" " "	*		*	
11	" " "	*		*	
12	SMALL pieces & Strips	*		*	
13	" " "	*		*	
14	" " "	*		*	
15	" " "	*		*	
16	" " "	*		*	
17	" " "	*		*	
18	" " "	*		*	
19	" " "	*		*	
20	" " "	*		*	
21	" " "	*		*	
22	" " "	*		*	
23	" " "	*		*	
24	" " "	*		*	
25	" " "	*		*	
26	" " "	*		*	
27	" " "	*		*	
28	" " "	*		*	

*Indicates that the sample count is not statistically different from background

All instruments Calibrated 8-24-85

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

F1

BUILDING	89
ROOM NO.	ROOF
TAKEN BY	OH/PFT
DATE	7-19-85

LABORATORY COUNTING INSTRUMENT					
Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff

ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
Notice of Results			
Copy to		R. DAVIS 6073	
Copy to			
Copy to			
Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
* E140N	1296	BY	40
	1297		40
* E520	3832	BY	0.02
CLOUD MODEL 18	30777	α	0

COUNTED BY OH DATE 7/19

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	INSIDE FILTER (HEPA) MATCH LID	*		*	DIRECT PROBE
2	INSIDE PREFILTER " "	*		*	DIRECT PROBE
3	PRE-FILTER HOLDERS	*		*	SWIPE
4	" " "	40		*	DIRECT PROBE
5	SIDE OF HEPA FILTER	*		*	DIRECT PROBE
6	BESIDE FILTER (HEPA)	*		*	DIRECT PROBE
7	ROOF SURFACE/FRONT OF LATCHES	*		*	DIRECT PROBE
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

DOSE RATE MEASUREMENTS (mR/hr)

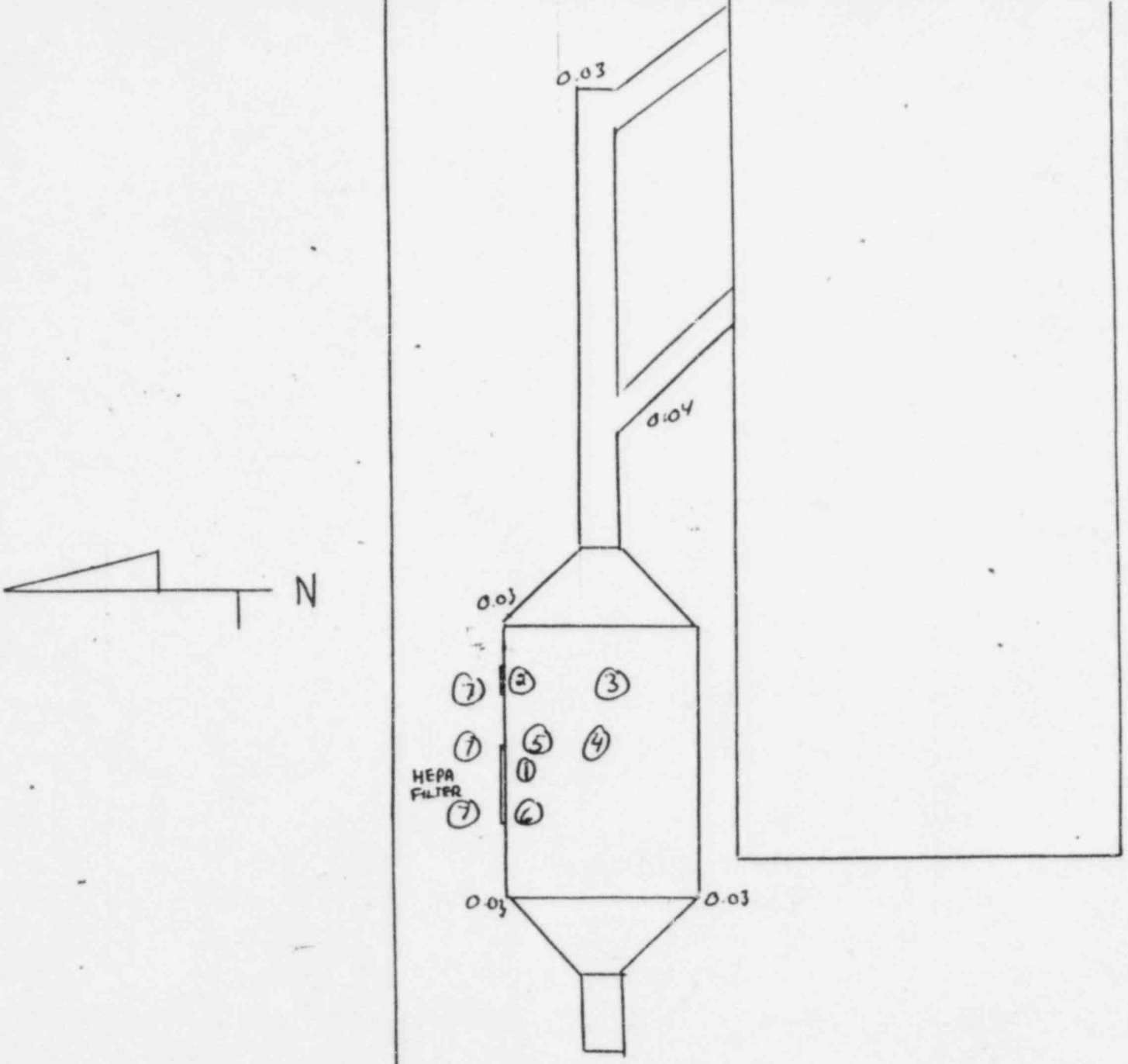
POINT MEASURED	DIST	READING
LONG PIPE FROM FRONT	CONTACT	0.03
OFFSHOOT PIPE	CONTACT	0.04
AMERICIUM CONTAINER	CONTACT	0.03

*Indicates that the sample count is not statistically different from background

* CALIBRATED 5-28-85

GPO 873-818

F1A



HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

F2

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	Cells 1+2	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	DSU							Copy to		R. DAVIS 6073	
DATE	10-9-85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED				COUNTED BY	DATE
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND		
1. E-140-N	1398	βγ	60		
2. E-520	3832	βγ	.02		
3. LUDLUM 3	39898	α	.0		

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
Cell #1 Duct	Contact	.08
Cell #2 Duct	Contact	.04

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	Cell #1 Ventilation Duct	*		*	Swipe
2	(Remaining in Floor)				
3	Cell #2 Ventilation Duct	*		*	Swipe
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

1. 8-24-85 CALIBRATION
2. 5-28-85
3. 9-9-85

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

F3

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	ventilation system	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	DH/PFT							Copy to			
DATE	8-20-85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
E-140N	1296 1297	Bγ	40
L-18	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING

COUNTED BY	DATE	COUNTS PER MINUTE (Above background)			
SAMPLE NO.	DESCRIPTION OF SAMPLE	β γ	SOFT x or βγ	α	REMARKS
1	housing interior direct	*		*	ventilation filter housing
2	exterior direct	*		*	
3	blower housing	*		*	blower and exhaust
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

G1

BUILDING	Outside Building 100	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	OUTSIDE	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	D. TIBBOR							Copy to		R. DAVIS 6023	
DATE	8-27-85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
E140			
HP210T	1296	BY	100
E520			
HP27D	3832	BY	.02

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
Tank #1	Contact	0.12
Tank #2	"	0.12
Pipe #1	"	0.02
Pipe #2	"	0.08
Pipe Above #1	"	0.03
Pipe Above #2	"	0.03
Pipe Above #3	"	0.01
Tank #3	"	0.12
Pipe #3	"	0.03

COUNTED BY	DATE	COUNTS PER MINUTE (Above background)			
SAMPLE NO.	DESCRIPTION OF SAMPLE	β γ	SOFT x or β γ	α	REMARKS
1	Tank #1	240		*	See G2
2	Tank #2	240		*	see G2
3	Tank #3	240		*	see G2
4	pipe #1	*		*	
5	pipe #2	*		*	
6	pipe #3	*		*	
7	dark plastic	*		*	
8	yellow plastic	*		*	
9	pipes above ground	*		*	
10					
11					
12					
13					
14					Pipes Above, are the pipes which came out of the tops of the tanks and could be seen above ground.
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

All instruments Calibrated 8-24-85

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

G2

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
		Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
ROOM NO.	OUTSIDE							Copy to		R DAVIS 6073	
TAKEN BY	CLR							Copy to			
DATE	9/20/85							Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
E-520 *	1398	BY	40
E520	3812	BY	0.02
VICTOREEN MODEL #3	39898	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
TANK NO. 1	CONTACT	0.09
TANK NO. 2	CONTACT	0.06
TANK NO 3	CONTACT	0.02

COUNTED BY CLR **DATE** 9/20

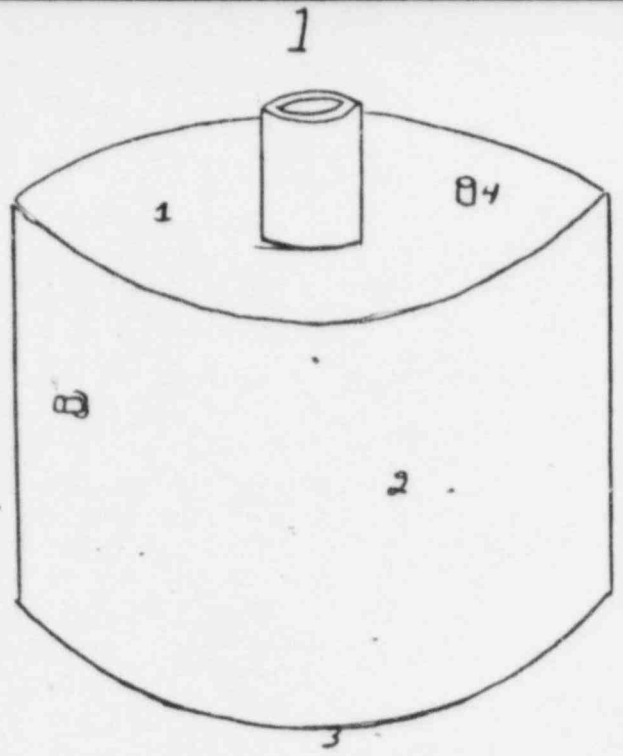
SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	TOP OF TANK NO 1	*		*	DIRECT PROBE SURVEY
2	SIDE OF TANK NO 1	1040		*	DISPOSED AS RAD WASTE
3	BOTTOM OF TANK NO 1	800		*	" " " "
4	SMALL UPPER PIPE (TANK 1)	600		*	" " " "
5					
6	TOP OF TANK NO 2	*		*	DIRECT PROBE SURVEY
7	SIDE OF TANK NO 2	*		*	" " "
8	BOTTOM OF TANK NO 2	604		*	DISPOSED AS RAD WASTE
9	SMALL UPPER PIPE TANK NO 2	*		*	DIRECT PROBE & SWIPE
10	SIDE PIPE TANK NO 2	300		*	DISPOSED AS RAD WASTE
11					
12	TOP OF TANK NO 3	*		*	DIRECT PROBE
13	SIDE OF TANK NO 3	*		*	" "
14	BOTTOM OF TANK NO 3	700		*	DISPOSED AS RAD WASTE
15	SMALL UPPER PIPE	*		*	DIRECT PROBE
16	SIDE PIPE TANK NO 3	*		*	" "
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

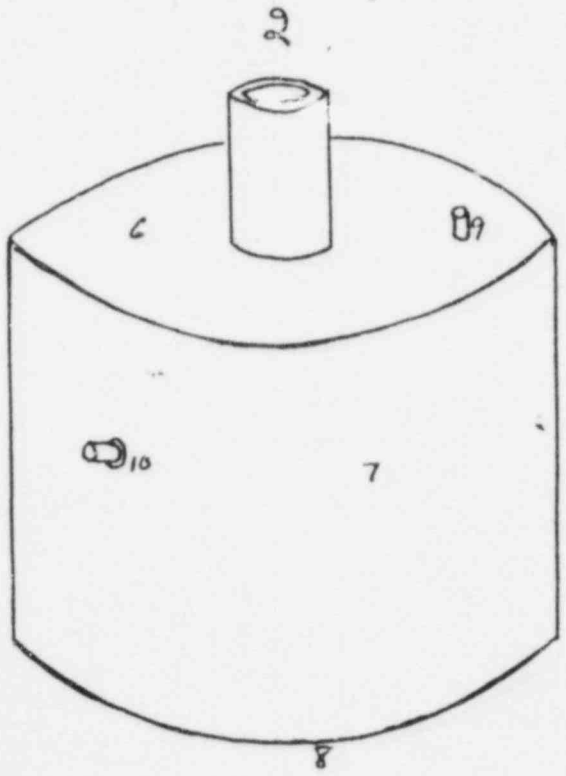
*Indicates that the sample count is not statistically different from background

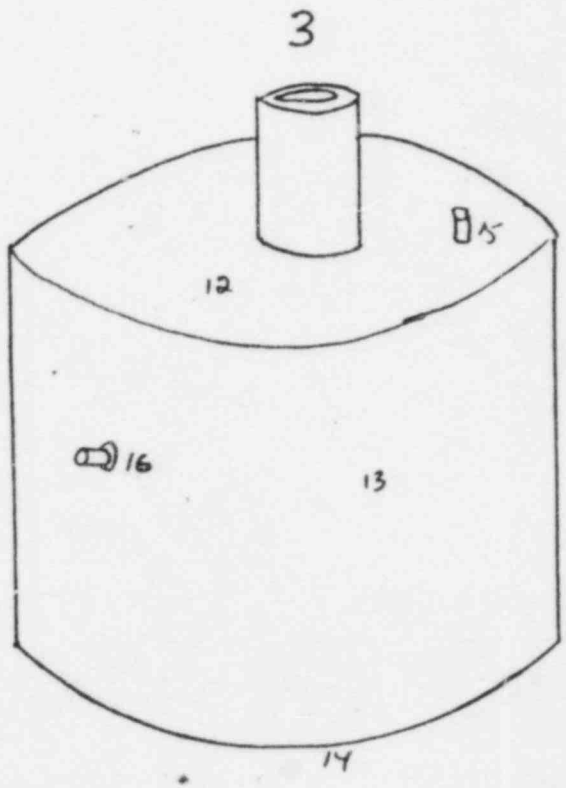
CALIBRATED 8-24-85

GPO 873-815

C 2 A
BLOG 82
TANKS







HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

G 3

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.		Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	DH							Copy to			
DATE	10-10-85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
E140N	1398	Bγ	60
L-18	307220	α	0

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING

COUNTED BY | DATE

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	lg. cask inside out	*		*	large slipping cask (direct)
2	inside cask shell	*		*	inside cutaway side of cask (swipe)
3	sm. cask inside out	*		*	small slipping cask (direct)
4	swipes lg. cask	*		*	large cask (semi-perchlorate)
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

H1

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.		Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to			
DATE	8-8-85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
E140N	1296	βγ	60
	1297		
E520	3832	βγ	0.03
LUDLUM MODEL # 18	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING

COUNTED BY CLR DATE 8/8

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	RELEASE SURVEYS OF THE				
2	FOLLOWING ITEMS				
3					
4	PERISCOPE INTO CELL #1				
5	OPERATING ROOM SIDE	*		*	NO LOOSE, NO FIXED
6					
7	LEAD PLUG FOR ACCESS				
8	TUBE INTO CELL #2	*		*	NO LOOSE OR FIXED
9					
10	1½ INCH ELECTRICAL				
11	CABLE TO CELL TROLLEY				
12	W/ RUBBER CASING	*		*	CASING + CABLE SEPERATED DUE TO INABILITY TO REMOVE FIXED AND LOOSE FROM RUBBER. RUBBER THEN DISPOSED OF AS CONTAMINATED WASTE.
13					
14					
15					
16					
17					
18	LIGHT SOCKETS +				
19	ELECTRICAL BOXES IN				
20	CELLS NO 1 + 2	*		*	SOME FIXED LOCATED + PROPERLY DECONTAMINATED (APPROX. 180 CPM)
21					
22					
23	FURNACE FILTERS (BATHROOM)	*		*	NO LOOSE OR FIXED
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

H2.

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.		Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to			
DATE	8-8-85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
EITON	1296	βγ	60
	1297		
E520	3832	βγ	0.03
LUDLUM MODEL #18	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING

COUNTED BY CLR DATE 8/8

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) βγ	SOFT x or βγ	α	REMARKS
1	RELEASE SURVEYS OF THE				
2	FOLLOWING ITEMS				
3					
4	GENERAL MILL MANIPULATOR				
5	IN CELL #2	*		*	DECONTAMINATED ALL PARTS SUCCESSFULLY EXCEPT FOR WORM GEAR WHICH WAS DISPOSED OF AS RADIOACTIVE WASTE.
6					
7					
8					
9	MANIPULATOR #1 ALL				
10	SECTIONS ON OPERATING				
11	ROOM SIDE	*		*	NO FIXED OR LOOSE
12					
13	MANIPULATOR #2 ALL				
14	SECTIONS ON OPERATING				
15	ROOM SIDE	*		*	NO FIXED OR LOOSE
16					
17	MANIPULATOR #3 ALL				
18	SECTIONS ON OPERATING				
19	ROOM SIDE	*		*	NO FIXED OR LOOSE
20					
21	MANIPULATOR #4 ALL				
22	SECTIONS ON OPERATING				
23	ROOM SIDE	*		*	NO FIXED OR LOOSE
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

H3

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.		Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
								Copy to	✓	R. DAVIS 6073	
TAKEN BY	CLR							Copy to			
								Copy to			
DATE	8-8-85							Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
E140N	1296 1297	βγ	60
E520	3832	βγ	0.03
LUDLUM MODEL #18	30722	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING
ALL OBJECTS ON LIST	CONTACT	<0.1

COUNTED BY CLR DATE 8/8

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or βγ	α	REMARKS
1	RELEASE SURVEYS OF THE				
2	FOLLOWING ITEMS				
3					
4	TABLES FROM CELL #2	*		*	DECONTAMINATED LEG ON 1 TABLE OF 180 CPM FIXED.
5					
6	METAL TABLE TOP FROM				
7	CELL #2	*		*	DECONTAMINATED CORNER OF 120 CPM FIXED.
8					
9	METAL CASINGS FROM				
10	INSIDE METAL CYLINDERS				
11	INSIDE BLDG, BACK ROOM	*		*	
12					
13	MOTOR #1 USED TO				
14	OPERATE METAL BELT	*		*	DECONTAMINATED BOLTS OF 200 CPM FIXED
15					
16					
17	MOTOR #2 USED TO				
18	OPERATE CELL TROLLEY	*		*	
19					
20	ASSORTED LEAD BRICKS				
21	FROM CELLS #1 + #2	*		*	DECONTAMINATED BRICKS (7) WITH HIGHEST READING BEING 250 CPM FIXED.
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

GPO 873-815

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

H4

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.		Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to			
DATE	9/27/85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED

TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
ELION	1398	BY	40
E520	3832	BY	0.03
VICTOREEN MODEL #3	39898	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING

COUNTED BY CLR DATE 9/27

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	RELEASE SURVEYS OF				
2	THE FOLLOWING ITEMS				
3					
4	STAINLESS STEEL FROM				
5	CELL #2 DOOR	*		*	DIRECT PROBE
6					
7	TOP HALF OF ALL OUTSIDE				
8	STORAGE TUBES	*		*	DIRECT PROBE + SWIPES
9	(TUBES WERE CUT IN HALF)				
10					
11	LEAD STORAGE PIG #1	*		*	DECONTAMINATED INSIDE THAT WAS
12					300 CCPM FIXED
13					
14	LEAD STORAGE PIG #2	*		*	DECONTAMINATED TOP THAT WAS
15					800 CCPM AT HIGHEST POINT
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

I1

BUILDING		LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.		Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	CLR							Copy to			
DATE	8/01 - 10/01							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING

COUNTED BY CLR DATE

SAMPLE NO.	DESCRIPTION OF SAMPLE PAGE	COUNTS PER MINUTE (Above background) β γ	SOFT x or βγ	α	REMARKS
1	A1 - DOOR THRESHOLD	*		*	DECONTAMINATED 9/23/85
2	B5 - MIDDLE OF FLOOR	*		*	CONTAMINATED TILE DISPOSED AS RAM 9/20/85
3	C1 - NORTH WALL - BACK ROOM	*		*	DECONTAMINATED 9/27/85
4	C4 - DOOR THRESHOLD	*		*	" 9/11/85
5	C5 - CEILING TILE	*		*	CEILING TILE DISPOSED AS RAM 9/4/85
6	C6 - LIGHT FIXTURES	*		*	SEE EXPLANATION - PAGE C6
7	C7 - CONCRETE NEXT TO TUBE	*		*	DECONTAMINATED 8/20/85
8	C8 - STORAGE TUBES	*		*	RAM INSIDE TUBES DISPOSED OF 8/21/85
9	D1 - SPOTS ON NORTH WALL	*		*	DECONTAMINATED 10/01/85
10	D1 - SOUTH WALL I-BEAM	*		*	" 10/02/85
11	D1 - COMPLETE LEDGE	*		*	DECONTAMINATED 9/27/85
12	E1 - ENTRYWAY FLOOR	*		*	" 10/01/85
13	E1 - NORTH WALL	*		*	" 9/30/85
14	E1 - ABOVE LEDGE ROD	*		*	DISPOSED OF AS RAM 10/01/85
15	E1 - SOUTH WALL	*		*	DECONTAMINATED 9/27/85
16	E1A - LEDGE	*		*	" 10/01/85
17	C1 - C2 - TANKS	*		*	DISPOSED OF AS RAM 9/26/85
18	D3 - DIVIDER TOP	*		*	DISPOSED OF AS RAM 9/30/85
19	D3 - CEMENT BLOCKS	*		*	DECONTAMINATED 9/27/85
20	D3 - FLOOR UNDER BLOCKS	*		*	" "
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

GPO 873-818

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

I2

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.		Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	DSV							Copy to		R. DAVIS 6073	
DATE	10-8-85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
E140N	1398	βγ	60
E520	3832	βγ	0.02
Ludlum 3	89898	α	0

DOSE RATE MEASUREMENTS (mR/hr)

POINT MEASURED	DIST	READING

COUNTED BY DSV DATE 10-5

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or βγ	α	REMARKS
1	Concrete Block Roof above cell, 1+2	*		*	Swipes
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

1. 8-24-85 CALIBRATION
2. 5-28-85
3. 9-9-85

GPO 873-815

HEALTH PHYSICS MONITORING REPORT
NDW-NRL-5101/6004 (Rev. 9-80)

I 3

BUILDING	89	LABORATORY COUNTING INSTRUMENT						ACTION INDICATED		RECIPIENT (NAME & CODE)	ACTION COMPLETE
ROOM NO.	Hot Cells	Type of Counter	Serial No.	Type of Activity	Bkd. C/M	Critical Level	% Eff	Notice of Results			
TAKEN BY	DH/DSV							Copy to			
DATE	10-9-85							Copy to			
								Copy to			
								Post		Leak Test Records	

SURVEY INSTRUMENT USED			
TYPE MODEL NO.	SERIAL NO.	RAD'N TYPE	BACK-GROUND
E140N	1398	β γ	60
E120	3832	β γ	0.03
L-18	39898	α	0

DOSE RATE MEASUREMENTS (mR/hr)		
POINT MEASURED	DIST	READING
lead brick wall	contact	0.03

COUNTED BY | DATE

SAMPLE NO.	DESCRIPTION OF SAMPLE	COUNTS PER MINUTE (Above background) β γ	SOFT x or β γ	α	REMARKS
1	Cell floor	*		*	highest reading
2	lead brick wall (surface)	*		*	highest reading
3	" (duct)	*		*	highest reading
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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21					
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24					
25					
26					
27					
28					

*Indicates that the sample count is not statistically different from background

GPO 873-815

SECTION IV

Calibration of Instruments

A. During the course of work under this contract, the following field instruments were used.

Instrument	Serial #	Use
Eberline E-140N/HP-210T	1296	Beta-Gamma Contamination Survey
Eberline E-140N/HP-210T	1297	Beta-Gamma Contamination Survey
Eberline E-140N/HP-210T	1377	Beta-Gamma Contamination Survey
Eberline E-140N/HP-210T	1398	Beta-Gamma Contamination Survey
Ludlum 18/43-5	30722	Alpha Contamination Survey
44-9		Beta-Gamma Contamination Survey
44-9		Beta-Gamma Radiation Survey
Eberline E520	3832	Beta-Gamma Radiation Survey
Ludlum 3/43-5	39873	Alpha Contamination Survey

B. All instruments listed above were calibrated within 3 months of use. Calibration procedures for these instruments met all standards as set forth in ANSI N.323 (1978), Radiation Protection Instrumentation Test and Calibration. * In addition to routine calibration, all instruments were source checked regularly by Radiological Control Personnel when in use by comparing their response to known quantity source.

* Calibration certificates for the instruments listed above are attached to this section. It should be noted that not all instruments were used throughout the entire work.

Attachment III

Instrument Calibration Certificates

Form RS-23
FD Rev. 4/85

RAD Services Inc.

CALIBRATION CERTIFICATE

"This Certificate will be accompanied by Calibration Charts or Readings where applicable"

CUSTOMER INFORMATION

Customer Name: Afftrex LTD.
Customer Address: Aber Road RD #4
Finleyville, PA 15332

Customer P.O.# 85-142K
Service W.O.# I-85-06-235

INSTRUMENT INFORMATION

Instrument Manufacturer: Eberline
Model: E-140N Serial Number: 1296
External Probe(s): HP-210 Serial #: 1296

Calibration Method: ~~137~~ MP-1 s/n 301
Cs s/n 107

INSTRUMENT CALIBRATION INFORMATION

	Instrument Range	Calibration Standard Value	Instrument Response Before Calib.	Instrument Response After Calib.	Comment
1	X1	100 CPM		100 CPM	All Calibrations Btn. + & - 10
2		200		210	
3		400		420	Reads 3700 CPM in 1 mR/hr field 137Cs
4	X10	1K		1K	
5		2K		2.1K	
6		4K		4.2K	
7					
8	X100	10K		10K	
9		20K		21K	
10		40K		42K	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and ins, ected prior to shipment and that it met all of the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Bureau of Standards (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated by: Martin G. Lawler (Signed)
Calibration Date: 05-28-85
Next Calibration Due: 11-28-85

I certify that the above information is correct:
Authorized Agent Theresa M Spina
Title Admin. Coordinator Date 05-28-85

Form RS-
FD Rev. 4/

RAD Services Inc.

CALIBRATION CERTIFICATE

"This Certificate will be accompanied by Calibration Charts or Readings where applicable"

CUSTOMER INFORMATION

Customer Name: Afftrex LTD.
Customer Address: Aber Road RD #4
Finleyville, PA 15332

Customer P.O.# 85-142K
Service W.O.# I-85-06-235

INSTRUMENT INFORMATION

Instrument Manufacturer: Eberline
Model: E-140N Serial Number: 1297
External Probe(s): HP-210 Serial #: 1297

Calibration Method: ~~137~~ MP-1 s/n 301
Cs s/n 107

INSTRUMENT CALIBRATION INFORMATION

	Instrument Range	Calibration Standard Value	Instrument Response Before Calib.	Instrument Response After Calib.	Comment
1	X1	100 CPM		105 CPM	All Calibrations Btn. + & - 1
2		200		210	
3		400		420	Reads 3700 CPM in 1 mR/hr
4					field 137Cs
5	X10	1K		1.05K	
6		2K		2.1K	
7		4K		4.2K	
8					
9	X100	10K		10.5K	
10		20K		21K	
11		40K		42K	
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all of the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Bureau of Standards (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated by: Merlin C. Fowler (Signed)
Calibration Date: 05-28-85
Next Calibration Due: 11-28-85

I certify that the above information is correct:
Authorized Agent: Theresa M. [illegible]
Title: Admin. Coordinator Date: 05-28-85

Eberline

A DIVISION OF Thermo Electron CORPORATION

CERTIFICATION OF CALIBRATION

Instrument E-140N / HP-210T

Serial No. 1377

Type of Source Eberline MP-1 S/N 376
Cs-137, EJ-120

Range	Calibration Point	Reading
X100 @ 40K cpm	40K cpm	40K cpm
X10 @ 4K cpm	4K cpm	4K cpm
X1 @ 400 cpm	400 cpm	400 cpm
X100 @ 10K cpm	10K cpm ± 10%	10K cpm
X10 @ 1K cpm	1K cpm ± 10%	1K cpm
X1 @ 100 cpm	100 cpm ± 10%	100 cpm
HP-210T @ X10 @ 1mR/h	3,600 ± 1,000 cpm	4200 cpm

Calibration sources used have calibration traceable to the National Bureau of Standards.

Date 2-4 Signature [signature]

P.O. Number E5-165K2

Eberline

A DIVISION OF Thermo Electron CORPORATION

CERTIFICATION OF CALIBRATION

Instrument E-140N / He-210T

Serial No. 1377

Type of Source Eberline MP-1 S/N 378
Cs-137, EJ-120

Range	Calibration Point	Reading
X100 @ 40K cpm	40K cpm	40K cpm
X10 @ 4K cpm	4K cpm	4K cpm
X1 @ 400 cpm	400 cpm	400 cpm
X100 @ 10K cpm	10K cpm ± 10%	10K cpm
X10 @ 1K cpm	1K cpm ± 10%	1K cpm
X1 @ 100 cpm	100 cpm ± 10%	100 cpm
He-210T @ X10 @ 1mR/h	3,600 ± 1,000 cpm	4100 cpm

Calibration sources used have calibration traceable to the National Bureau of Standards.

Date 2-4 Signature [signature]

P.O. Number E5-165K2

Form RS-23
FD Rev. 4/83

RAD Services Inc.

CALIBRATION CERTIFICATE

"This Certificate will be accompanied by Calibration Charts or Readings where applicable"

CUSTOMER INFORMATION

Customer Name: Afftrex LTD.
Customer Address: Aber Road RD #4
Finleyville, PA 15332

Customer P.O.# 85-142K
Service W.O.# I-85-06-235

INSTRUMENT INFORMATION

Instrument Manufacturer Ludlum
Model 18 Serial Number 30722
External Probe(s) 43-5 Serial # PR-015368
44-9 PR-015533 44-6 PR-015395
Calibration Method ~~99~~ MP-1 s/n 301
^{137}Cs s/n 107 ~~230~~ Tc s/n 1256
Th s/n 11623

INSTRUMENT CALIBRATION INFORMATION

	Instrument Range	Calibration Standard Value	Instrument Response Before Calib.	Instrument Response After Calib.	Comment
1	X1	100 CPM		100 CPM	All Calibrations Btn. + & - 10%
2		200		200	
3		400		390	All calibrations done in High Voltage position 1
4					
5	X10	1K		1K	
6		2K		2K	All High Voltage positions set to 900 Volts
7		4K		4K	
8					
9	X100	10K		10K	All readins and efficiencies
10		20K		21K	were done with window out
11		40K		42K	
12					43-5 Probe has a 13.8% efficien
13	X1K	100K		100K	to ^{230}Th
14		200K		200K	
15		400K		400K	44-6 Probe reads 1400 CPM in
16					1 mR/hr field ^{137}Cs
17					
18					44-9 Probe reads 3600 CPM in
19					1 mR/hr field ^{137}Cs and has a
20					12.6% efficiency to ^{99}Tc
21					
22					
23					

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all of the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Bureau of Standards (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated by: Marlin A. Lauchle (Signed)
Calibration Date: 05-28-85
Next Calibration Due: 11-28-85

I certify that the above information is correct:
Authorized Agent Theresa M Spina
Title Admin. Coordinator Date 05-28-85

Form RS-23
FD Rev 4/83

RAD Services Inc.

CALIBRATION CERTIFICATE

"This Certificate will be accompanied by Calibration Charts or Readings where applicable"

CUSTOMER INFORMATION

Customer Name: Afftrex LTD.
Customer Address: Aber Road RD #4
Finleyville, PA 15332

Customer P.O.# 85-142K
Service W.O.# I-85-06-235

INSTRUMENT INFORMATION

Instrument Manufacturer: Eberline
Model E-520 Serial Number 3832
External Probe(s) _____ Serial # _____

Calibration Method 137 MP-1 s/n 301
Cs s/n 107

INSTRUMENT CALIBRATION INFORMATION

	Instrument Range	Calibration Standard Value	Instrument Response Before Calib.	Instrument Response After Calib.	Comment
1	X0.01	40 CPM		40 CPM	All Calibrations Btn. + & - 10%
2		80		80	
3		160		160	
4					
5	X0.1	0.5 mR/hr		0.5 mR/hr	
6		1		1	
7		1.5		1.5	
8					
9	X1	5		5	
10		10		10	
11		15		15	
12					
13	X10	50		55	
14		100		100	
15		150		138	
16					
17	X100	500		525	
18		1,000		1,050	
19		1,500		1,500	
20					
21					
22					
23					

STATEMENT OF CERTIFICATION

We Certify that the instrument listed above was calibrated and inspected prior to shipment and that it met all of the Manufacturers published operating specifications. We further certify that our Calibration Measurements are traceable to the National Bureau of Standards (We are not responsible for damage incurred during shipment or use of this instrument).

Instrument Calibrated by: Marlin G. Fawcett (Signed)
Calibration Date: 05-28-85
Next Calibration Due: 11-28-85

I certify that the above information is correct:
Authorized Agent Theresa M Spina
Title Admin. Coordinator Date 05-28-85