

QUADREX CORPORATION  
PROJECT REPORT FOR  
DECONTAMINATION AND SURVEY  
FOR UNCONDITIONAL RELEASE  
OF THE REACTOR ROOM  
IN TAYLOR HALL AT  
THE UNIVERSITY OF TEXAS  
AUSTIN, TEXAS

Nuclear Engineering Teaching Laboratory  
Dismantlement and Final Decommissioning  
The University of Texas, Austin  
Project No. 102-568  
Taylor Hall D&D

Issued January 15, 1993

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### Attachments:

Reactor Vessel Final Micro-R Meter Survey

Reactor Vessel Final Swipe Survey

Ceiling, Room 131 Final Swipe and Direct GM Survey

Walls, Room 131 Final Swipe and Direct GM Survey

Floor, Room 131 Final Swipe and Direct GM Survey

Area LSC (Low Energy Beta) Final Swipe Survey

Environmental (Crawl Space Below Reactor Room) Final Swipe and Soil Sampling

Final Radiation (Micro R) Surveys:

Area, Rooms 131, 131A, 131D, 135, 133, 129, and 125

Sink, Room 131A

Ventilation System Exhaust and Roof of Room 131

Ventilation System HEPA Filter Housing, Ceiling of Room 131

Air Sample Summary

Daily Instrument Source Checks

Instrumentation Calibration

Project Dosimetry Summary

Tables 1.4 and 1.8, Appendix 4, University of Texas Bid Document

Radioactive Materials Manifest

NRC Regulatory Guide 1.86

Radiation Levels for Release of Reactor Facility to Unrestricted Access,  
Radioactive Material Other than Surface Contamination; Reference NRC Standardization  
and Special Projects Branch Docket No. 50-141, Communication to Stanford University.

## I. EXECUTIVE SUMMARY

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Quadrex Corporation performed a preliminary radiological assessment, decontamination of the reactor vessel room and fixtures, verification survey for unconditional release of affected areas, transport off-site, volume reduction, and disposal of contaminated wastes for the University of Texas in Austin, Texas.

The contaminants of concern expected in the neutron-activated 5052 aluminum reactor vessel liner, referencing Table 1.8 in the University of Texas Decommissioning Plan, License No. R-92, Docket No. 50-192, were Mn-54, Co-60, Zn-65, Fe-55, and Ni-63. Zn-65, with a half-life of 245 days, was initially cited as the prominent isotope and was to have attributed 95 percent of the total activity. Dose rates from the induced activity of the biological shield wall (concrete) were to have been attributed to Co-60, Eu-152, and Mn-54, with Co-60 initially being prominent at 79 percent.

Quadrex Corporation representatives mobilized November 1, 1992 and completed on-site efforts December 11, 1992. Canberra/NSD, a support contractor providing a health physics technician and a mobile laboratory equipped with a proportional counter and a gamma spectroscopy system (MCA), demobilized on 12/14/92, and the final swipes were counted off-site on 12/16/92. All packages of radioactively contaminated/activated materials generated during the remediation effort (~528 CF, 97 uCi) were shipped to the Quadrex Recycle Center in Oak Ridge, Tennessee, on 12/9/92, for volume reduction. Final disposition of the waste was disposal at the Barnwell LLW facility, and the materials were shipped from the QRC to ensure receipt prior to 1/1/93. A post-decontamination verification survey, employing both direct measurements and swipe tests, was performed of site areas to screen for elevated levels of contamination. While the initial intent was to satisfy criteria for surface activity per NRC Regulatory Guide 1.86, 1000 dpm/100 cm<sup>2</sup> removable and 5000 dpm/100 cm<sup>2</sup> total, the expressed NRC administrative limit of 5 uR/hr greater than Bkg at 1 meter for non-surface activity was strived for. Decontamination by simple spray-and-wipe, light abrasives, cutting out activated aluminum, and hydraulic demolition and removal of activated concrete, was afforded as necessary, and success was verified by subsequent repeat surveys. Rooms



131, 131A, 131D, 125, 127, 135, 133, and the crawl space under Rm 131 were addressed in varying degrees.

The preliminary facility survey resulted in finding significantly less residual radioactivity than was expected. The necessary decontamination was actually limited to a wipe down of the aluminum reactor tank liner, removal of the activated portions of aluminum, and removal of activated concrete from the floor and walls of the pit to a depth of approximately twelve inches. The verification survey showed no significant removable contamination, and the levels of residual total activity ranged from background to only slightly detectable, easily satisfying both the Reg. Guide criteria and the 5 uR/hr imposed radiation level for unrestricted release. The total recorded man-rem exposure for the Quadrex D&D effort was 0.010 rem external, and no internal uptake was indicated by both the air sample results and the entry/exit bioassay (urine) samples.

## II. SURVEY STRATEGY

---

The facility preliminary radiological survey was a screen for trends of significant contamination in the reactor room (Rm 131) and the reactor tank, establishment of control boundaries, determination of potential cross-contamination in adjacent areas, and to provide a baseline location-specific background radiation level. A systematic 1-meter x 1-meter grid was established in the reactor room for reproducible sample points, and swipe samples were collected to test for removable contamination. Adjacent areas were not gridded, but a random survey was performed. Counted for gross alpha/gross beta on a proportional counter, swipe results indicated no significant radioactivity, with the exception of the walls of the aluminum reactor tank liner. A direct frisk using a ratemeter with a GM pancake probe was performed over limited areas at grid points, and at bias locations such as HVAC intake registers, tops of horizontal fixtures, and other potential collection points. No significant beta-gamma surface activity was found at distances from the reactor tank. The survey was completed by a gamma radiation scan employing a micro-R meter (NaI) throughout the reactor room and adjacent areas, recording the instrument readings both at contact and at one meter above the floor. The average background as indicated by the instrument was ten microR/hr. Preliminary survey data is not included in this report.

After completion of the limited reactor tank decontamination effort and removal of the affected materials from site, a final verification survey was performed to satisfy U.S. NRC Regulatory Guide 1.86 surface contamination criteria for unconditional release, and to test for the additionally imposed conditions for the residual above background radiation level of 5 microR/hr.

The final survey began in the reactor tank where actual decontamination had been required and performed, and progressed outward to the reactor room and adjacent areas to verify that no previously inadvertently missed activity during the preliminary survey, or cross-contamination resulting from the remediation effort persisted at significant levels.

Gamma spectroscopy of specimens was performed during the clean-up to isotopically identify contaminants, and to provide quantification sufficient to manifest the packaged material for transport. Loose sediment was found to be contaminated with species specific Co-60. Sections of aluminum were found to be slightly insulated with induced activity at the approximate ratio of 5.0 pCi/gm Co-60 : 1.5 pCi/gm Eu-152, and a concrete rubble sample result indicated 5.0 pCi/gm Co-60 : 6.6 pCi/gm Eu-152. Air sample concentrations were compared to the more restrictive MPC value for Co-60, referencing 10 CFR 20, Appendix B, Table II, Column 1. The highest sample concentration was less than one percent FMPC.

The verification survey provided for a swipe survey of the reactor tank at the frequency of eight samples per each 7' x 21' wall and floor surface, or approximately one sample per 20 ft<sup>2</sup>. Maximum removable beta-gamma contamination was 690 dpm/100 cm<sup>2</sup>, with a mean well below 100 dpm. Alpha activity was slightly detectable, with a high of only 6 dpm/100 cm<sup>2</sup>. A direct GM survey was performed, offering ~60 percent surface coverage, with all readings indicating less than 100 cpm gross, or < 400 dpm net per 15.2 cm<sup>2</sup> probe area.

A radiation survey was performed in the reactor tank using a micro-R meter. Contact and 1-meter readings were recorded at eight points of the floor, and at eight points over the walls. The highest above background reading recorded was 2 microR/hr. A comparison survey was performed by the oversight contractor, employing a Reuter-Stokes pressurized ionization chamber (PIC), which is less energy dependent than the micro-R field instrument. The ambient background on the PIC however, coincided closely with the micro-R meter. The PIC showed a trend of reducing radiation levels as it was lowered toward the bottom of the pit, dropping to below the background recorded in the room above.

The reactor room was resurveyed, following the original 1 meter x 1 meter grid. Swipes were collected at the grid nodes, and approximately 130 samples were collected for each the ceiling and floor, and 44 samples were collected from the walls. Results of the ceiling and wall samples were at the detection limit for both beta-gamma and alpha activity. Results of the floor samples were at the detection limit for alpha, and typically

less than 10 dpm/100 cm<sup>2</sup> beta-gamma, with the exception of one isolated sample from location J-6 which had 588 dpm, still considerably below the criteria of 1000 dpm/100 cm<sup>2</sup>.

Additional swipe testing was performed randomly in the reactor room and adjacent areas, as an attempt to rule out the possible presence of low energy beta emitters (Ni-63, Fe-55). Whatman filters were used to collect the swipe samples, and counting was performed off-site at Quadrex Environmental, Gainesville, Florida. The discriminator was kicked out on the liquid scintillation counter to allow detection of gross beta, without regard to the energy. Albeit of skeptical calibration in the count mode used, the 60 samples counted showed typically no detectable, with an isolated high of only 16 dpm/100 cm<sup>2</sup>.

A direct GM frisk was performed in the reactor room, providing for spot checks of the ceiling and floor. The walls were scanned with thorough coverage from the bottom to a height of one meter. No significant activity was found, recording less than 100 cpm gross (< 400 dpm net) per probe area.

A micro-R meter survey was performed in the reactor room and adjacent areas, including the crawl space below the reactor room, the ceiling above, and particularly at the remaining facility HEPA-filtered exhaust system stack and filter housing. Area readings were made at a height of one meter, and fixtures were checked at contact. Background-type readings were recorded, ranging from 7 - 12 microR/hr gross.

Samples of the crawl space below the reactor room, through which the concrete tank base (biological shield) penetrated, was randomly sampled. Six swipes were collected from concrete surfaces, and three soil/fill material samples were collected. The swipes were counted, and indicated a beta-gamma high of 31 dpm/100 cm<sup>2</sup> and no detectable alpha. Gamma spectroscopy results of the soil samples indicated scant traces of elements incidental to the natural uranium decay chain, and naturally occurring K-40.

### III. INSTRUMENTATION

#### A. GM Survey

Ludlum Model 3 Ratemeter with Ludlum Model 44-9 GM Pancake

1.7 mg/cm<sup>2</sup> window thickness, 15.2 cm<sup>2</sup> window area; Calibrated to NIST standards, typically 13 percent CE for Cs-137 and 19 percent for Tc-99; Background ranged 40-60 cpm; Survey results were interpreted assuming a conservative efficiency of 10 percent. MDA = ~355 dpm/15.2 cm<sup>2</sup> probe area (@ Bkg=50 cpm, CE=0.10).

#### B. Radiation Survey

Ludlum Model 19 Micro-R Survey Meter using 1" x 1" NaI Detector

Energy dependent and calibrated to Cs-137 on higher scales, but the lowest scale used in the survey was electronically calibrated. Area background recorded at 10 microR/hr; trace activity presented did not indicate a significant response difference between the Model 19 and the State's PIC.

#### C. Gamma Spectroscopy System

Canberra/ND ACCUSPEC MCA (IBM PC)

High-purity Germanium Detector, Low-Bkg Steel Shield Counting Chamber Capabilities:

Sample Type	Counting Container	Count Time*
Solid Material	300 ml Aluminum Can	5 Minutes
Liquid	1-L Marinelli Beaker	15 Hours
Swipe, Air Filter	47 mm Dia. Paper Disk in Plastic Petri Dish	1 Hour

\* Typical count times adequate to achieve normal sensitivity limits.

Typical MDA Values for soil samples (5 min. count time):

Nuclide	Photon Energy (keV)	MDA (pCi/g)
Th-234	93	5.0
U-235	186	0.6
Pb-214	352	1.0
Bi-214	609	1.0
Cs-137	662	0.6
Ac-228	911	1.5
Co-60	1173	0.6
K-40	1461	6.0

#### D. Proportional Counter

Canberra Model 2400 Gas Flow Proportional Counter

Air Sample MDAs: (10 min. count time)		
Sample Volume	MDA Alpha uCi/ml	MDA Beta uCi/ml
300 m3	8.5E-16	1.8E-15
3 m3	8.5E-14	1.8E-13
.3 m3	8.5E-13	1.8E-12
Swipe Sample MDAs: (2 min. count time)		
	MDA Alpha	MDA Beta
	13 dpm	38 dpm

#### E. Liquid Scintillation Counter

Beckman LS 3801 Liquid Scintillation Counter

LLD: H-3 ~ 21 dpm, C-14 ~ 15 dpm

## ATTACHMENTS

REACTOR VESSEL  
FINAL SURVEY  
MICRO-R/HR. READINGS

LOCATION	GROSS READING AT 1 METER	GROSS READING AT CONTACT	BACK GROUND READINGS	MAX. NET READING	MAX. NET LIMIT
ES L FLOOR NORTH EAST SIDE	10 MICRO-R/HR.	10 MICRO-R/HR.	10 MICRO-R/HR.	0 MICRO-R/HR.	5 MICRO-R/HR.
ES L FLOOR SOUTH EAST SIDE	10 MICRO-R/HR.	10 MICRO-R/HR.	10 MICRO-R/HR.	0 MICRO-R/HR.	5 MICRO-R/HR.
ESSEL FLOOR CENTER	10 MICRO-R/HR.	10 MICRO-R/HR.	10 MICRO-R/HR.	0 MICRO-R/HR.	5 MICRO-R/HR.
ES L FLOOR NORTH CENTER	11 MICRO-R/HR.	10 MICRO-R/HR.	10 MICRO-R/HR.	1 MICRO-R/HR.	5 MICRO-R/HR.
ES L FLOOR SOUTH CENTER	10 MICRO-R/HR.	10 MICRO-R/HR.	10 MICRO-R/HR.	0 MICRO-R/HR.	5 MICRO-R/HR.
ESSEL FLOOR NORTH WEST SIDE	11 MICRO-R/HR.	10 MICRO-R/HR.	10 MICRO-R/HR.	1 MICRO-R/HR.	5 MICRO-R/HR.
ESSEL FLOOR WEST CENTER	11 MICRO-R/HR.	10 MICRO-R/HR.	10 MICRO-R/HR.	1 MICRO-R/HR.	5 MICRO-R/HR.
ES L FLOOR SOUTH WEST SIDE	11 MICRO-R/HR.	11 MICRO-R/HR.	10 MICRO-R/HR.	1 MICRO-R/HR.	5 MICRO-R/HR.
ES L WALL EAST END	10 MICRO-R/HR.	10 MICRO-R/HR.	10 MICRO-R/HR.	0 MICRO-R/HR.	5 MICRO-R/HR.
ESSEL WALL NORTH EAST END	10 MICRO-R/HR.	10 MICRO-R/HR.	10 MICRO-R/HR.	0 MICRO-R/HR.	5 MICRO-R/HR.
ES L WALL SOUTH EAST END	10 MICRO-R/HR.	10 MICRO-R/HR.	10 MICRO-R/HR.	0 MICRO-R/HR.	5 MICRO-R/HR.
ES L WALL NORTH CENTER	10 MICRO-R/HR.	10 MICRO-R/HR.	10 MICRO-R/HR.	0 MICRO-R/HR.	5 MICRO-R/HR.
ESSEL WALL SOUTH CENTER	10 MICRO-R/HR.	10 MICRO-R/HR.	10 MICRO-R/HR.	0 MICRO-R/HR.	5 MICRO-R/HR.
ES L WALL NORTH WEST END	12 MICRO-R/HR.	12 MICRO-R/HR.	10 MICRO-R/HR.	2 MICRO-R/HR.	5 MICRO-R/HR.
ES L WALL WEST CENTER	12 MICRO-R/HR.	12 MICRO-R/HR.	10 MICRO-R/HR.	2 MICRO-R/HR.	5 MICRO-R/HR.
ES L WALL SOUTH WEST END	12 MICRO-R/HR.	12 MICRO-R/HR.	10 MICRO-R/HR.	2 MICRO-R/HR.	5 MICRO-R/HR.

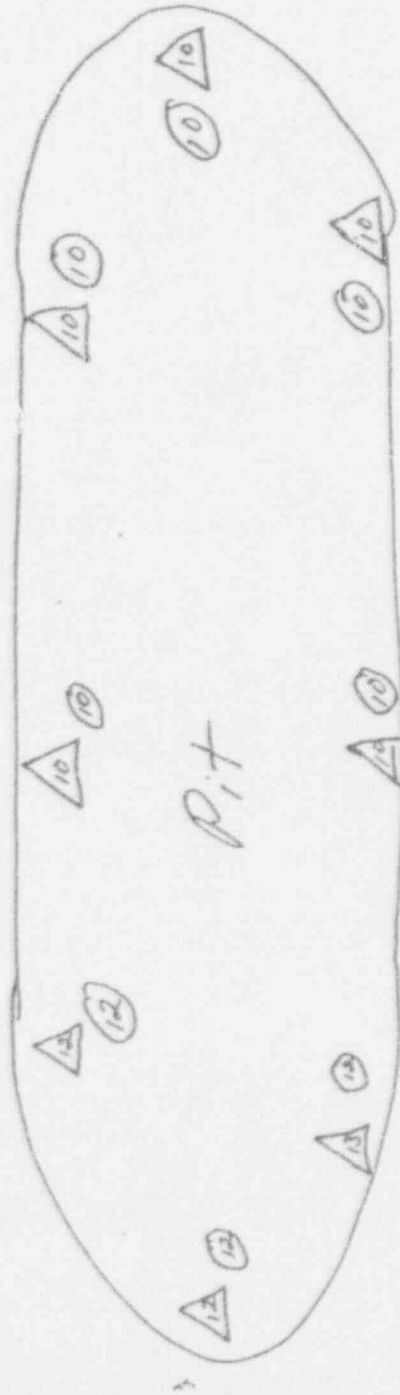


△ = ON CONTACT

North

○ = 1 METER FROM WALL

ALL READINGS 1 METER UP FROM BOTTOM



REMARKS:			
GROSS MICRO R READINGS			
Date:	12-15-92	Time:	7:30 AM
Instrument Used:	MICRO R METER	Location of Survey:	ROOM 131 Pit Walls
Model 19	95477	Reason for Survey:	Final Survey
		Signature of Surveyor:	m. j. m. p.
		Signature of Reviewing Supervisor:	Richard L. Miller
		Page 1 of 3	

Back ground Reading 10 Micro R - hr.

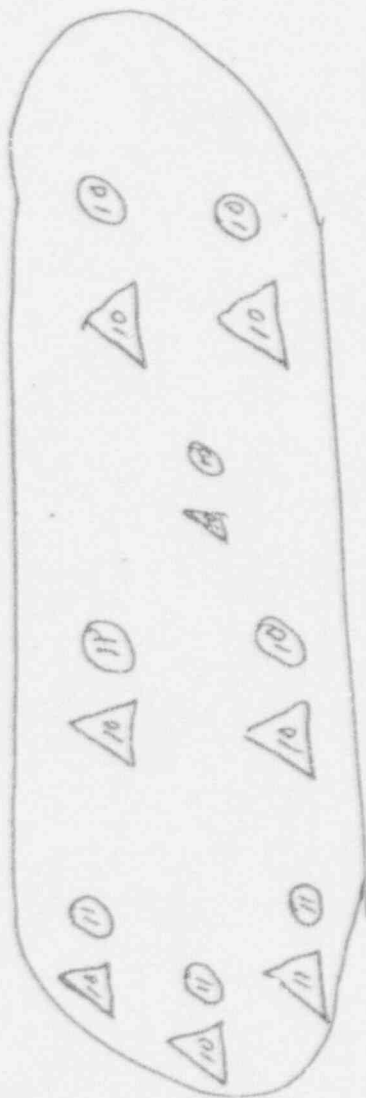
Beta-Gamma Swipe  
Alpha Swipe  
Airborne Beta Gamma Alpha



△ = CONTACT READINGS

○ = 1 METER READINGS

NORTH



REMARKS:		GROSS MICRO R READINGS		"Back ground Readings 10 MICRO R-HA"	
Date:	12-1-92	Time:	7:45 AM	Location of Survey:	Room 131 Floor of pit
Instrument Used:	MICRO R METER	Serial No.:	95477	Reason for Survey:	FIXIAL SURVEY
Model 19		Signature of Surveyor:		Signature of Reviewing Supervisor:	
		m. j. m. p.		Richard E. Miller	
				Page 2 of 3	

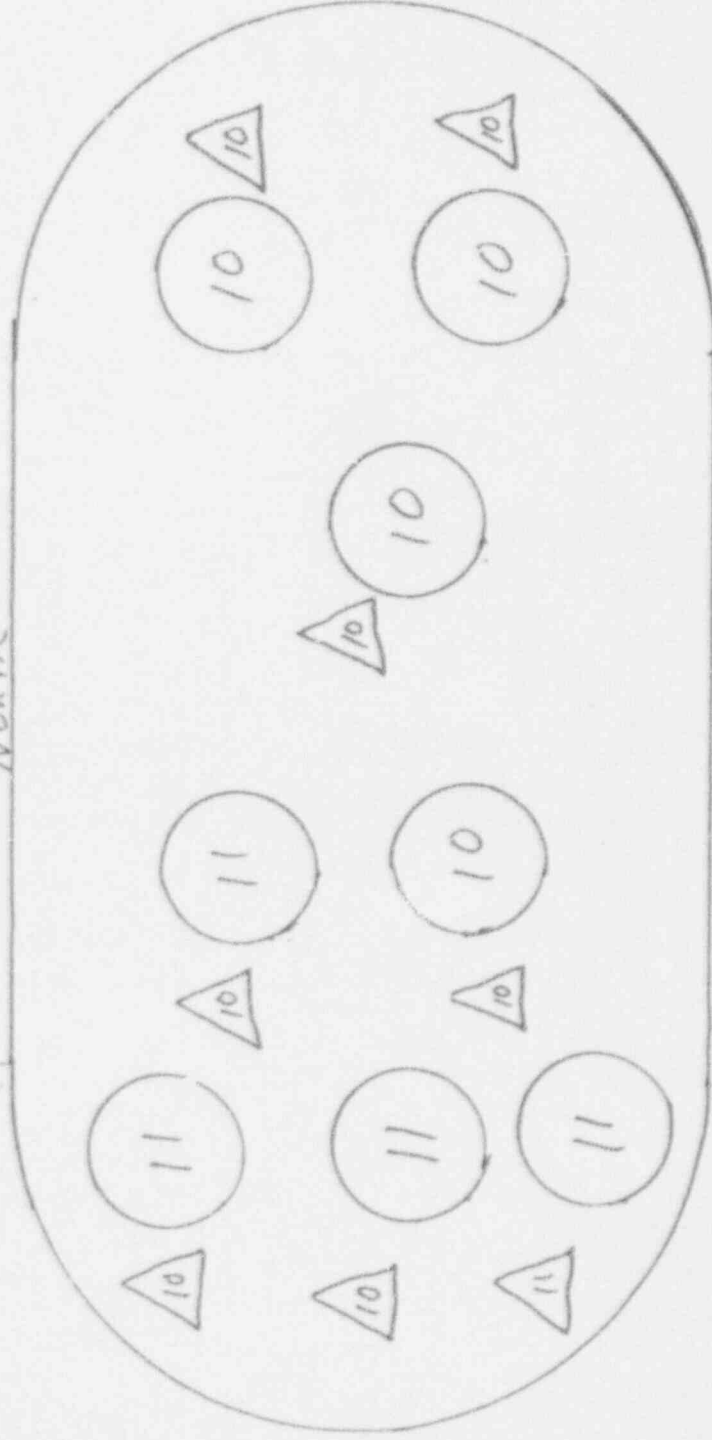
Pit Floor Survey

DATE 12-1-92

$\Delta$  = CONTACT READINGS     $\bigcirc$  = METER READINGS

ALL READINGS GROSS MICRO-R-HR.

North



METER

MODEL #19

SERIAL #95477

12-1-92

2m

4m

Page 2

12/7/92

Press. I. C.

Model RS-111

Readings in

uR/hr @ 1 meter

From Surface

DR

Back Ground

in Control

Room 9-10 uR/hr

Top

First weld

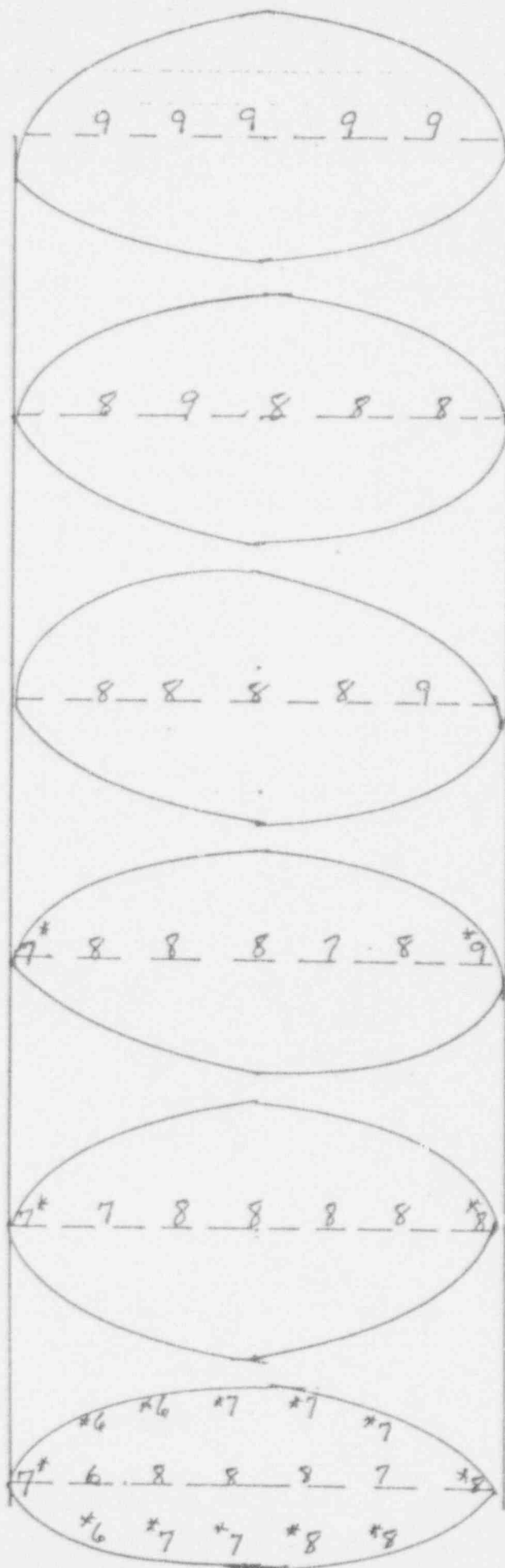
→ West

At Cut

② Halfway Between  
Cut and Floor  
\* Surface

1 Meter Above Bottom  
\* Surface

③ Detector on Bottom  
\* Surface



REACTOR VESSEL  
FINAL SURVEY SMEARS  
FOR BETA / ALPHA

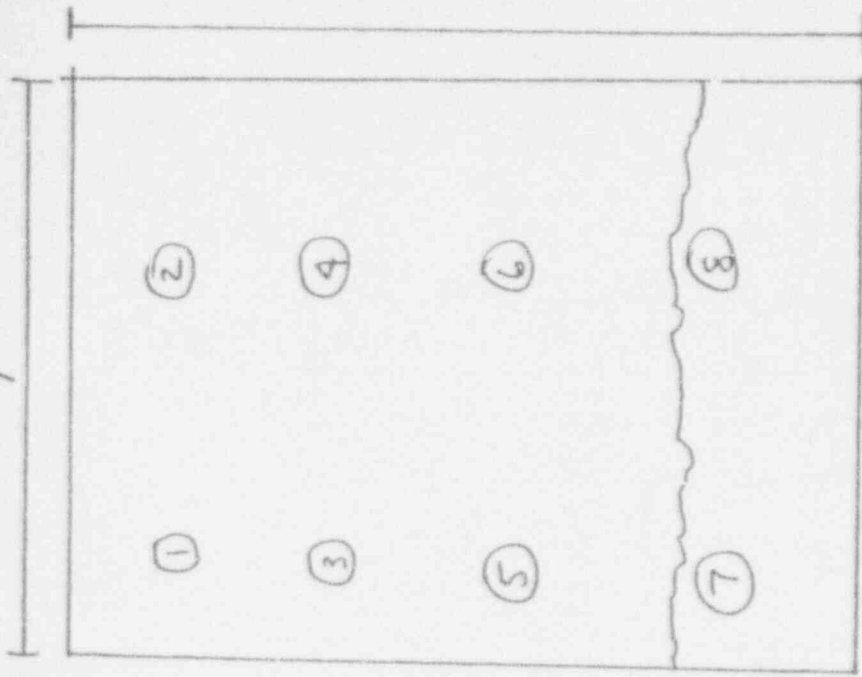
SAMPLE #	LOCATION	GROSS	GROSS	NET	NET	LIMIT
		BETA/GAMMA	ALPHA	BETA/dpm	ALPHA/dpm	REG. GUIDE
						1.66
1	WEST WALL	5	0	8.75	0	1000dpm
2	WEST WALL	2	0	1.25	0	1000dpm
	WEST WALL	8	1	15	1.66	1000dpm
	WEST WALL	30	3	69	6.42	1000dpm
5	WEST WALL	4	0	6.25	0	1000dpm
	WEST WALL	7	1	13	1.66	1000dpm
	WEST WALL	57	1	138	1.66	1000dpm
8	WEST WALL	15	0	33	0	1000dpm
9	NORTH WALL	10	0	21	0	1000dpm
	NORTH WALL	43	1	10.3	1.66	1000dpm
	NORTH WALL	55	0	133	0	1000dpm
12	NORTH WALL	278	1	690	1.66	1000dpm
	NORTH WALL	147	0	363	0	1000dpm
	NORTH WALL	12	0	26	0	1000dpm
15	NORTH WALL	9	0	18	0	1000dpm
16	NORTH WALL	33	0	78	0	1000dpm
	EAST WALL	5	0	8.75	0	1000dpm
18	EAST WALL	4	0	6.25	0	1000dpm
19	EAST WALL	8	1	15	1.66	1000dpm
	EAST WALL	4	0	6.25	0	1000dpm
	EAST WALL	6	0	11	0	1000dpm
22	EAST WALL	4	0	6.25	0	1000dpm
23	EAST WALL	10	0	21	0	1000dpm
	EAST WALL	23	1	53	1.66	1000dpm
25	SOUTH WALL	3	0	3.75	0	1000dpm
26	SOUTH WALL	21	0	48	0	1000dpm
	SOUTH WALL	41	0	98	0	1000dpm
28	SOUTH WALL	7	0	13	0	1000dpm
29	SOUTH WALL	38	1	90	1.66	1000dpm
	SOUTH WALL	27	1	63	1.66	1000dpm
31	SOUTH WALL	10	0	21	0	1000dpm
32	SOUTH WALL	3	0	3.75	0	1000dpm
33	FLOOR	8	0	16	0	1000dpm
34	FLOOR	3	1	3.4	1.66	1000dpm
35	FLOOR	22	1	50	1.66	1000dpm
36	FLOOR	2	0	1.25	0	1000dpm
37	FLOOR	6	0	11	0	1000dpm
38	FLOOR	4	0	6.25	0	1000dpm
39	FLOOR	35	0	83	0	1000dpm
40	FLOOR	7	0	13	0	1000dpm

Not to scale

7'

21'

Location	Gross CPM	CPM(2)	Net CPM	Activity (1)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				



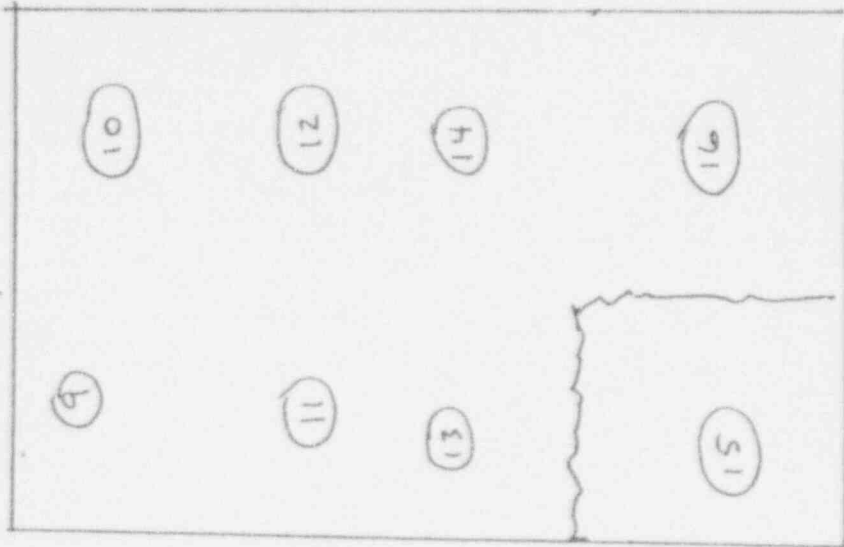
Remarks  $\beta$ - $\gamma$  Bkgd. = 60 cpm (2) = smear location

Direct measurements all < 100 cpm 60% of wall surface scanned with probe

Date 12-4-92	Time 0746	Location of Survey Reactor Vessel West Wall	Reason for Survey Release Final Survey	<input checked="" type="checkbox"/> Beta-Gamma Swipe <input checked="" type="checkbox"/> Alpha Swipe <input type="checkbox"/> Airborne Beta Gamma <input type="checkbox"/> Airborne Alpha
Instrument used MODEL 3 20 Gm pancake	Serial No. 20138	Signature of Surveyor <i>[Signature]</i>	Signature of Reviewing Supervisor <i>[Signature]</i>	Page 1 of 5

100. 10' 7' 21'

Location	Gross CPM	CPM(2)	Net CPM	Activity (1)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				



Remarks  $\beta - \gamma$  Bkgd. = 60 cpm (N) = smear location

Direct measurements all < 100 cpm 60% of wall surface scanned with probe

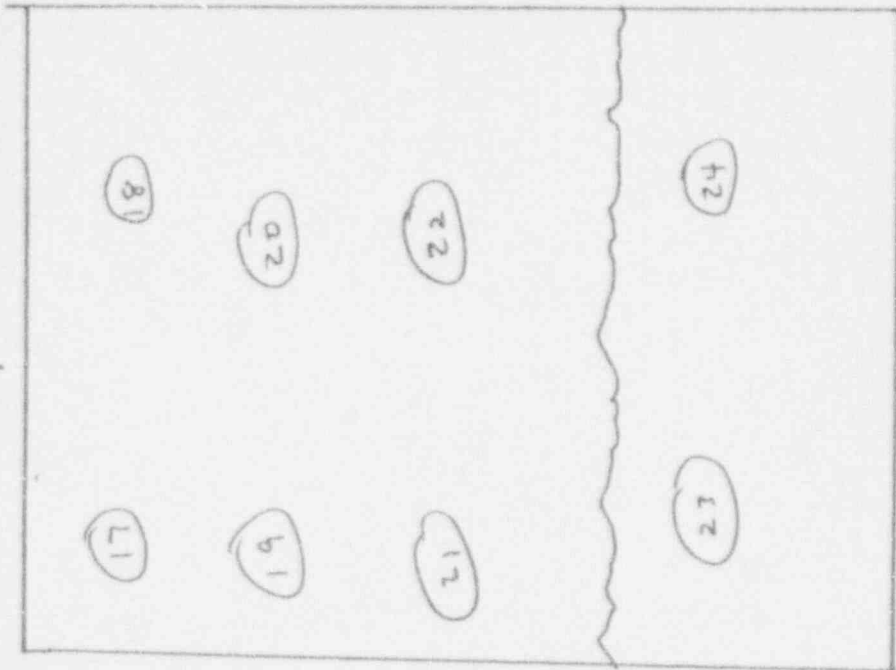
Date	12-4-92	Time	0746	Location of Survey	Reactor Vessel North Wall	Reason for Survey	Release	<input checked="" type="checkbox"/> Beta-Gamma Swipe	<input checked="" type="checkbox"/> Alpha Swipe	<input type="checkbox"/> Airborne Beta Gamma	<input type="checkbox"/> Airborne Alpha
Instrument used	Model 3 W.G.M. pancake	Serial No.	20138	Signature of Surveyor	m/inf	Signature of Reviewing Supervisor	Rudolf E. Miller	Page 2 of 5			



NOT TO SCALE  
7'

21'

Location	Gross CPM	CPM(2)	Net CPM	Activity (1)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				



Remarks  $\beta$ - $\gamma$  Bkgd. = 60 cpm (N) = smear location

Direct measurements all < 100 cpm 60% of wall surfaces scanned with probe

Location of Survey  
Reactor Vessel  
East Wall

Reason for Survey  
Release

☒ Beta-Gamma Swipe ☐ Airborne Alpha  
☒ Alpha Swipe ☐ Airborne Beta Gamma

Date  
12-4-92

Instrument used  
Ludlum Model 3 w GM probe

Signature of Surveyor

Signature of Reviewing Supervisor

Page 3 of 5

NO. 18 SCALE 7'

Location	Gross CPM	CPM(2)	Net CPM	Activity (1)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Remarks  $\beta\text{-}\gamma$  Bkgd. = 60 cpm (N) = smear location

Direct measurements at < 100 cpm

60% of Wall Surface scanned with probe

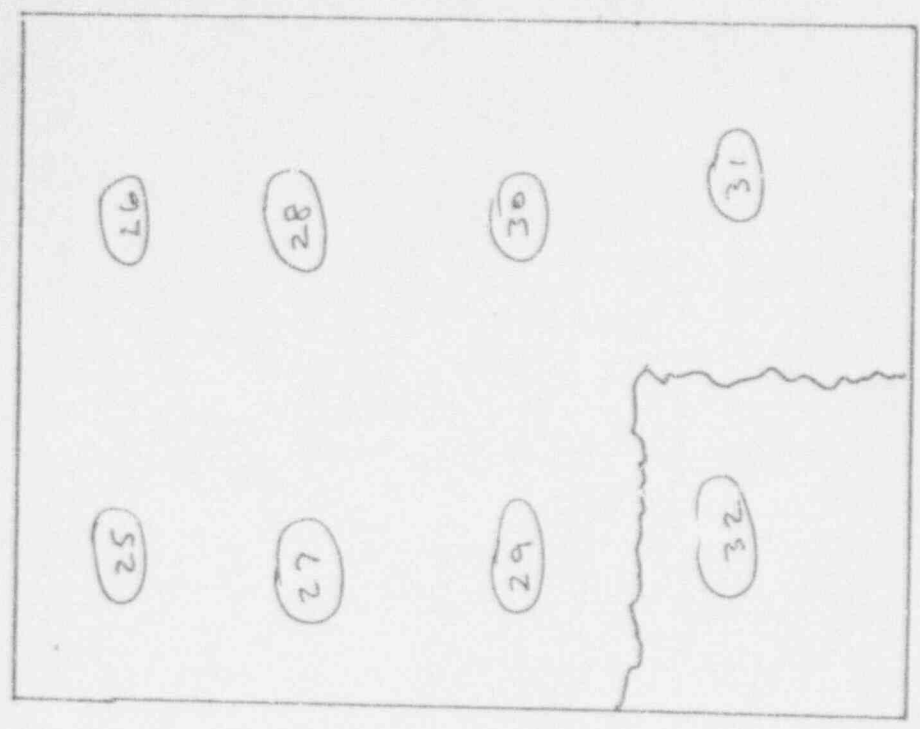
Date	12-4-92	Time	0746
Location of Survey	Reactor Vessel South Wall		
Signature of Surveyor	<i>m. j. m</i>		
Instrument used	Model 3	Serial No.	20138
u GM probe			

Reason for Survey  
Release

<input checked="" type="checkbox"/> Beta-Gamma Swipe	<input type="checkbox"/> Airborne
<input checked="" type="checkbox"/> Alpha Swipe	<input type="checkbox"/> Airborne Alpha
<input type="checkbox"/> Airborne Beta Gamma	

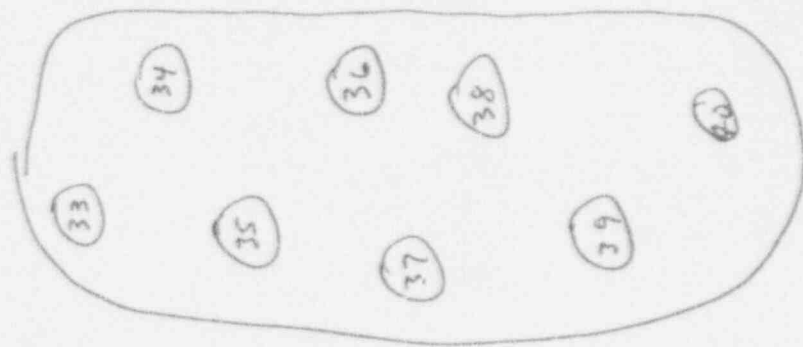
Signature of Reviewing Supervisor

*Rudolf E. Miller*



21

Location	Gross CPM	CPM(2)	Net CPM	Activity (1)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				



Remarks

3-r Bldg. = 60 cpm

(N) = smear location

Direct measurements all < 100 cpm

60% of floor surfaces scanned with probe

Date  
12-4-92

Time  
0800

Location of Survey  
Reactor Vessel  
FLOOR

Reason for Survey  
Release

☒ Beta-Gamma Swipe  
☒ Alpha Swipe  
☐ Airborne Beta Gamma  
☐ Airborne Alpha

Instrument used  
Cudlum  
Model 3  
w GM probe

Serial No.  
20138

Signature of Surveyor

*mf. mp*

Signature of Reviewing Supervisor

*Richard E. Smith*

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PROGRAM # 1  
 PRESET COUNT: 999999 BETA  
 PSET TIME (M): 2.00  
 HIGH VOLTAGE: 1500  
 DISC WINDOW: 1000  
 START SAMPLE: 1  
 STOP SAMPLE: 50  
 ERROR (SIGMA): 1.96  
 REPEAT #: 0  
 A EFFIC (%): 21.00  
 A CROSTLK (%): 20.00  
 A BKGND (CPM): .15  
 B EFFIC (%): 20.00  
 B BKGND (CPM): .75  
 BKGD TIME (M): 20.00  
 VOL (cm2): 100.00  
 ALARM (dpm/V): 200.00  
 USER EQUATION:

SAMPLE # 1	TIME (M): 2.00	TIME: 09:51:12	DATE: DEC 04, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 5	NET: 1.75	+/- 1.87	dpm/cm2: 8.75E-2 +/- 9.36E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE # 2	TIME (M): 2.00	TIME: 09:53:35	DATE: DEC 04, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/- 3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE # 3	TIME (M): 2.00	TIME: 09:55:58	DATE: DEC 04, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 8	NET: 3.18	+/- 2.50	dpm/cm2: .15 +/- .12
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE # 4	TIME (M): 2.00	TIME: 09:58:22	DATE: DEC 04, 1992
ALPHA GROSS: 3	NET: 1.35	+/- 1.61	dpm/cm2: 6.42E-2 +/- 7.71E-2
BETA GROSS: 30	NET: 13.98	+/- 5.20	dpm/cm2: .69 +/- .26
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE # 5	TIME (M): 2.00	TIME: 10:00:45	DATE: DEC 04, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 4	NET: 1.25	+/- 1.59	dpm/cm2: 6.25E-2 +/- 7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE # 6	TIME (M): 2.00	TIME: 10:03:08	DATE: DEC 04, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/- 3.98E-2

GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # 7 TIME (M): 2.00 TIME: 10:05:31 DATE: DEC 04, 1992  
 ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
 BETA GROSS: 57 NET: 27.68 +/- 7.30 dpm/cm2: 1.38 +/- .36  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # 8 TIME (M): 2.00 TIME: 10:07:54 DATE: DEC 04, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 15 NET: 6.75 +/- 3.62 dpm/cm2: .33 +/- .18  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # 9 TIME (M): 2.00 TIME: 10:10:17 DATE: DEC 04, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 10 NET: 4.25 +/- 2.88 dpm/cm2: .21 +/- .14  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # 10 TIME (M): 2.00 TIME: 10:12:40 DATE: DEC 04, 1992  
 ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
 BETA GROSS: 43 NET: 20.68 +/- 6.31 dpm/cm2: 1.03 +/- .31  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # 11 TIME (M): 2.00 TIME: 10:15:03 DATE: DEC 04, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 55 NET: 26.75 +/- 7.17 dpm/cm2: 1.33 +/- .35  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # 12 TIME (M): 2.00 TIME: 10:17:27 DATE: DEC 04, 1992  
 ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
 BETA GROSS: 278 NET: 138.17 +/- 16.29 dpm/cm2: 6.90 +/- .81  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # 13 TIME (M): 2.00 TIME: 10:19:50 DATE: DEC 04, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 147 NET: 72.75 +/- 11.82 dpm/cm2: 3.63 +/- .59  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # 14 TIME (M): 2.00 TIME: 10:22:13 DATE: DEC 04, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 12 NET: 5.25 +/- 3.19 dpm/cm2: .26 +/- .15  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # 15 TIME (M): 2.00 TIME: 10:24:36 DATE: DEC 04, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 9 NET: 3.75 +/- 2.71 dpm/cm2: .18 +/- .13  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # 16 TIME (M): 2.00 TIME: 10:26:59 DATE: DEC 04, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 33 NET: 15.75 +/- 5.51 dpm/cm2: .78 +/- .27  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # 17 TIME (M): 2.00 TIME: 10:29:22 DATE: DEC 04, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 5 NET: 1.75 +/- 1.87 dpm/cm2: 8.75E-2 +/- 9.36E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # 18 TIME (M): 2.00 TIME: 10:31:45 DATE: DEC 04, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 4 NET: 1.25 +/- 1.59 dpm/cm2: 6.25E-2 +/- 7.97E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # 19 TIME (M): 2.00 TIME: 10:34:09 DATE: DEC 04, 1992  
 ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
 BETA GROSS: 8 NET: 3.18 +/- 2.50 dpm/cm2: .15 +/- .12

SAMPLE # 20	TIME (M): 2.00	TIME: 10:36:32	DATE: DEC 04, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 4	NET: 1.25	+/- 1.55	dpm/cm2: 6.25E-2 +/- 7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # 21	TIME (M): 2.00	TIME: 10:38:55	DATE: DEC 04, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 6	NET: 2.25	+/- 2.11	dpm/cm2: .11 +/- .10
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # 22	TIME (M): 2.00	TIME: 10:41:18	DATE: DEC 04, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 4	NET: 1.25	+/- 1.59	dpm/cm2: 6.25E-2 +/- 7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # 23	TIME (M): 2.00	TIME: 10:43:41	DATE: DEC 04, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 10	NET: 4.25	+/- 2.88	dpm/cm2: .21 +/- .14
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # 24	TIME (M): 2.00	TIME: 10:46:04	DATE: DEC 04, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 23	NET: 10.68	+/- 4.54	dpm/cm2: .53 +/- .22
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # 25	TIME (M): 2.00	TIME: 10:48:27	DATE: DEC 04, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 3	NET: .75	+/- 1.25	dpm/cm2: 3.75E-2 +/- 6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # 26	TIME (M): 2.00	TIME: 10:50:50	DATE: DEC 04, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 21	NET: 9.75	+/- 4.34	dpm/cm2: .48 +/- .21
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # 27	TIME (M): 2.00	TIME: 10:53:13	DATE: DEC 04, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 41	NET: 19.75	+/- 6.17	dpm/cm2: .98 +/- .30
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # 28	TIME (M): 2.00	TIME: 10:55:37	DATE: DEC 04, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 7	NET: 2.75	+/- 2.32	dpm/cm2: .13 +/- .11
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # 29	TIME (M): 2.00	TIME: 10:58:00	DATE: DEC 04, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 38	NET: 18.18	+/- 5.92	dpm/cm2: .90 +/- .29
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # 30	TIME (M): 2.00	TIME: 11:00:23	DATE: DEC 04, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 27	NET: 12.68	+/- 4.95	dpm/cm2: .63 +/- .24
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # 31	TIME (M): 2.00	TIME: 11:02:46	DATE: DEC 04, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 10	NET: 4.25	+/- 2.88	dpm/cm2: .21 +/- .14
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # 32	TIME (M): 2.00	TIME: 11:05:09	DATE: DEC 04, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 3	NET: .75	+/- 1.25	dpm/cm2: 3.75E-2 +/- 6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		



SAMPLE #:	33.	TIME (M):	2.00	TIME:	11:07:32	DATE:	DEC 04, 1992
ALPHA GROSS:	0	NET:	0	+/-	.16	dpm/cm2:	0 +/-8.08E-3
BETA GROSS:	8	NET:	3.25	+/-	2.52	dpm/cm2:	.16 +/- .12
GAMMA GROSS:	0	C FACTOR:	1.0000				
SAMPLE #:	34.	TIME (M):	2.00	TIME:	11:09:55	DATE:	DEC 04, 1992
ALPHA GROSS:	1	NET:	.35	+/-	.83	dpm/cm2:	1.56E-2 +/-3.98E-2
BETA GROSS:	3	NET:	.68	+/-	1.21	dpm/cm2:	3.40E-2 +/-6.07E-2
GAMMA GROSS:	0	C FACTOR:	1.0000				
SAMPLE #:	35.	TIME (M):	2.00	TIME:	11:12:18	DATE:	DEC 04, 1992
ALPHA GROSS:	1	NET:	.35	+/-	.83	dpm/cm2:	1.56E-2 +/-3.98E-2
BETA GROSS:	22	NET:	10.18	+/-	4.44	dpm/cm2:	.50 +/- .22
GAMMA GROSS:	0	C FACTOR:	1.0000				
SAMPLE #:	36.	TIME (M):	2.00	TIME:	11:14:41	DATE:	DEC 04, 1992
ALPHA GROSS:	0	NET:	0	+/-	.16	dpm/cm2:	0 +/-8.08E-3
BETA GROSS:	2	NET:	.25	+/-	.79	dpm/cm2:	1.25E-2 +/-3.95E-2
GAMMA GROSS:	0	C FACTOR:	1.0000				
SAMPLE #:	37.	TIME (M):	2.00	TIME:	11:17:05	DATE:	DEC 04, 1992
ALPHA GROSS:	0	NET:	0	+/-	.16	dpm/cm2:	0 +/-8.08E-3
BETA GROSS:	6	NET:	2.25	+/-	2.11	dpm/cm2:	.11 +/- .10
GAMMA GROSS:	0	C FACTOR:	1.0000				
SAMPLE #:	38.	TIME (M):	2.00	TIME:	11:19:28	DATE:	DEC 04, 1992
ALPHA GROSS:	0	NET:	0	+/-	.16	dpm/cm2:	0 +/-8.08E-3
BETA GROSS:	4	NET:	1.25	+/-	1.59	dpm/cm2:	6.25E-2 +/-7.97E-2
GAMMA GROSS:	0	C FACTOR:	1.0000				
SAMPLE #:	39.	TIME (M):	2.00	TIME:	11:21:51	DATE:	DEC 04, 1992
ALPHA GROSS:	0	NET:	0	+/-	.16	dpm/cm2:	0 +/-8.08E-3
BETA GROSS:	35	NET:	16.75	+/-	5.68	dpm/cm2:	.83 +/- .28
GAMMA GROSS:	0	C FACTOR:	1.0000				
SAMPLE #:	40.	TIME (M):	2.00	TIME:	11:24:14	DATE:	DEC 04, 1992
ALPHA GROSS:	0	NET:	0	+/-	.16	dpm/cm2:	0 +/-8.08E-3
BETA GROSS:	7	NET:	2.75	+/-	2.32	dpm/cm2:	.13 +/- .11
GAMMA GROSS:	0	C FACTOR:	1.0000				

CEILING ROOM 131  
FINAL SURVEY SMEARS  
FOR BETA / ALPHA

SAMPLE #	LOCATION	GROSS		NET		LIMIT REC. GUIDE 1.86
		BETA/GAMMA	ALPHA	BETA/dpm	ALPHA/dpm	
A-1	CEILING ROOM 131	6	1	10	1.66	1000dpm
A-2	CEILING ROOM 131	2	0	1.25	0	1000dpm
A-3	CEILING ROOM 131	3	0	3.75	0	1000dpm
A-4	CEILING ROOM 131	2	0	1.25	0	1000dpm
A-5	CEILING ROOM 131	1	0	0	0	1000dpm
A-6	CEILING ROOM 131	3	0	3.75	0	1000dpm
A-7	CEILING ROOM 131	1	0	0	0	1000dpm
A-8	CEILING ROOM 131	3	0	3.75	0	1000dpm
A-9	CEILING ROOM 131	4	0	6.25	0	1000dpm
A-10	CEILING ROOM 131	1	0	0	0	1000dpm
A-11	CEILING ROOM 131	2	1	0.899	1.66	1000dpm
B-1	CEILING ROOM 131	4	0	6.25	0	1000dpm
B-2	CEILING ROOM 131	1	4	5.89	1.66	1000dpm
B-3	CEILING ROOM 131	2	2	0.399	4.04	1000dpm
B-4	CEILING ROOM 131	1	0	0	0	1000dpm
B-5	CEILING ROOM 131	4	1	5.89	1.66	1000dpm
B-6	CEILING ROOM 131	3	0	3.75	0	1000dpm
B-7	CEILING ROOM 131	2	0	1.25	0	1000dpm
B-8	CEILING ROOM 131	4	0	6.25	0	1000dpm
B-9	CEILING ROOM 131	2	0	1.25	0	1000dpm
B-10	CEILING ROOM 131	4	0	6.25	0	1000dpm
B-11	CEILING ROOM 131	2	1	0.899	1.66	1000dpm
C-1	CEILING ROOM 131	2	1	0.899	1.66	1000dpm
C-2	CEILING ROOM 131	0	1	0	1.66	1000dpm
C-3	CEILING ROOM 131	2	0	1.25	0	1000dpm
C-4	CEILING ROOM 131	1	2	0	4.04	1000dpm
C-5	CEILING ROOM 131	0	0	0	0	1000dpm
C-6	CEILING ROOM 131	6	3	9.9	6.42	1000dpm
C-7	CEILING ROOM 131	1	0	0	0	1000dpm
C-8	CEILING ROOM 131	0	1	0	1.66	1000dpm
C-9	CEILING ROOM 131	1	0	0	0	1000dpm
C-10	CEILING ROOM 131	0	1	0	1.66	1000dpm
C-11	CEILING ROOM 131	2	1	0.899	1.66	1000dpm
D-1	CEILING ROOM 131		1	10	1.66	1000dpm
D-2	CEILING ROOM 131	3	2	2.9	4.04	1000dpm
D-3	CEILING ROOM 131	6	1	10	1.66	1000dpm
D-4	CEILING ROOM 131	1	0	0	0	1000dpm
D-5	CEILING ROOM 131	3	0	3.75	0	1000dpm
D-6	CEILING ROOM 131	0	0	0	0	1000dpm
D-7	CEILING ROOM 131	5	2	7.9	4.04	1000dpm
D-8	CEILING ROOM 131	2	1	0.899	1.66	1000dpm
D-9	CEILING ROOM 131	3	1	3.4	1.66	1000dpm
D-10	CEILING ROOM 131	3	0	3.75	0	1000dpm
D-11	CEILING ROOM 131	4	1	5.89	1.66	1000dpm
E-1	CEILING ROOM 131	0	0	0	0	1000dpm
E-2	CEILING ROOM 131	6	0	11	0	1000dpm
E-3	CEILING ROOM 131	1	0	0	0	1000dpm
E-4	CEILING ROOM 131	5	0	8.75	0	1000dpm



E-5	CEILING ROOM 131	0	0	0	1000dpm
E-6	CEILING ROOM 131	1	0	0	1000dpm
E-7	CEILING ROOM 131	4	0	6.25	1000dpm
E-8	CEILING ROOM 131	4	0	6.25	1000dpm
E-9	CEIL' & ROOM 131	2	0	1.25	1000dpm
E-10	CEILING ROOM 131	5	0	8.75	1000dpm
E-11	CEILING ROOM 131	3	0	3.75	1000dpm
F-1	CEILING ROOM 131	4	3	4.9	6.42 1000dpm
F-2	CEILING ROOM 131	1	0	0	1000dpm
F-3	CEILING ROOM 131	1	0	0	1000dpm
F-4	CEILING ROOM 131	4	1	5.89	1.66 1000dpm
F-5	CEILING ROOM 131	4	0	6.25	1000dpm
F-6	CEILING ROOM 131	3	0	3.75	1000dpm
F-7	CEILING ROOM 131	3	0	3.75	1000dpm
G-1	CEILING ROOM 131	4	0	6.25	1000dpm
G-2	CEILING ROOM 131	1	0	0	1000dpm
G-3	CEILING ROOM 131	3	0	3.75	1000dpm
G-4	CEILING ROOM 131	2	2	3.99	4.04 1000dpm
G-5	CEILING ROOM 131	1	0	0	1000dpm
G-6	CEILING ROOM 131	5	0	8.75	1000dpm
G-7	CEILING ROOM 131	2	0	1.25	1000dpm
H-1	CEILING ROOM 131	5	0	8.75	1000dpm
H-2	CEILING ROOM 131	2	0	1.25	1000dpm
H-3	CEILING ROOM 131	3	0	3.75	1000dpm
H-4	CEILING ROOM 131	4	1	5.89	1.66 1000dpm
H-5	CEILING ROOM 131	2	1	0.899	1.66 1000dpm
K-6	CEILING ROOM 131	2	1	0.899	1.66 1000dpm
H-7	CEILING ROOM 131	4	0	6.25	1000dpm
K-1	CEILING ROOM 131	1	0	0	1000dpm
K-2	CEILING ROOM 131	0	0	0	1000dpm
K-3	CEILING ROOM 131	3	0	3.75	1000dpm
K-4	CEILING ROOM 131	4	0	6.25	1000dpm
I-1	CEILING ROOM 131	2	1	0.899	1.66 1000dpm
I-2	CEILING ROOM 131	4	0	6.25	1000dpm
I-3	CEILING ROOM 131	1	0	0	1000dpm
I-4	CEILING ROOM 131	2	0	1.25	1000dpm
I-5	CEILING ROOM 131	2	3	0	6.42 1000dpm
I-6	CEILING ROOM 131	2	0	1.25	1000dpm
I-7	CEILING ROOM 131	2	0	1.25	1000dpm
I-8	CEILING ROOM 131	0	0	0	1000dpm
I-9	CEILING ROOM 131	1	0	0	1000dpm
I-10	CEILING ROOM 131	1	0	0	1000dpm
I-11	CEILING ROOM 131	7	1	0.899	1.66 1000dpm
J-1	CEILING ROOM 131	5	1	8.4	1.66 1000dpm
J-2	CEILING ROOM 131	1	0	0	1000dpm
J-3	CEILING ROOM 131	1	0	0	1000dpm
J-4	CEILING ROOM 131	2	0	1.25	1000dpm
J-5	CEILING ROOM 131	3	0	3.75	1000dpm
J-6	CEILING ROOM 131	2	0	1.25	1000dpm
J-7	CEILING ROOM 131	2	1	0.899	1.66 1000dpm
J-8	CEILING ROOM 131	1	0	0	1000dpm
J-9	CEILING ROOM 131	3	1	3.4	1.66 1000dpm
J-10	CEILING ROOM 131	2	0	1.25	1000dpm
J-11	CEILING ROOM 131	2	1	0.899	1.66 1000dpm
K-5	CEILING ROOM 131	3	0	3.75	1000dpm
K-6	CEILING ROOM 131	6	1	10	1.66 1000dpm
K-7	CEILING ROOM 131	3	0	3.75	1000dpm
K-8	CEILING ROOM 131	3	0	3.75	1000dpm

K-9	CEILING ROOM 131	5	1	8.4	1.66	1000dps
-10	CEILING ROOM 131	3	0	3.75	0	1000dps
-11	CEILING ROOM 131	5	0	8.75	0	1000dps
L-1	CEILING ROOM 131	1	0	0	0	1000dps
L-2	CEILING ROOM 131	4	1	5.89	1.66	1000dps
-3	CEILING ROOM 131	0	1	0	1.66	1000dps
L-4	CEILING ROOM 131	3	1	3.4	1.66	1000dps
L-5	CEILING ROOM 131	4	0	6.25	0	1000dps
-6	CEILING ROOM 131	4	0	6.25	0	1000dps
-7	CEILING ROOM 131	4	0	6.25	0	1000dps
L-8	CEILING ROOM 131	4	1	5.89	1.66	1000dps
L-9	CEILING ROOM 131	3	1	3.4	1.66	1000dps
-10	CEILING ROOM 131	2	0	1.25	0	1000dps
L-11	CEILING ROOM 131	1	1	0	1.66	1000dps
M-1	CEILING ROOM 131	2	0	1.25	0	1000dps
-2	CEILING ROOM 131	3	1	3.4	1.66	1000dps
-3	CEILING ROOM 131	4	0	6.25	0	1000dps
M-4	CEILING ROOM 131	3	1	3.4	1.66	1000dps
-5	CEILING ROOM 131	2	0	1.25	0	1000dps
-6	CEILING ROOM 131	3	0	3.75	0	1000dps
M-7	CEILING ROOM 131	6	1	10	1.66	1000dps
M-8	CEILING ROOM 131	3	1	3.4	1.66	1000dps
-9	CEILING ROOM 131	2	1	0.899	1.66	1000dps
-10	CEILING ROOM 131	3	0	3.75	0	1000dps
M-11	CEILING ROOM 131	4	0	6.25	0	1000dps

SEE ATTACHED SHEETS

REMARKS:				
Sample #'s with Grid - Ceiling SAME Grid as Floor				
Date: 12-9-92	Time: 7:00 AM	Location of Survey: Room 131 Taylor Hall Bldg.	Reason for Survey: Final Survey	<input checked="" type="checkbox"/> Beta-Gamma Swipe <input checked="" type="checkbox"/> Alpha Swipe <input type="checkbox"/> Airborne Beta Gamma <input checked="" type="checkbox"/> Direct Readings
Instrument Used: Model 3 94-9 Pencake probe	Serial No.: # 20138 # 094014	Signature of Surveyor: m.j. mp	Signature of Reviewing Supervisor: Richard R. Miller	Page ___ of ___

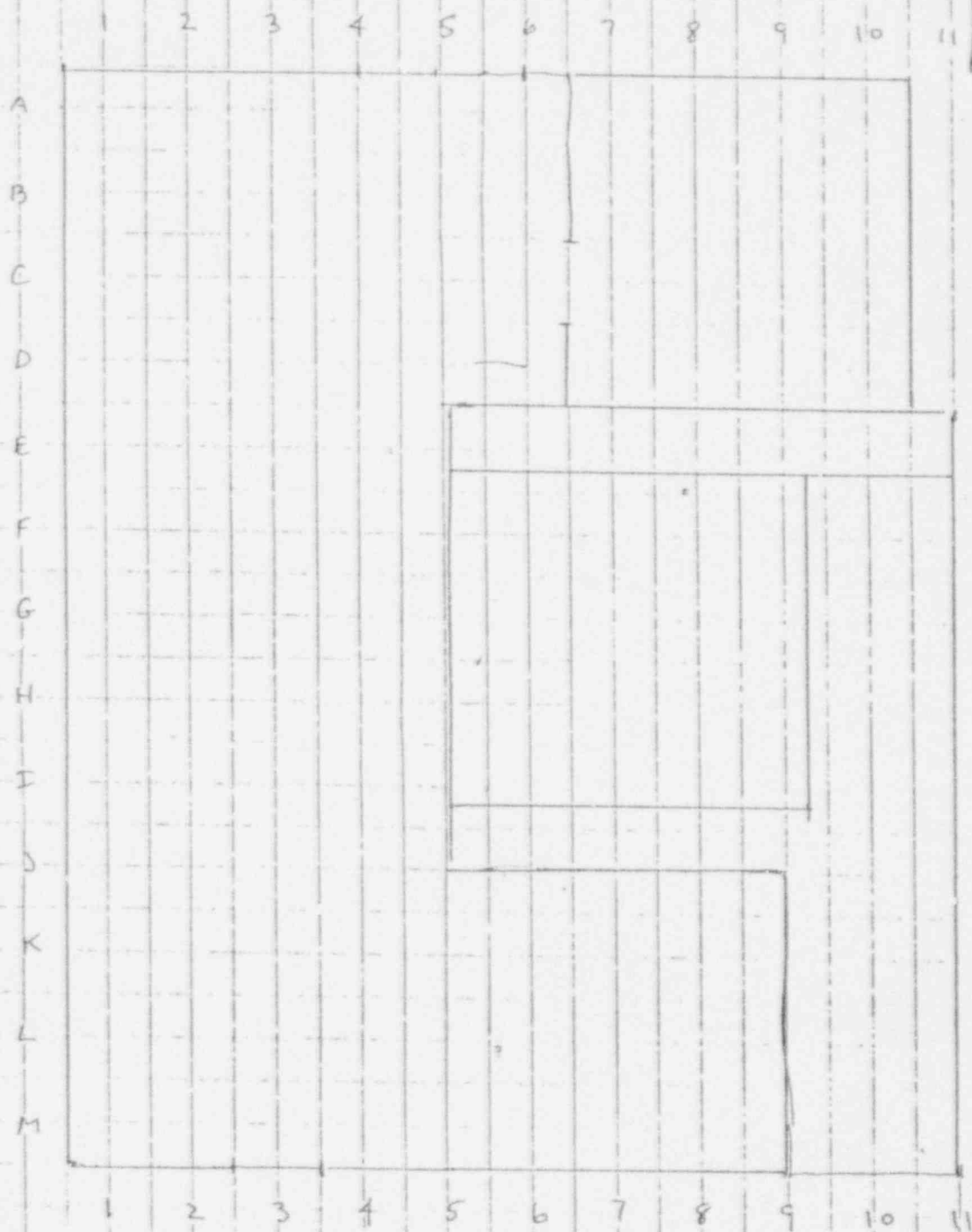
RM - 131

REACTOR ROOM - TAYLOR HALL

12-10-92

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All Direct Readings  $< 1000 \text{ DPM}/100\text{cm}^2$

Luc Lam Model 3 w 44-9 G.M. pancake probe  
S/N 20138

PROGRAM #1  
 PRESET COUNT: 999999 BETA  
 PSET TIME (M): 2.00  
 HIGH VOLTAGE: 1500  
 DISC WINDOW: 1000  
 START SAMPLE: 1  
 STOP SAMPLE: 50  
 ERROR (SIGMA): 1.96  
 REPEAT #: 0  
 A EFFIC (%): 21.00  
 A CROSTLK (%): 20.00  
 A BKGND (CPM): 15  
 B EFFIC (%): 20.00  
 B BKGND (CPM): 75  
 BKGD TIME (M): 20.00  
 VOL (cm2): 100.00  
 A1 ARM (dpm/V): 200.00  
 ULLR EQUATION

Ceiling Rm 131  
 Taylor Hall

Swipes, Final survey

SAMPLE #1 A-1	TIME (M): 2.00	TIME: 15:09:33	DATE: DEC 09, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 6	NET: 2.18	+/- 2.08	dpm/cm2: .10 +/- .10
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE #2 A-2	TIME (M): 2.00	TIME: 15:11:56	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/- 3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE #3 A-3	TIME (M): 2.00	TIME: 15:14:19	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 3	NET: .75	+/- 1.25	dpm/cm2: 3.75E-2 +/- 6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE #4 A-4	TIME (M): 2.00	TIME: 15:16:42	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- 8.08E-3

SAMPLE # <del>11</del> A-5	TIME (M): 2.00	TIME: 15:19:05	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 1	NET: 0	+/- 38	dpm/cm2: 0 +/- 1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>11</del> A-6	TIME (M): 2.00	TIME: 15:21:28	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 3	NET: 75	+/- 1.25	dpm/cm2: 3.75E-2 +/- 6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>11</del> A-7	TIME (M): 2.00	TIME: 15:23:51	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 1	NET: 0	+/- 38	dpm/cm2: 0 +/- 1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>11</del> A-8	TIME (M): 2.00	TIME: 15:26:15	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 3	NET: 75	+/- 1.25	dpm/cm2: 3.75E-2 +/- 6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>11</del> A-9	TIME (M): 2.00	TIME: 15:28:38	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 4	NET: 1.25	+/- 1.59	dpm/cm2: 6.25E-2 +/- 7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>11</del> A-10	TIME (M): 2.00	TIME: 15:31:01	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 1	NET: 0	+/- 38	dpm/cm2: 0 +/- 1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>11</del> A-11	TIME (M): 2.00	TIME: 15:33:24	DATE: DEC 09, 1992
ALPHA GROSS: 1	NET: 35	+/- 83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 2	NET: 18	+/- 71	dpm/cm2: 8.99E-3 +/- 3.59E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>11</del> B-1	TIME (M): 2.00	TIME: 15:35:47	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 4	NET: 1.25	+/- 1.59	dpm/cm2: 6.25E-2 +/- 7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>11</del> B-2	TIME (M): 2.00	TIME: 15:38:10	DATE: DEC 09, 1992
ALPHA GROSS: 1	NET: 35	+/- 83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 4	NET: 1.17	+/- 1.56	dpm/cm2: 5.89E-2 +/- 7.80E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>11</del> B-3	TIME (M): 2.00	TIME: 15:40:33	DATE: DEC 09, 1992
ALPHA GROSS: 2	NET: 85	+/- 1.28	dpm/cm2: 4.04E-2 +/- 6.13E-2
BETA GROSS: 2	NET: 7.99E-2	+/- 60	dpm/cm2: 3.99E-3 +/- 3.01E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>11</del> B-4	TIME (M): 2.00	TIME: 15:42:57	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 1	NET: 0	+/- 38	dpm/cm2: 0 +/- 1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>11</del> B-5	TIME (M): 2.00	TIME: 15:45:20	DATE: DEC 09, 1992
ALPHA GROSS: 1	NET: 35	+/- 83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 4	NET: 1.17	+/- 1.56	dpm/cm2: 5.89E-2 +/- 7.80E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>11</del> B-6	TIME (M): 2.00	TIME: 15:47:43	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 3	NET: 75	+/- 1.25	dpm/cm2: 3.75E-2 +/- 6.29E-2

SAMPLE <del>11</del> B-7	TIME (M): 2.00	TIME: 15:50:00	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/-3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>11</del> B-8	TIME (M): 2.00	TIME: 15:52:29	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 4	NET: 1.25	+/-1.59	dpm/cm2: 6.25E-2 +/-7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>11</del> B-9	TIME (M): 2.00	TIME: 15:54:52	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/-3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>11</del> B-10	TIME (M): 2.00	TIME: 15:57:15	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 4	NET: 1.25	+/-1.59	dpm/cm2: 6.25E-2 +/-7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>11</del> B-11	TIME (M): 2.00	TIME: 15:59:38	DATE: DEC 09, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 2	NET: .18	+/- .71	dpm/cm2: 8.99E-3 +/-3.59E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>11</del> C-1	TIME (M): 2.00	TIME: 16:02:02	DATE: DEC 09, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 2	NET: .18	+/- .71	dpm/cm2: 8.99E-3 +/-3.59E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>11</del> C-2	TIME (M): 2.00	TIME: 16:04:25	DATE: DEC 09, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 0	NET: 0	+/- .41	dpm/cm2: 0 +/-2.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>11</del> C-3	TIME (M): 2.00	TIME: 16:06:48	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/-3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>11</del> C-4	TIME (M): 2.00	TIME: 16:09:11	DATE: DEC 09, 1992
ALPHA GROSS: 2	NET: .85	+/-1.28	dpm/cm2: 4.04E-2 +/-6.13E-2
BETA GROSS: 1	NET: 0	+/- .45	dpm/cm2: 0 +/-2.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>11</del> C-5	TIME (M): 2.00	TIME: 16:11:34	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 0	NET: 0	+/- .38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>11</del> C-6	TIME (M): 2.00	TIME: 16:13:57	DATE: DEC 09, 1992
ALPHA GROSS: 3	NET: 1.35	+/-1.61	dpm/cm2: 6.42E-2 +/-7.71E-2
BETA GROSS: 6	NET: 1.98	+/-2.01	dpm/cm2: 9.90E-2 +/- .10
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>11</del> C-7	TIME (M): 2.00	TIME: 16:16:20	DATE: DEC 09, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 1	NET: 0	+/- .38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>11</del> C-8	TIME (M): 2.00	TIME: 16:18:44	DATE: DEC 09, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 0	NET: 0	+/- .41	dpm/cm2: 0 +/-2.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		



SAMPLE # ~~31~~ C-9 TIME (M): 2.00 TIME: 16:21:07 DATE: DEC 09, 1992  
 ALPHA GROSS: 0 NET: 0 +/- 16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 1 NET: 0 +/- 38 dpm/cm2: 0 +/- 1.90E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # ~~32~~ C-10 TIME (M): 2.00 TIME: 16:23:30 DATE: DEC 09, 1992  
 ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
 BETA GROSS: 0 NET: 0 +/- .41 dpm/cm2: 0 +/- 2.07E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # ~~33~~ C-11 TIME (M): 2.00 TIME: 16:25:53 DATE: DEC 09, 1992  
 ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
 BETA GROSS: 2 NET: .18 +/- .71 dpm/cm2: 8.99E-3 +/- 3.59E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # ~~34~~ D-1 TIME (M): 2.00 TIME: 16:28:16 DATE: DEC 09, 1992  
 ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
 BETA GROSS: 6 NET: 2.18 +/- 2.08 dpm/cm2: .10 +/- .10  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # ~~35~~ D-2 TIME (M): 2.00 TIME: 16:30:39 DATE: DEC 09, 1992  
 ALPHA GROSS: 2 NET: .85 +/- 1.28 dpm/cm2: 4.04E-2 +/- 6.13E-2  
 BETA GROSS: 3 NET: .58 +/- 1.15 dpm/cm2: 2.90E-2 +/- 5.75E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # ~~36~~ D-3 TIME (M): 2.00 TIME: 16:33:02 DATE: DEC 09, 1992  
 ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
 BETA GROSS: 6 NET: 2.18 +/- 2.08 dpm/cm2: .10 +/- .10  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # ~~37~~ D-4 TIME (M): 2.00 TIME: 16:35:26 DATE: DEC 09, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 1 NET: 0 +/- .38 dpm/cm2: 0 +/- 1.90E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # ~~38~~ D-5 TIME (M): 2.00 TIME: 16:37:49 DATE: DEC 09, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 3 NET: .75 +/- 1.25 dpm/cm2: 3.75E-2 +/- 6.29E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # ~~39~~ D-6 TIME (M): 2.00 TIME: 16:40:12 DATE: DEC 09, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 0 NET: 0 +/- .38 dpm/cm2: 0 +/- 1.90E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE # ~~40~~ D-7 TIME (M): 2.00 TIME: 16:42:35 DATE: DEC 09, 1992  
 ALPHA GROSS: 2 NET: .85 +/- 1.28 dpm/cm2: 4.04E-2 +/- 6.13E-2  
 BETA GROSS: 5 NET: 1.58 +/- 1.80 dpm/cm2: 7.90E-2 +/- 9.00E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000



PROGRAM #1  
 PRESET COUNT 999999 BETA  
 PSET TIME (M): 2.00  
 HIGH VOLTAGE: 1500.  
 DISC WINDOW: 1000  
 START SAMPLE: 1.  
 STOP SAMPLE: 50.  
 ERROR (SIGMA): 1.96  
 REPEAT #: 0  
 A EFFIC (%): 21.00  
 A CROSTLK (%): 20.00  
 A BKGND (CFM): 15  
 B EFFIC (%): 20.00  
 B BKGND (CFM): 75  
 BKGD TIME (M): 20.00  
 VOL (cm2): 100.00  
 ALARM (dpm/V): 200.00  
 USER EQUATION:

Ceiling RM 131  
 Taylor Hall  
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SAMPLE <del>#1</del> D-8	TIME (M): 2.00	TIME: 07:33:00	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: 35	+/- 83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 2	NET: 18	+/- 71	dpm/cm2: 8.99E-3 +/- 3.59E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE <del>#2</del> D-9	TIME (M): 2.00	TIME: 07:35:23	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: 35	+/- 83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 3	NET: 68	+/- 121	dpm/cm2: 3.40E-2 +/- 6.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE <del>#3</del> D-10	TIME (M): 2.00	TIME: 07:37:46	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 3	NET: 75	+/- 125	dpm/cm2: 3.75E-2 +/- 6.29E-2

SAMPLE <del>4-11</del> D-11	TIME (M): 2.00	TIME: 07:40:09	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: 35	+/- 83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 4	NET: 1.17	+/- 1.56	dpm/cm2: 5.89E-2 +/- 7.80E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-5</del> E-1	TIME (M): 2.00	TIME: 07:42:32	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 0	NET: 0	+/- 36	dpm/cm2: 0 +/- 1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-6</del> E-2	TIME (M): 2.00	TIME: 07:44:55	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 6	NET: 2.25	+/- 2.11	dpm/cm2: 11 +/- 10
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-2</del> E-3	TIME (M): 2.00	TIME: 07:47:18	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 1	NET: 0	+/- 36	dpm/cm2: 0 +/- 1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-8</del> E-4	TIME (M): 2.00	TIME: 07:49:41	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 5	NET: 1.75	+/- 1.87	dpm/cm2: 8.75E-2 +/- 9.36E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-9</del> E-5	TIME (M): 2.00	TIME: 07:52:04	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 0	NET: 0	+/- 36	dpm/cm2: 0 +/- 1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-10</del> E-6	TIME (M): 2.00	TIME: 07:54:27	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 1	NET: 0	+/- 36	dpm/cm2: 0 +/- 1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-11</del> E-7	TIME (M): 2.00	TIME: 07:56:50	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 4	NET: 1.25	+/- 1.59	dpm/cm2: 6.25E-2 +/- 7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-12</del> E-8	TIME (M): 2.00	TIME: 07:59:13	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 4	NET: 1.25	+/- 1.59	dpm/cm2: 6.25E-2 +/- 7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-13</del> E-9	TIME (M): 2.00	TIME: 08:01:36	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/- 3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-14</del> E-10	TIME (M): 2.00	TIME: 08:03:59	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 5	NET: 1.75	+/- 1.87	dpm/cm2: 8.75E-2 +/- 9.36E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-15</del> E-11	TIME (M): 2.00	TIME: 08:06:22	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 3	NET: .75	+/- 1.25	dpm/cm2: 3.75E-2 +/- 6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-16</del> F-1	TIME (M): 2.00	TIME: 08:08:45	DATE: DEC 10, 1992
ALPHA GROSS: 3	NET: 1.35	+/- 1.61	dpm/cm2: 6.42E-2 +/- 7.71E-2
BETA GROSS: 4	NET: .98	+/- 1.45	dpm/cm2: 4.90E-2 +/- 7.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE # <del>1-1</del> F-2	TIME (M): 1:00	TIME: 08:11:02	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 1	NET: 0	+/- .38	dpm/cm2: 0 +/- -1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>1-1</del> F-3	TIME (M): 2:00	TIME: 08:13:32	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 1	NET: 0	+/- .38	dpm/cm2: 0 +/- -1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>1-1</del> F-4	TIME (M): 2:00	TIME: 08:15:55	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/- -3.98E-2
BETA GROSS: 4	NET: 1.17	+/- 1.56	dpm/cm2: 5.89E-2 +/- -7.80E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>1-2</del> F-5	TIME (M): 2:00	TIME: 08:18:18	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 4	NET: 1.25	+/- 1.59	dpm/cm2: 6.25E-2 +/- -7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>1-1</del> F-6	TIME (M): 2:00	TIME: 08:20:41	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 3	NET: .75	+/- 1.25	dpm/cm2: 3.75E-2 +/- -6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>1-2</del> F-7	TIME (M): 2:00	TIME: 08:23:04	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 3	NET: .75	+/- 1.25	dpm/cm2: 3.75E-2 +/- -6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>1-2</del> G-1	TIME (M): 2:00	TIME: 08:25:27	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 4	NET: 1.25	+/- 1.59	dpm/cm2: 6.25E-2 +/- -7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>1-2</del> G-2	TIME (M): 2:00	TIME: 08:27:50	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 1	NET: 0	+/- .38	dpm/cm2: 0 +/- -1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>1-2</del> G-3	TIME (M): 2:00	TIME: 08:30:13	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 3	NET: .75	+/- 1.25	dpm/cm2: 3.75E-2 +/- -6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>1-2</del> G-4	TIME (M): 2:00	TIME: 08:32:36	DATE: DEC 10, 1992
ALPHA GROSS: 2	NET: .85	+/- 1.28	dpm/cm2: 4.04E-2 +/- -6.13E-2
BETA GROSS: 2	NET: 7.99E-2	+/- .60	dpm/cm2: 3.99E-3 +/- -3.01E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>1-2</del> G-5	TIME (M): 2:00	TIME: 08:35:00	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 1	NET: 0	+/- .38	dpm/cm2: 0 +/- -1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>1-2</del> G-6	TIME (M): 2:00	TIME: 08:37:23	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 5	NET: 1.75	+/- 1.87	dpm/cm2: 8.75E-2 +/- -9.36E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE # <del>1-2</del> G-7	TIME (M): 2:00	TIME: 08:39:46	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/- -3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

ALPHA GROSS	0	NET	0	+/- 16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS	5	NET	1.25	+/- 1.67	dpm/cm2: 8.75E-2	+/- 9.36E-2
GAMMA GROSS	0	C FACTOR	1.0000			

SAMPLE # <del>31</del> H-2	TIME (M): 2.00	TIME: 08:44:32	DATE: DEC 10, 1992			
ALPHA GROSS	0	NET	0	+/- 16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS	2	NET	.25	+/- .79	dpm/cm2: 1.25E-2	+/- 3.95E-2
GAMMA GROSS	0	C FACTOR	1.0000			

SAMPLE # <del>32</del> H-3	TIME (M): 2.00	TIME: 08:46:55	DATE: DEC 10, 1992			
ALPHA GROSS	0	NET	0	+/- 16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS	3	NET	.75	+/- 1.25	dpm/cm2: 3.75E-2	+/- 6.29E-2
GAMMA GROSS	0	C FACTOR	1.0000			

SAMPLE # <del>33</del> H-4	TIME (M): 2.00	TIME: 08:49:18	DATE: DEC 10, 1992			
ALPHA GROSS	1	NET	.35	+/- .83	dpm/cm2: 1.66E-2	+/- 3.98E-2
BETA GROSS	4	NET	1.17	+/- 1.56	dpm/cm2: 5.89E-2	+/- 7.80E-2
GAMMA GROSS	0	C FACTOR	1.0000			

SAMPLE # <del>34</del> H-5	TIME (M): 2.00	TIME: 08:51:41	DATE: DEC 10, 1992			
ALPHA GROSS	1	NET	.35	+/- .83	dpm/cm2: 1.66E-2	+/- 3.98E-2
BETA GROSS	2	NET	.18	+/- .71	dpm/cm2: 8.99E-3	+/- 3.59E-2
GAMMA GROSS	0	C FACTOR	1.0000			

SAMPLE # <del>35</del> H-6	TIME (M): 2.00	TIME: 08:54:04	DATE: DEC 10, 1992			
ALPHA GROSS	1	NET	.35	+/- .83	dpm/cm2: 1.66E-2	+/- 3.98E-2
BETA GROSS	2	NET	.18	+/- .71	dpm/cm2: 8.99E-3	+/- 3.59E-2
GAMMA GROSS	0	C FACTOR	1.0000			

SAMPLE # <del>36</del> H-7	TIME (M): 2.00	TIME: 08:56:28	DATE: DEC 10, 1992			
ALPHA GROSS	0	NET	0	+/- 16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS	4	NET	1.25	+/- 1.59	dpm/cm2: 6.25E-2	+/- 7.97E-2
GAMMA GROSS	0	C FACTOR	1.0000			

SAMPLE # <del>37</del> K-1	TIME (M): 2.00	TIME: 08:58:51	DATE: DEC 10, 1992			
ALPHA GROSS	0	NET	0	+/- 16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS	1	NET	0	+/- .38	dpm/cm2: 0	+/- 1.90E-2
GAMMA GROSS	0	C FACTOR	1.0000			

SAMPLE # <del>38</del> K-2	TIME (M): 2.00	TIME: 09:01:14	DATE: DEC 10, 1992			
ALPHA GROSS	0	NET	0	+/- 16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS	0	NET	0	+/- .38	dpm/cm2: 0	+/- 1.70E-2
GAMMA GROSS	0	C FACTOR	1.0000			

SAMPLE # <del>39</del> K-3	TIME (M): 2.00	TIME: 09:03:37	DATE: DEC 10, 1992			
ALPHA GROSS	0	NET	0	+/- 16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS	3	NET	.75	+/- 1.25	dpm/cm2: 3.75E-2	+/- 6.29E-2
GAMMA GROSS	0	C FACTOR	1.0000			

SAMPLE # <del>40</del> K-4	TIME (M): 2.00	TIME: 09:06:00	DATE: DEC 10, 1992			
ALPHA GROSS	0	NET	0	+/- 16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS	4	NET	1.25	+/- 1.59	dpm/cm2: 6.25E-2	+/- 7.97E-2
GAMMA GROSS	0	C FACTOR	1.0000			

PROGRAM # 1  
 PRESET COUNT: 999999 BETA  
 PSET TIME (M): 2.00  
 HIGH VOLTAGE: 1500  
 DISC WINDOW: 1000  
 START SAMPLE: 1  
 STOP SAMPLE: 50  
 ERROR (SIGMA): 1.96  
 REPEAT #: 0  
 A EFFIC (%): 21.00  
 A CROSTLK (%): 20.00  
 A BKGND (CPM): 15  
 B EFFIC (%): 20.00  
 B BKGND (CPM): 75  
 PKGD TIME (M): 20.00  
 VOL (cm2): 100.00  
 ALARM (dpm/V): 200.00  
 USER EQUATION:

Ceiling RM 131  
 Taylor Hall  
 Swipes final survey

SAMPLE ~~1-1~~ I-1 TIME (M): 2.00 TIME: 09:38:30 DATE: DEC 10, 1992  
 ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
 BETA GROSS: 2 NET: .18 +/- .71 dpm/cm2: 8.99E-3 +/- 3.59E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-2~~ I-2 TIME (M): 2.00 TIME: 09:40:54 DATE: DEC 10, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 4 NET: 1.25 +/- 1.59 dpm/cm2: 6.25E-2 +/- 7.97E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-3~~ I-3 TIME (M): 2.00 TIME: 09:43:17 DATE: DEC 10, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 1 NET: 0 +/- .36 dpm/cm2: 0 +/- 1.90E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-4~~ I-4 TIME (M): 2.00 TIME: 09:45:40 DATE: DEC 10, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 2 NET: .25 +/- .79 dpm/cm2: 1.25E-2 +/- 3.95E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-5~~ I-5 TIME (M): 2.00 TIME: 09:48:03 DATE: DEC 10, 1992  
 ALPHA GROSS: 3 NET: 1.35 +/- 1.61 dpm/cm2: 6.42E-2 +/- 7.71E-2  
 BETA GROSS: 2 NET: 0 +/- .49 dpm/cm2: 0 +/- 2.49E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-6~~ I-6 TIME (M): 2.00 TIME: 09:50:26 DATE: DEC 10, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 2 NET: .25 +/- .79 dpm/cm2: 1.25E-2 +/- 3.95E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-7~~ I-7 TIME (M): 2.00 TIME: 09:52:49 DATE: DEC 10, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 2 NET: .25 +/- .79 dpm/cm2: 1.25E-2 +/- 3.95E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-8~~ I-8 TIME (M): 2.00 TIME: 09:55:12 DATE: DEC 10, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 0 NET: 0 +/- .98 dpm/cm2: 0 +/- 1.90E-2

SAMPLE <del>1-9</del> I-9	TIME (M): 2.00	TIME: 09:57:36	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 1	NET: 0	+/- 38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-10</del> I-10	TIME (M): 2.00	TIME: 09:59:59	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 1	NET: 0	+/- 38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-11</del> I-11	TIME (M): 2.00	TIME: 10:02:22	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- 83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 2	NET: 2.68	+/-2.30	dpm/cm2: .13 +/- .11
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-12</del> J-1	TIME (M): 2.00	TIME: 10:04:45	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- 83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 5	NET: 1.68	+/-1.84	dpm/cm2: 8.40E-2 +/-9.21E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-13</del> J-2	TIME (M): 2.00	TIME: 10:07:08	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 1	NET: 0	+/- 38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-14</del> J-3	TIME (M): 2.00	TIME: 10:09:31	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 1	NET: 0	+/- 38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-15</del> J-4	TIME (M): 2.00	TIME: 10:11:54	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/-3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-16</del> J-5	TIME (M): 2.00	TIME: 10:14:17	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 3	NET: .75	+/-1.25	dpm/cm2: 3.75E-2 +/-6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-17</del> J-6	TIME (M): 2.00	TIME: 10:16:40	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/-3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-18</del> J-7	TIME (M): 2.00	TIME: 10:19:03	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- 83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 2	NET: .18	+/- .71	dpm/cm2: 8.99E-3 +/-3.59E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-19</del> J-8	TIME (M): 2.00	TIME: 10:21:27	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 1	NET: 0	+/- 38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-20</del> J-9	TIME (M): 2.00	TIME: 10:23:50	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- 83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 3	NET: .68	+/-1.21	dpm/cm2: 3.40E-2 +/-6.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-21</del> J-10	TIME (M): 2.00	TIME: 10:26:13	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/-3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		



SAMPLE <del>A-1</del> J-4	TIME (M): 2.00	TIME: 10:20:36	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 2	NET: .18	+/- .71	dpm/cm2: 8.99E-3 +/-3.59E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>A-2</del> K-5	TIME (M): 2.00	TIME: 10:30:59	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 3	NET: .75	+/-1.25	dpm/cm2: 3.75E-2 +/-6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>A-24</del> K-6	TIME (M): 2.00	TIME: 10:33:22	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 6	NET: 2.18	+/-2.08	dpm/cm2: .10 +/--.10
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>A-25</del> K-7	TIME (M): 2.00	TIME: 10:35:45	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 3	NET: .75	+/-1.25	dpm/cm2: 3.75E-2 +/-6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>A-26</del> K-8	TIME (M): 2.00	TIME: 10:38:08	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 3	NET: .75	+/-1.25	dpm/cm2: 3.75E-2 +/-6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>A-27</del> K-9	TIME (M): 2.00	TIME: 10:40:31	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 5	NET: 1.68	+/-1.84	dpm/cm2: 8.40E-2 +/-9.21E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>A-28</del> K-10	TIME (M): 2.00	TIME: 10:42:54	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 3	NET: .75	+/-1.25	dpm/cm2: 3.75E-2 +/-6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>A-29</del> K-11	TIME (M): 2.00	TIME: 10:45:17	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 1	NET: 1.75	+/-1.87	dpm/cm2: 8.75E-2 +/-9.36E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>A-30</del> L-1	TIME (M): 2.00	TIME: 10:47:41	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 1	NET: 0	+/- .38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>A-31</del> L-2	TIME (M): 2.00	TIME: 10:50:04	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 4	NET: 1.17	+/-1.56	dpm/cm2: 5.89E-2 +/-7.80E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>A-32</del> L-3	TIME (M): 2.00	TIME: 10:52:27	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 0	NET: 0	+/- .41	dpm/cm2: 0 +/-2.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>A-33</del> L-4	TIME (M): 2.00	TIME: 10:54:50	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 3	NET: .68	+/-1.21	dpm/cm2: 3.40E-2 +/-6.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>A-34</del> L-5	TIME (M): 2.00	TIME: 10:57:13	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 4	NET: 1.25	+/-1.59	dpm/cm2: 6.25E-2 +/-7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		





PROGRAM # 1  
 PRESET COUNT 999999 BETA  
 PSET TIME (M) 2.00  
 HIGH VOLTAGE 1500  
 DISC WINDOW 1000  
 START SAMPLE 1  
 STOP SAMPLE 50  
 ERROR (SIGMA) 1.96  
 REPEAT # 0  
 A EFFIC (%) 21.90  
 A CROSSLK (%) 20.00  
 A BKGND (CPM) 15  
 B EFFIC (%) 20.00  
 B BKGND (CPM) 75  
 BKGD T1 (E) (M) 20.00  
 VOL (cm2) 100.00  
 ALARM (dpm/V) 200.00  
 USER EQUATION

Ceiling Rm 131  
 Taylor Hall  
 Swipes, Final Survey

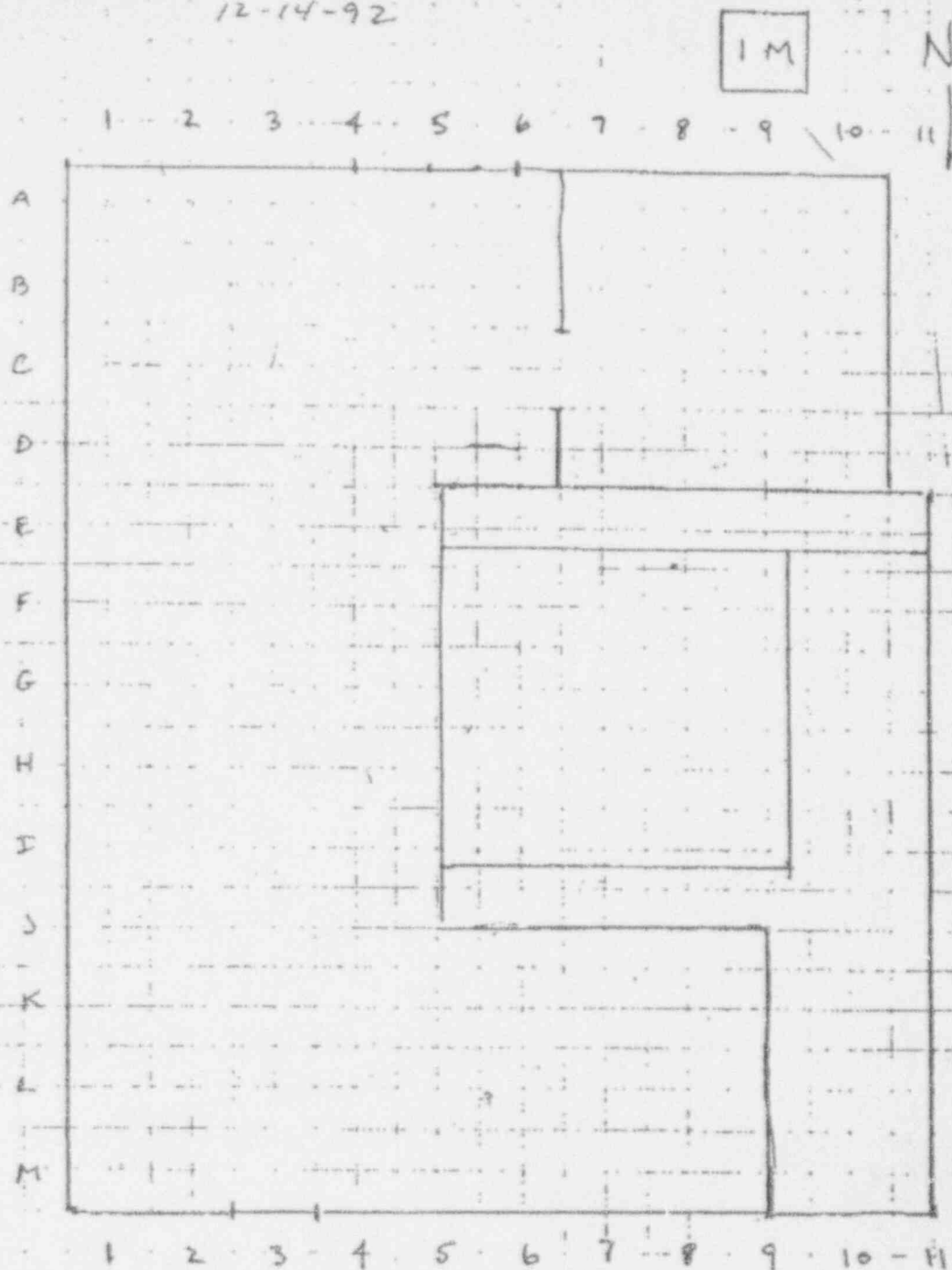
SAMPLE	TIME (M)	TIME	DATE
SAMPLE <del>1-1</del> M-1	2.00	12:07:18	DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 2	NET: 25	+/- 79	dpm/cm2: 1.25E-2 +/- 3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-2</del> M-2	2.00	12:09:41	DEC 10, 1992
ALPHA GROSS: 1	NET: 35	+/- 83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 3	NET: 68	+/- 121	dpm/cm2: 3.40E-2 +/- 6.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-3</del> M-3	2.00	12:12:04	DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 4	NET: 1.25	+/- 1.59	dpm/cm2: 6.25E-2 +/- 7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-4</del> M-4	2.00	12:14:27	DEC 10, 1992
ALPHA GROSS: 1	NET: 35	+/- 83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 3	NET: 68	+/- 121	dpm/cm2: 3.40E-2 +/- 6.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-5</del> M-5	2.00	12:16:50	DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 2	NET: 25	+/- 79	dpm/cm2: 1.25E-2 +/- 3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-6</del> M-6	2.00	12:19:13	DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 3	NET: 75	+/- 125	dpm/cm2: 3.75E-2 +/- 6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-7</del> M-7	2.00	12:21:36	DEC 10, 1992
ALPHA GROSS: 1	NET: 35	+/- 83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 6	NET: 2.18	+/- 2.08	dpm/cm2: .10 +/- .10
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-8</del> M-8	2.00	12:24:00	DEC 10, 1992
ALPHA GROSS: 1	NET: 35	+/- 83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 3	NET: 68	+/- 121	dpm/cm2: 3.40E-2 +/- 6.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-9</del> M-9	2.00	12:26:23	DEC 10, 1992
ALPHA GROSS: 1	NET: 35	+/- 83	dpm/cm2: 1.66E-2 +/- 3.98E-2
BETA GROSS: 2	NET: 18	+/- 71	dpm/cm2: 8.99E-3 +/- 3.59E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-10</del> M-10	2.00	12:28:46	DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 3	NET: 75	+/- 125	dpm/cm2: 3.75E-2 +/- 6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>1-11</del> M-11	2.00	12:31:09	DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- 16	dpm/cm2: 0 +/- 8.08E-3
BETA GROSS: 4	NET: 1.25	+/- 1.59	dpm/cm2: 6.25E-2 +/- 7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

WALLS OF ROOM 131  
FINAL SURVEY SMEARS  
FOR BETA / ALPHA

SAMPLE #	LOCATION	GROSS COUNTS		NET CPM	GROSS ALPHA CPM	GROSS CPM	NET CPM	NET BETA/dpm	NET ALPHA/dpm	LIMIT REG. GUIDE 1.86
		BETA/GAMMA	CPM							
	EAST WALL	88	44	5	7	3.5	.7	MDA	MDA	1000dpm
	EAST WALL	77	38	0	10	5	2.2	MDA	MDA	1000dpm
1	EAST WALL	87	43	4	6	3	.2	MDA	MDA	1000dpm
	EAST WALL	92	46	7	5	2.5	0	MDA	MDA	1000dpm
	EAST WALL	91	45	6	5	2.5	0	MDA	MDA	1000dpm
1	EAST WALL	99	49	10	6	3	.2	MDA	MDA	1000dpm
1	EAST WALL	85	42	3	3	1.5	0	MDA	MDA	1000dpm
	EAST WALL	108	54	15	5	2.5	0	MDA	MDA	1000dpm
	EAST WALL	93	46	7	14	7	4.2	MDA	MDA	1000dpm
1	EAST WALL	82	41	2	5	2.5	0	MDA	MDA	1000dpm
	EAST WALL	91	45	6	7	3.5	.7	MDA	MDA	1000dpm
	EAST WALL	95	47	8	8	4	1.2	MDA	MDA	1000dpm
1	NORTH WALL	79	39	0	8	4	1.2	MDA	MDA	1000dpm
7	NORTH WALL	92	46	7	5	2.5	0	MDA	MDA	1000dpm
	NORTH WALL	76	38	0	4	2	0	MDA	MDA	1000dpm
4	NORTH WALL	62	31	0	4	2	0	MDA	MDA	1000dpm
5	NORTH WALL	79	39	0	3	1.5	0	MDA	MDA	1000dpm
	NORTH WALL	92	46	7	3	1.5	0	MDA	MDA	1000dpm
	NORTH WALL	95	47	8	9	4.5	1.7	MDA	MDA	1000dpm
8	NORTH WALL	90	45	6	14	7	4.2	MDA	MDA	1000dpm
	NORTH WALL	84	42	3	7	3.5	.7	MDA	MDA	1000dpm
	NORTH WALL	81	40	1	8	4	1.2	MDA	MDA	1000dpm
11	WEST WALL	95	47	8	4	2	0	MDA	MDA	1000dpm
11	WEST WALL	84	42	3	9	4.5	1.7	MDA	MDA	1000dpm
	WEST WALL	93	46	7	2	1	0	MDA	MDA	1000dpm
11	WEST WALL	91	45	6	4	2	0	MDA	MDA	1000dpm
	WEST WALL	93	46	7	5	2.5	0	MDA	MDA	1000dpm
	WEST WALL	98	49	10	3	1.5	0	MDA	MDA	1000dpm
	WEST WALL	80	40	1	11	5.5	2.7	MDA	MDA	1000dpm
11	WEST WALL	98	49	10	6	3	.2	MDA	MDA	1000dpm
11	WEST WALL	75	37	0	4	2	0	MDA	MDA	1000dpm
	WEST WALL	102	51	12	9	4.5	1.7	MDA	MDA	1000dpm
11	WEST WALL	86	43	4	3	1.5	0	MDA	MDA	1000dpm
11	WEST WALL	81	40	1	5	2.5	0	MDA	MDA	1000dpm
	WEST WALL	71	35	0	5	2.5	0	MDA	MDA	1000dpm
	SOUTH WALL	81	40	1	8	4	1.2	MDA	MDA	1000dpm
9	SOUTH WALL	89	44	5	11	5.5	2.7	MDA	MDA	1000dpm
	SOUTH WALL	88	44	5	4	2	0	MDA	MDA	1000dpm
	SOUTH WALL	83	41	2	8	4	1.2	MDA	MDA	1000dpm
6	SOUTH WALL	78	39	0	7	3.5	.7	MDA	MDA	1000dpm
5	SOUTH WALL	91	45	6	6	3	.2	MDA	MDA	1000dpm
	SOUTH WALL	93	46	7	3	1.5	0	MDA	MDA	1000dpm
	SOUTH WALL	92	46	7	6	3	.2	MDA	MDA	1000dpm
2	SOUTH WALL	86	43	4	10	5	2.2	MDA	MDA	1000dpm

## FINAL SURVEY WALLS

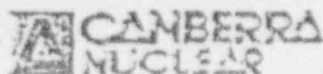
12-14-92



Ludlum Model 3 w/ G.M. pancake s/n 20138

all wall surfaces 1 meter in height surveyed  
at Grid points all readings < 1000 dpm  
entire 1 meter grid scanned with probe

R. Lee 12-14-92



Nuclear Services Division

ALPHA  
REMOVABLE BETA-GAMMA ACTIVITY MEASUREMENTS

DATE 12-16-92

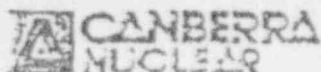
Instrumentation: DIG-5, GSM-5, AND RMC-A-3 MODEL AGP-2A Idh  
 Efficiency: 33% (counts/dis.) Bkg CPM: 2.8  
 Sample Count Time: 2 min MDA\*: 21 DPM / 100 cm<sup>2</sup>  
 Area Wiped With Smear: 100 cm<sup>2</sup>

	Measurement Location	Gross Counts	Gross CPM	Net CPM	DPM/100cm <sup>2</sup> **
1	A-1	7	3.5	0.7	
2	B-1	10	5	2.2	
3	C-1	10	3	0.2	
4	D-1	5	2.5	-0.3	
5	E-1	5	2.5	-0.3	
6	F-1	6	3	0.2	
7	G-1	3	1.5	-1.3	
8	H-1	5	2.5	-0.3	
9	I-1	14	7	4.2	
10	J-1	5	2.5	0.3	
11	K-1	7	3.5	0.7	
12	L-1	8	4	1.2	
13	M-1	8	4	1.2	
14	M-2	5	2.5	-0.3	
15	M-3	4	2	-0.8	
16	M-4	4	2	-0.8	
17	M-5	3	1.5	-1.3	
18	M-6	3	1.5	-1.3	
19	M-7	9	4.5	1.7	
20	M-8	14	7	4.2	
21	M-9	7	3.5	0.7	

$$* \text{MDA} = [4.65 \sqrt{(2\text{kg CPM}) \times (T) + 3}] / [\text{Efficiency} \times T]$$

where T = Sample Count Time (Minutes)

$$** \text{DPM/100cm}^2 = [(\text{Net CPM}) / (\text{Efficiency})] \times [(100\text{cm}^2) / (\text{Area Wiped})]$$



Nuclear Services Division

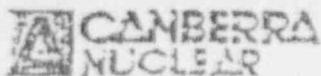
 REMOVABLE <sup>ALPHA</sup> ~~BETA~~ ACTIVITY MEASUREMENTS
DATE 12-16-92Instrumentation: DG-5, GSM-5 AND RMC-A-3 MODEL ASP-2A JOHNSONEfficiency: 33 % (counts/dis.) Bkg CPM: 2.8Sample Count Time: 2 MIN MDA\*: 21 DPM / 100 cm<sup>2</sup>Area Wiped With Smear: 100 cm<sup>2</sup>

	Measurement Location	Gross Counts	Gross CPM	Net CPM	DFM/100cm <sup>2</sup> **
22	M-10	8	4	1.2	<u>&lt; MDA</u>
23	M-11	4	2	-0.8	
24	L-11	9	4.5	1.7	
25	K-11	2	1	-1.8	
26	J-11	4	2	-0.8	
27	I-11	5	2.5	-0.3	
28	H-11	3	1.5	-1.3	
29	G-11	11	5.5	2.7	
30	F-11	6	3	0.2	
31	E-11	4	2	-0.8	
32	D-11	9	4.5	1.7	
33	C-11	3	1.5	-1.3	
34	B-11	5	2.5	-0.3	
35	A-11	5	2.5	-0.3	
36	A-10	8	4	1.2	
37	A-9	11	5.5	2.7	
38	A-8	4	2	-0.8	
39	A-7	8	4	1.2	
40	A-6	7	3.5	0.7	
41	A-5	6	3	0.2	
42	A-4	3	1.5	-1.3	

$$* \text{MDA} = [4.65 \sqrt{(\text{Bkg CPM}) \times (T)} + 3] / [\text{Efficiency} \times T]$$

where T = Sample Count Time (Minutes)

$$** \text{DFM/100cm}^2 = [(\text{Net CPM}) / (\text{Efficiency})] \times [(100\text{cm}^2) / (\text{Area Wiped})]$$



**Nuclear Services Division**

ALPHA  
REMOVABLE ~~DATA SHEET~~ ACTIVITY MEASUREMENTS

DATE 12-16-92.

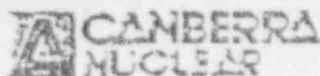
Instrumentation: DIG-5 GSM-5 AND RMCA-3 MODEL ASP-2A JOHNSON  
Efficiency: 33 % (counts/dis.) Bkg CPM: 2.8  
Sample Count Time: 2 min MDA\*: 2.1 DPM / 100 cm<sup>2</sup>  
Area Wiped With Smear: 100 cm<sup>2</sup>

[illegible]

$$* \text{ MDA} = [4.65 \sqrt{(\text{Bkg CPM}) \times (\text{T})} + 3] / [\text{Efficiency} \times \text{T}]$$

where T = Sample Count Time (Minutes)

$$** \text{ DPM}/100\text{cm}^2 = [(\text{Net CPM}) / (\text{Efficiency})] \times [(100\text{cm}^2) / (\text{Area Wiped})]$$



Nuclear Services Division

## REMOVABLE BETA-GAMMA ACTIVITY MEASUREMENTS

DATE 12-16-92Instrumentation: DIG-5, GSM-5 AND 2-B PROBE PAWCAKEEfficiency: 42 % (counts/dis.) Bkg CPM: 39Sample Count Time: 2 MIN MDA\*: 50 DPM / 100 cm<sup>2</sup>Area Wiped With Smear: 100 cm<sup>2</sup>

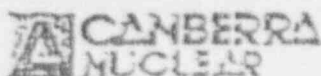
	Measurement Location	Gross Counts	Gross CPM	Net CPM	DPM/100cm <sup>2</sup> **
1	A-1	88	44	5	
2	B-1	77	38	-1	
3	C-1	87	43	4	
4	D-1	92	46	7	
5	E-1	91	45	6	
6	F-1	99	49	10	
7	G-1	85	42	3	
8	H-1	108	54	15	
9	I-1	93	46	7	
10	J-1	82	41	2	
11	K-1	91	45	6	
12	L-1	95	47	8	
13	M-1	79	39	-	
14	M-2	92	46	7	
15	M-3	76	38	-1	
16	M-4	62	31	-8	
17	M-5	79	39	-	
18	M-6	92	46	7	
19	M-7	95	47	8	
20	M-8	90	45	6	
21	M-9	84	42	3	

$$* \text{MDA} = [4.65 \sqrt{(\text{Bkg CPM}) \times (\text{T}) + 3}] / [\text{Efficiency} \times \text{T}]$$

where T = Sample Count Time (Minutes)

$$** \text{DPM/100cm}^2 = [(\text{Net CPM}) / (\text{Efficiency})] \times [(100\text{cm}^2) / (\text{Area Wiped})]$$





Nuclear Services Division

## REMOVABLE BETA-GAMMA ACTIVITY MEASUREMENTS

DATE 12-16-92Instrumentation: DG-5, GSM-5 AND Z-B PROBE PANCAKEEfficiency: 42 % (counts/dis.) Bkg CPM: 39Sample Count Time: 2 min MDA\* : 50 DPM / 100 cm<sup>2</sup>Area Wiped With Smear: 100 cm<sup>2</sup>

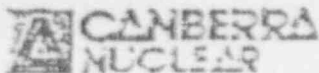
	Measurement Location	Gross Counts	Gross CPM	Net CPM	DPM/100cm <sup>2</sup> **
22	M-10	81	40	1	< MDA
23	M-11	95	47	8	
24	L-11	84	42	3	
25	K-11	93	46	7	
26	J-11	91	45	6	
27	I-11	93	46	7	
28	H-11	98	49	10	
29	G-11	80	40	1	
30	F-11	98	49	10	
31	E-11	75	37	-2	
32	D-11	102	51	12	
33	C-11	86	43	4	
34	B-11	81	40	1	
35	A-11	71	35	-4	
36	A-10	81	40	1	
37	A-9	89	44	5	
38	A-8	88	44	5	
39	A-7	83	41	2	
40	A-6	78	39	—	
41	A-5	91	45	6	
42	A-4	93	46	7	

$$* \text{MDA} = [4.65 \sqrt{(\text{Bkg CPM}) \times (T)} + 3] / [\text{Efficiency} \times T]$$

where T = Sample Count Time (Minutes)

$$** \text{DPM/100cm}^2 = [(\text{Net CPM}) / (\text{Efficiency})] \times [(100\text{cm}^2) / (\text{Area Wiped})]$$





Nuclear Services Division

## REMOVABLE BETA-GAMMA ACTIVITY MEASUREMENTS

DATE 12-16-92

Instrumentation: DIG-5, GSM-5, AND Z-B Probe Pancake

Efficiency: 42% (counts/dis.) Bkg CPM: 39

Sample Count Time: 2 min MDA\* : 50 DPM / 100 cm<sup>2</sup>

Area Wiped With Smear: 100 cm<sup>2</sup>

[illegible]

$$* \text{MDA} = [4.65 \sqrt{(2\text{kg CPM}) \times (T)} + 3] / [\text{Efficiency} \times T]$$

where T = Sample Count Time (Minutes)

$$^{**} \text{ DPM/100cm}^2 = [(\text{Net CPM}) / (\text{Efficiency})] \times [(100\text{cm}^2) / (\text{Area Wiped})]$$

FLOOR ROOM 131  
FINAL SURVEY SMEARS  
FOR BETA / ALPHA

SAMPLE #	LOCATION	GROSS		NET	NET	LIMIT
		BETA/GAMMA	ALPHA	BETA/dpm	ALPHA/dpm	REG. GUIDE 1.86
A-1	FLOOR ROOM 131	8	3	14	6.42	1000dpm
B-1	FLOOR ROOM 131	2	2	0.399	4.04	1000dpm
C-1	FLOOR ROOM 131	3	0	3.75	0	1000dpm
D-1	FLOOR ROOM 131	5	1	8.4	1.66	1000dpm
E-1	FLOOR ROOM 131	2	0	1.25	0	1000dpm
F-1	FLOOR ROOM 131	4	0	6.25	0	1000dpm
G-1	FLOOR ROOM 131	1	0	0	0	1000dpm
H-1	FLOOR ROOM 131	4	0	6.25	0	1000dpm
I-1	FLOOR ROOM 131	4	0	6.25	0	1000dpm
J-1	FLOOR ROOM 131	5	0	8.75	0	1000dpm
K-1	FLOOR ROOM 131	1	1	0	1.66	1000dpm
L-1	FLOOR ROOM 131	2	0	1.25	0	1000dpm
M-1	FLOOR ROOM 131	1	0	0	0	1000dpm
A-2	FLOOR ROOM 131	8	1	15	1.66	1000dpm
B-2	FLOOR ROOM 131	0	0	0	0	1000dpm
C-2	FLOOR ROOM 131	3	2	2.9	4.04	1000dpm
D-2	FLOOR ROOM 131	3	0	3.75	0	1000dpm
E-2	FLOOR ROOM 131	2	0	1.25	0	1000dpm
F-2	FLOOR ROOM 131	2	0	1.25	0	1000dpm
G-2	FLOOR ROOM 131	4	0	6.25	0	1000dpm
H-2	FLOOR ROOM 131	1	1	0	1.66	1000dpm
I-2	FLOOR ROOM 131	3	2	2.9	4.04	1000dpm
J-2	FLOOR ROOM 131	4	0	6.25	0	1000dpm
K-2	FLOOR ROOM 131	5	1	8.4	1.66	1000dpm
L-2	FLOOR ROOM 131	1	0	0	0	1000dpm
M-2	FLOOR ROOM 131	4	1	5.89	1.66	1000dpm
A-3	FLOOR ROOM 131	1	0	0	0	1000dpm
B-3	FLOOR ROOM 131	3	1	3.4	1.66	1000dpm
C-3	FLOOR ROOM 131	3	0	3.75	0	1000dpm
D-3	FLOOR ROOM 131	0	0	0	0	1000dpm
E-3	FLOOR ROOM 131	0	0	0	0	1000dpm
F-3	FLOOR ROOM 131	2	0	1.25	0	1000dpm
G-3	FLOOR ROOM 131	5	0	8.75	0	1000dpm
H-3	FLOOR ROOM 131	1	1	1.66	1.66	1000dpm
I-3	FLOOR ROOM 131	4	0	6.25	0	1000dpm
J-3	FLOOR ROOM 131	4	1	5.89	1.66	1000dpm
K-3	FLOOR ROOM 131	0	0	0	0	1000dpm
L-3	FLOOR ROOM 131	3	0	3.75	0	1000dpm
M-3	FLOOR ROOM 131	1	0	0	0	1000dpm
A-4	FLOOR ROOM 131	2	0	1.25	0	1000dpm
B-4	FLOOR ROOM 131	1	2	0	4.04	1000dpm
C-4	FLOOR ROOM 131	2	0	1.25	0	1000dpm
D-4	FLOOR ROOM 131	2	0	1.25	0	1000dpm
E-4	FLOOR ROOM 131	3	1	3.4	1.66	1000dpm
F-4	FLOOR ROOM 131	6	0	11	0	1000dpm
G-4	FLOOR ROOM 131	5	1	8.4	1.66	1000dpm
H-4	FLOOR ROOM 131	2	0	1.25	0	1000dpm
I-4	FLOOR ROOM 131	7	0	13	0	1000dpm

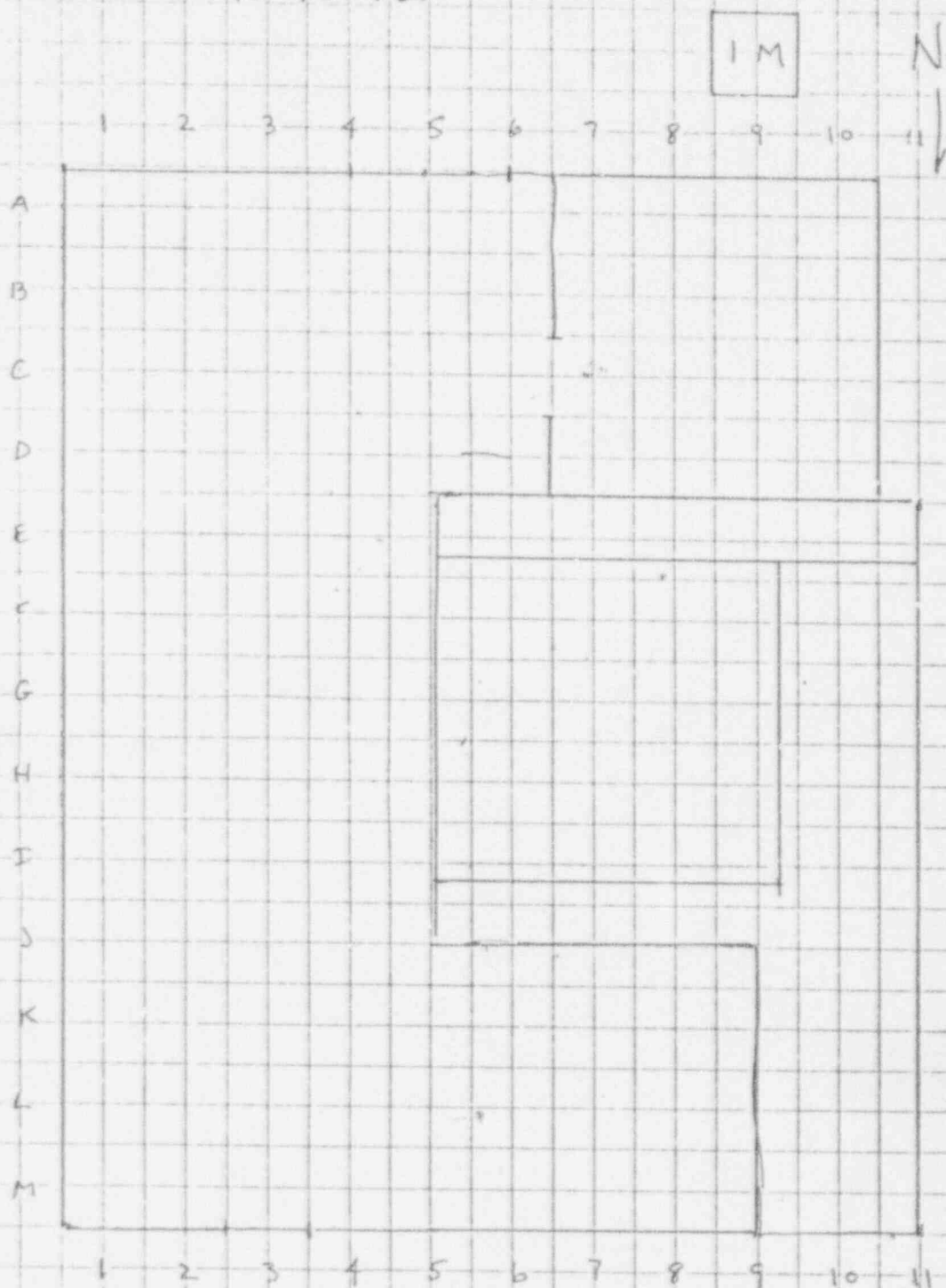
J-4	FLOOR ROOM 131	6	0	11	0	1000dpm
K-4	FLOOR ROOM 131	2	0	1.25	0	1000dpm
L-4	FLOOR ROOM 131	0	1	0	1.66	1000dpm
M-4	FLOOR ROOM 131	4	1	5.89	1.66	1000dpm
A-5	FLOOR ROOM 131	2	0	1.25	0	1000dpm
I-5	FLOOR ROOM 131	2	1	0.899	1.66	1000dpm
J-5	FLOOR ROOM 131	2	0	1.25	0	1000dpm
D-5	FLOOR ROOM 131	4	0	6.25	0	1000dpm
E-5	FLOOR ROOM 131	7	2	12	4.04	1000dpm
F-5	FLOOR ROOM 131	6	0	11	0	1000dpm
G-5	FLOOR ROOM 131	2	0	1.25	0	1000dpm
H-5	FLOOR ROOM 131	2	1	0.899	1.66	1000dpm
I-5	FLOOR ROOM 131	3	0	3.75	0	1000dpm
J-5	FLOOR ROOM 131	3	1	3.4	1.66	1000dpm
K-5	FLOOR ROOM 131	1	2	0	4.04	1000dpm
L-5	FLOOR ROOM 131	3	0	3.75	0	1000dpm
M-6	FLOOR ROOM 131	2	0	1.25	0	1000dpm
B-6	FLOOR ROOM 131	0	1	0	1.66	1000dpm
C-6	FLOOR ROOM 131	2	0	1.25	0	1000dpm
I-6	FLOOR ROOM 131	3	1	3.4	1.66	1000dpm
L-6	FLOOR ROOM 131	2	1	0.899	1.66	1000dpm
F-6	FLOOR ROOM 131	3	0	3.75	0	1000dpm
I-6	FLOOR ROOM 131	2	0	1.25	0	1000dpm
I-6	FLOOR ROOM 131	5	0	8.75	0	1000dpm
I-6	FLOOR ROOM 131	1	2	0	4.04	1000dpm
I-6	FLOOR ROOM 131	237	0	588	0	1000dpm
I-6	FLOOR ROOM 131	2	0	1.25	0	1000dpm
L-6	FLOOR ROOM 131	3	2	2.9	4.04	1000dpm
M-6	FLOOR ROOM 131	5	2	7.9	4.04	1000dpm
I-7	FLOOR ROOM 131	6	1	10	1.66	1000dpm
J-7	FLOOR ROOM 131	1	0	0	0	1000dpm
C-7	FLOOR ROOM 131	5	1	8.4	1.66	1000dpm
I-7	FLOOR ROOM 131	3	0	3.75	0	1000dpm
I-7	FLOOR ROOM 131	4	1	5.89	1.66	1000dpm
F-7	FLOOR ROOM 131	3	2	2.9	4.04	1000dpm
G-7	FLOOR ROOM 131	0	0	0	0	1000dpm
I-7	FLOOR ROOM 131	3	1	3.4	1.66	1000dpm
I-7	FLOOR ROOM 131	3	1	3.4	1.66	1000dpm
J-7	FLOOR ROOM 131	2	0	1.25	0	1000dpm
K-7	FLOOR ROOM 131	3	0	3.75	0	1000dpm
L-7	FLOOR ROOM 131	1	1	0	1.66	1000dpm
M-7	FLOOR ROOM 131	2	1	0.899	1.66	1000dpm
A-8	FLOOR ROOM 131	0	0	0	0	1000dpm
B-8	FLOOR ROOM 131	4	1	5.89	1.66	1000dpm
C-8	FLOOR ROOM 131	1	1	6	1.66	1000dpm
D-8	FLOOR ROOM 131	9	1	18	1.66	1000dpm
E-8	FLOOR ROOM 131	6	1	10	1.66	1000dpm
F-8	FLOOR ROOM 131	2	0	1.25	0	1000dpm
G-8	FLOOR ROOM 131	3	0	3.75	0	1000dpm
H-8	FLOOR ROOM 131	0	0	0	0	1000dpm
I-8	FLOOR ROOM 131	8	1	15	1.66	1000dpm
J-8	FLOOR ROOM 131	3	1	3.4	1.66	1000dpm
K-8	FLOOR ROOM 131	4	1	5.89	1.66	1000dpm
L-8	FLOOR ROOM 131	4	0	6.25	0	1000dpm
M-8	FLOOR ROOM 131	2	1	0.899	1.66	1000dpm
A-9	FLOOR ROOM 131	5	0	8.75	0	1000dpm
B-9	FLOOR ROOM 131	3	1	8.4	1.66	1000dpm
C-9	FLOOR ROOM 131	5	1	8.4	1.66	1000dpm

D-9	FLOOR ROOM 131	4	0	6.25	0	1000dps
E-9	FLOOR ROOM 131	11	0	29	0	1000dps
-9	FLOOR ROOM 131	7	0	13	0	1000dps
-9	FLOOR ROOM 131	2	0	1.25	0	1000dps
H-9	FLOOR ROOM 131	2	0	1.25	0	1000dps
-9	FLOOR ROOM 131	2	3	0	6.42	1000dps
-9	FLOOR ROOM 131	1	0	0	0	1000dps
F-9	FLOOR ROOM 131	4	2	5.4	4.04	1000dps
I-9	FLOOR ROOM 131	4	1	5.89	1.66	1000dps
-9	FLOOR ROOM 131	10	0	21	0	1000dps
-10	FLOOR ROOM 131	4	0	6.25	0	1000dps
D-10	FLOOR ROOM 131	7	1	13	1.66	1000dps
-10	FLOOR ROOM 131	2	1	0.899	1.66	1000dps
-10	FLOOR ROOM 131	0	1	0	1.66	1000dps
G-10	FLOOR ROOM 131	0	0	0	0	1000dps
H-10	FLOOR ROOM 131	1	1	0	1.66	1000dps
-10	FLOOR ROOM 131	1	1	0	1.66	1000dps
J-10	FLOOR ROOM 131	6	0	11	0	1000dps
K-10	FLOOR ROOM 131	3	1	3.4	1.66	1000dps
-10	FLOOR ROOM 131	5	2	7.9	3.04	1000dps
-10	FLOOR ROOM 131	26	0	51	0	1000dps
A-11	FLOOR ROOM 131	4	0	6.25	0	1000dps
-11	FLOOR ROOM 131	2	0	1.25	0	1000dps
-11	FLOOR ROOM 131	3	0	3.75	0	1000dps
D-11	FLOOR ROOM 131	1	0	0	0	1000dps

RM - 131

REACTOR ROOM - TAYLOR HALL

12-10-92



All Direct Readings  $< 1000 \text{ DPM}/100\text{cm}^2$

Luc Lam Model 3 & 44-9 G.M. pancake probe  
S/N 20138

PROGRAM #:1  
 PRESET COUNT:999999. BETA  
 PSET TIME (M):2.00  
 HIGH VOLTAGE:1500.  
 DISC WINDOW:1000.  
 START SAMPLE :1.  
 STOP SAMPLE:50.  
 ERROR (SIGMA):1.96  
 REPEAT #:0  
 A EFFIC (%):21.00  
 A CROSTLK (%):20.00  
 A BKGND (CPM):.15  
 B EFFIC (%):20.00  
 B BKGND (CPM):.75  
 BKGD TIME (M):20.00  
 VOL(cm2):100.00  
 ALARM (dpm/V):200.00  
 USER EQUATION:

Floor Survey  
 RM 131 Taylor Hall  
 Final survey

SAMPLE ~~1~~ A-1 TIME (M):2.00 TIME:12:52:59 DATE:DEC 10,1992  
 ALPHA GROSS: 3. NET: 1.35 +/-1.61 dpm/cm2:6.42E-2 +/-7.71E-2  
 BETA GROSS: 8. NET: 2.98 +/-2.44 dpm/cm2:.14 +/- .12  
 GAMMA GROSS: 0 C FACTOR:1.0000

SAMPLE ~~2~~ B-1 TIME (M):2.00 TIME:12:55:22 DATE:DEC 10,1992  
 ALPHA GROSS: 2. NET: .85 +/-1.28 dpm/cm2:4.04E-2 +/-6.13E-2  
 BETA GROSS: 2. NET: 7.99E-2 +/- .60 dpm/cm2:3.99E-3 +/-3.01E-2  
 GAMMA GROSS: 0 C FACTOR:1.0000

SAMPLE ~~3~~ C-1 TIME (M):2.00 TIME:12:57:45 DATE:DEC 10,1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2:0 +/-8.08E-3  
 BETA GROSS: 3. NET: .75 +/-1.25 dpm/cm2:3.75E-2 +/-6.29E-2  
 GAMMA GROSS: 0 C FACTOR:1.0000

SAMPLE ~~4~~ D-1 TIME (M):2.00 TIME:13:00:09 DATE:DEC 10,1992  
 ALPHA GROSS: 1. NET: .35 +/- .83 dpm/cm2:1.66E-2 +/-3.98E-2  
 BETA GROSS: 5. NET: 1.68 +/-1.84 dpm/cm2:8.40E-2 +/-9.21E-2  
 GAMMA GROSS: 0 C FACTOR:1.0000

SAMPLE ~~5~~ E-1 TIME (M):2.00 TIME:13:02:32 DATE:DEC 10,1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2:0 +/-8.08E-3  
 BETA GROSS: 2. NET: .25 +/- .79 dpm/cm2:1.25E-2 +/-3.95E-2  
 GAMMA GROSS: 0 C FACTOR:1.0000

SAMPLE ~~6~~ F-1 TIME (M):2.00 TIME:13:04:55 DATE:DEC 10,1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2:0 +/-8.08E-3  
 BETA GROSS: 4. NET: 1.25 +/-1.59 dpm/cm2:6.25E-2 +/-7.97E-2  
 GAMMA GROSS: 0 C FACTOR:1.0000

SAMPLE ~~7~~ G-1 TIME (M):2.00 TIME:13:07:18 DATE:DEC 10,1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2:0 +/-8.08E-3  
 BETA GROSS: 1. NET: 0 +/- .38 dpm/cm2:0 +/-1.90E-2  
 GAMMA GROSS: 0 C FACTOR:1.0000

SAMPLE ~~8~~ H-1 TIME (M):2.00 TIME:13:09:41 DATE:DEC 10,1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2:0 +/-8.08E-3  
 BETA GROSS: 4. NET: 1.25 +/-1.59 dpm/cm2:6.25E-2 +/-7.97E-2  
 GAMMA GROSS: 0 C FACTOR:1.0000



SAMPLE <del>4-10</del> I-1	TIME (M): 2.00	TIME: 13:12:04	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 4	NET: 1.25	+/- 1.59	dpm/cm2: 6.25E-2 +/- -7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-10</del> J-1	TIME (M): 2.00	TIME: 13:14:27	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 5	NET: 1.75	+/- 1.87	dpm/cm2: 8.75E-2 +/- -9.36E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-11</del> K-1	TIME (M): 2.00	TIME: 13:16:50	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/- -3.98E-2
BETA GROSS: 1	NET: 0	+/- .41	dpm/cm2: 0 +/- -2.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-12</del> L-1	TIME (M): 2.00	TIME: 13:19:14	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/- -3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-13</del> M-1	TIME (M): 2.00	TIME: 13:21:37	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 1	NET: 0	+/- .38	dpm/cm2: 0 +/- -1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-14</del> A-2	TIME (M): 2.00	TIME: 13:24:00	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/- -3.98E-2
BETA GROSS: 8	NET: 3.18	+/- 2.50	dpm/cm2: .15 +/- -.12
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-15</del> B-2	TIME (M): 2.00	TIME: 13:26:23	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 0	NET: 0	+/- .38	dpm/cm2: 0 +/- -1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-16</del> C-2	TIME (M): 2.00	TIME: 13:28:46	DATE: DEC 10, 1992
ALPHA GROSS: 2	NET: .85	+/- 1.28	dpm/cm2: 4.04E-2 +/- -6.13E-2
BETA GROSS: 3	NET: .58	+/- 1.15	dpm/cm2: 2.90E-2 +/- -5.75E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-17</del> D-2	TIME (M): 2.00	TIME: 13:31:09	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 3	NET: .75	+/- 1.25	dpm/cm2: 3.75E-2 +/- -6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-18</del> E-2	TIME (M): 2.00	TIME: 13:33:32	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/- -3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-19</del> F-2	TIME (M): 2.00	TIME: 13:35:55	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/- -3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-20</del> G-2	TIME (M): 2.00	TIME: 13:38:18	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/- -8.08E-3
BETA GROSS: 4	NET: 1.25	+/- 1.59	dpm/cm2: 6.25E-2 +/- -7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>4-21</del> H-2	TIME (M): 2.00	TIME: 13:40:42	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/- -3.98E-2
BETA GROSS: 1	NET: 0	+/- .41	dpm/cm2: 0 +/- -2.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE <del>#22</del> <u>I-2</u>	TIME (M): 2.00	TIME: 13:43:05	DATE: DEC 10, 1992
ALPHA GROSS: 2	NET: .85	+/-1.28	dpm/cm2: 4.04E-2 +/-6.13E-2
BETA GROSS: 3	NET: .58	+/-1.15	dpm/cm2: 2.90E-2 +/-5.75E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>#23</del> <u>J-2</u>	TIME (M): 2.00	TIME: 13:45:28	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 4	NET: 1.25	+/-1.59	dpm/cm2: 6.25E-2 +/-7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>#24</del> <u>K-2</u>	TIME (M): 2.00	TIME: 13:47:51	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 5	NET: 1.68	+/-1.84	dpm/cm2: 8.40E-2 +/-9.21E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>#25</del> <u>L-2</u>	TIME (M): 2.00	TIME: 13:50:14	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 1	NET: 0	+/- .38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>#26</del> <u>M-2</u>	TIME (M): 2.00	TIME: 13:52:37	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 4	NET: 1.17	+/-1.56	dpm/cm2: 5.89E-2 +/-7.80E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>#27</del> <u>A-3</u>	TIME (M): 2.00	TIME: 13:55:00	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 1	NET: 0	+/- .38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>#28</del> <u>B-3</u>	TIME (M): 2.00	TIME: 13:57:23	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 3	NET: .68	+/-1.21	dpm/cm2: 3.40E-2 +/-6.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>#29</del> <u>C-3</u>	TIME (M): 2.00	TIME: 13:59:46	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 3	NET: .75	+/-1.25	dpm/cm2: 3.75E-2 +/-6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>#30</del> <u>D-3</u>	TIME (M): 2.00	TIME: 14:02:10	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 0	NET: 0	+/- .38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>#31</del> <u>E-3</u>	TIME (M): 2.00	TIME: 14:04:33	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 0	NET: 0	+/- .38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>#32</del> <u>F-3</u>	TIME (M): 2.00	TIME: 14:06:56	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/-3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>#33</del> <u>G-3</u>	TIME (M): 2.00	TIME: 14:09:19	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 5	NET: 1.75	+/-1.87	dpm/cm2: 8.75E-2 +/-9.36E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>#34</del> <u>H-3</u>	TIME (M): 2.00	TIME: 14:11:42	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 1	NET: 0	+/- .41	dpm/cm2: 0 +/-2.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>#35</del> <u>T-3</u>	TIME (M): 2.00	TIME: 14:14:05	DATE: DEC 10, 1992



ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/-8.08E-3
BETA GROSS: 4	NET: 1.25	+/-1.59	dpm/cm2: 6.25E-2	+/-7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			

SAMPLE <del>#36</del> -3	TIME (M): 2.00	TIME: 14:16:28	DATE: DEC 10, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 4	NET: 1.17	+/-1.56	dpm/cm2: 5.89E-2 +/-7.80E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE <del>#32</del> K-3	TIME (M): 2.00	TIME: 14:18:51	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 0	NET: 0	+/- .38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE <del>#38</del> L-3	TIME (M): 2.00	TIME: 14:21:15	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 3	NET: .75	+/-1.25	dpm/cm2: 3.75E-2 +/-6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

SAMPLE <del>#38</del> V1-3	TIME (M): 2.00	TIME: 14:23:38	DATE: DEC 10, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 1	NET: 0	+/- .38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		

# Floor Survey

Rm 131 Taylor Hall  
Final Survey

PROGRAM #: 1  
PRESET COUNT: 999999. BETA  
PSET TIME (M): 2.00  
HIGH VOLTAGE: 1500.  
DISC WINDOW: 1000.  
START SAMPLE: 1.  
STOP SAMPLE: 50.  
ERROR (SIGMA): 1.96  
REPEAT #: 0  
A EFFIC (%): 21.00  
A CROSTLK (%): 20.00  
A BKGND (CPM): .15  
B EFFIC (%): 20.00  
B BKGND (CPM): .75  
BKGD TIME (M): 20.00  
VOL (cm2): 100.00  
ALARM (dpm/V): 200.00  
USER EQUATION:

SAMPLE ~~1-1~~ A-4 TIME (M): 2.00 TIME: 16:43:25 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
BETA GROSS: 2 NET: .25 +/- .79 dpm/cm2: 1.25E-2 +/- 3.95E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-2~~ B-4 TIME (M): 2.00 TIME: 16:45:48 DATE: DEC 10, 1992  
ALPHA GROSS: 2 NET: .85 +/- 1.28 dpm/cm2: 4.04E-2 +/- 6.13E-2  
BETA GROSS: 1 NET: 0 +/- .45 dpm/cm2: 0 +/- 2.29E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-3~~ C-4 TIME (M): 2.00 TIME: 16:48:11 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
BETA GROSS: 2 NET: .25 +/- .79 dpm/cm2: 1.25E-2 +/- 3.95E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-4~~ D-4 TIME (M): 2.00 TIME: 16:50:34 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
BETA GROSS: 2 NET: .25 +/- .79 dpm/cm2: 1.25E-2 +/- 3.95E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-5~~ E-4 TIME (M): 2.00 TIME: 16:52:57 DATE: DEC 10, 1992  
ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
BETA GROSS: 3 NET: .68 +/- 1.21 dpm/cm2: 3.40E-2 +/- 6.07E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-6~~ F-4 TIME (M): 2.00 TIME: 16:55:20 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
BETA GROSS: 6 NET: 2.25 +/- 2.11 dpm/cm2: .11 +/- .10  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-7~~ G-4 TIME (M): 2.00 TIME: 16:57:44 DATE: DEC 10, 1992  
ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
BETA GROSS: 5 NET: 1.68 +/- 1.84 dpm/cm2: 8.40E-2 +/- 9.21E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-8~~ H-4 TIME (M): 2.00 TIME: 17:00:07 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
BETA GROSS: 2 NET: .25 +/- .79 dpm/cm2: 1.25E-2 +/- 3.95E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-9~~ I-4 TIME (M): 2.00 TIME: 17:02:30 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
BETA GROSS: 7 NET: 2.75 +/- 2.32 dpm/cm2: .13 +/- .11  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-10~~ J-4 TIME (M): 2.00 TIME: 17:04:53 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
BETA GROSS: 6 NET: 2.25 +/- 2.11 dpm/cm2: .11 +/- .10  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-11~~ K-4 TIME (M): 2.00 TIME: 17:07:16 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
BETA GROSS: 2 NET: .25 +/- .79 dpm/cm2: 1.25E-2 +/- 3.95E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-12~~ L-4 TIME (M): 2.00 TIME: 17:09:39 DATE: DEC 10, 1992  
ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
BETA GROSS: 0 NET: 0 +/- .41 dpm/cm2: 0 +/- 2.07E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-13~~ M-4 TIME (M): 2.00 TIME: 17:12:02 DATE: DEC 10, 1992  
ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
BETA GROSS: 4 NET: 1.17 +/- 1.56 dpm/cm2: 5.89E-2 +/- 7.80E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-14~~ A-5 TIME (M): 2.00 TIME: 17:14:26 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
BETA GROSS: 2 NET: .25 +/- .79 dpm/cm2: 1.25E-2 +/- 3.95E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-15~~ B-5 TIME (M): 2.00 TIME: 17:16:49 DATE: DEC 10, 1992  
ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
BETA GROSS: 2 NET: .18 +/- .71 dpm/cm2: 8.99E-3 +/- 3.59E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-16~~ C-5 TIME (M): 2.00 TIME: 17:19:11 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
BETA GROSS: 2 NET: .25 +/- .79 dpm/cm2: 1.25E-2 +/- 3.95E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-17~~ D-5 TIME (M): 2.00 TIME: 17:21:35 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
BETA GROSS: 4 NET: 1.25 +/- 1.59 dpm/cm2: 6.25E-2 +/- 7.97E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-18~~ E-5 TIME (M): 2.00 TIME: 17:23:58 DATE: DEC 10, 1992  
ALPHA GROSS: 2 NET: .85 +/- 1.28 dpm/cm2: 4.04E-2 +/- 6.13E-2  
BETA GROSS: 7 NET: 2.58 +/- 2.27 dpm/cm2: .12 +/- .11  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-19~~ F-5 TIME (M): 2.00 TIME: 17:26:21 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
BETA GROSS: 6 NET: 2.25 +/- 2.11 dpm/cm2: .11 +/- .10  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-20~~ G-5 TIME (M): 2.00 TIME: 17:28:44 DATE: DEC 10, 1992

ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/-8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2	+/-3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>#34</del> <del>4</del> -5 TIME (M): 2.00 TIME: 17:31:08 DATE: DEC 10, 1992				
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2	+/-3.98E-2
BETA GROSS: 2	NET: .18	+/- .71	dpm/cm2: 8.99E-3	+/-3.59E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>#22</del> <del>T</del> -5 TIME (M): 2.00 TIME: 17:33:31 DATE: DEC 10, 1992				
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/-8.08E-3
BETA GROSS: 3	NET: .75	+/-1.25	dpm/cm2: 3.75E-2	+/-6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>#23</del> <del>J</del> -5 TIME (M): 2.00 TIME: 17:35:54 DATE: DEC 10, 1992				
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2	+/-3.98E-2
BETA GROSS: 3	NET: .68	+/-1.21	dpm/cm2: 3.40E-2	+/-6.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>#24</del> <del>K</del> -5 TIME (M): 2.00 TIME: 17:38:17 DATE: DEC 10, 1992				
ALPHA GROSS: 2	NET: .85	+/-1.28	dpm/cm2: 4.04E-2	+/-6.13E-2
BETA GROSS: 1	NET: 0	+/- .45	dpm/cm2: 0	+/-2.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>#25</del> <del>L</del> -5 TIME (M): 2.00 TIME: 17:40:40 DATE: DEC 10, 1992				
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/-8.08E-3
BETA GROSS: 3	NET: .75	+/-1.25	dpm/cm2: 3.75E-2	+/-6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>#26</del> <del>A</del> -6 TIME (M): 2.00 TIME: 17:43:04 DATE: DEC 10, 1992				
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/-8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2	+/-3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>#27</del> <del>B</del> -6 TIME (M): 2.00 TIME: 17:45:27 DATE: DEC 10, 1992				
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2	+/-3.98E-2
BETA GROSS: 0	NET: 0	+/- .41	dpm/cm2: 0	+/-2.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>#28</del> <del>C</del> -6 TIME (M): 2.00 TIME: 17:47:50 DATE: DEC 10, 1992				
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/-8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2	+/-3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>#29</del> <del>D</del> -6 TIME (M): 2.00 TIME: 17:50:13 DATE: DEC 10, 1992				
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2	+/-3.98E-2
BETA GROSS: 3	NET: .68	+/-1.21	dpm/cm2: 3.40E-2	+/-6.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>#30</del> <del>E</del> -6 TIME (M): 2.00 TIME: 17:52:36 DATE: DEC 10, 1992				
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2	+/-3.98E-2
BETA GROSS: 2	NET: .19	+/- .71	dpm/cm2: 8.99E-3	+/-3.59E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>#31</del> <del>F</del> -6 TIME (M): 2.00 TIME: 17:54:59 DATE: DEC 10, 1992				
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/-8.08E-3
BETA GROSS: 3	NET: .75	+/-1.25	dpm/cm2: 3.75E-2	+/-6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>#32</del> <del>G</del> -6 TIME (M): 2.00 TIME: 17:57:22 DATE: DEC 10, 1992				
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/-8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2	+/-3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>#33</del> <del>H</del> -6 TIME (M): 2.00 TIME: 17:59:46 DATE: DEC 10, 1992				
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/-8.08E-3

PROGRAM #: 1  
PRESET COUNT: 999999. BETA  
PSET TIME (M): 2.00  
HIGH VOLTAGE: 1500.  
DISC WINDOW: 1000.  
START SAMPLE: 1.  
STOP SAMPLE: 50.  
ERROR (SIGMA): 1.96  
REPEAT #: 0  
A EFFIC (%): 21.00  
A CROSTLK (%): 20.00  
A BKGND (CPM): .15  
B EFFIC (%): 20.00

Floor Survey

Rm 131 Taylor Hall

Final Survey

BETA GROSS: 5 NET: 1.75 +/-1.87 dpm/cm2: 8.75E-2 +/-9.36E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~#34~~ I-6 TIME (M): 2.00 TIME: 18:02:09 DATE: DEC 10, 1992  
ALPHA GROSS: 2 NET: .85 +/-1.28 dpm/cm2: 4.04E-2 +/-6.13E-2  
BETA GROSS: 1 NET: 0 +/- .45 dpm/cm2: 0 +/-2.29E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~#35~~ J-6 TIME (M): 2.00 TIME: 18:04:32 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/-8.08E-3  
BETA GROSS: 237 NET: 117.75 +/-15.04 dpm/cm2: 5.88 +/- .75  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~#36~~ K-6 TIME (M): 2.00 TIME: 18:06:55 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/-8.08E-3  
BETA GROSS: 2 NET: .25 +/- .79 dpm/cm2: 1.25E-2 +/-3.95E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~#32~~ L-6 TIME (M): 2.00 TIME: 18:09:18 DATE: DEC 10, 1992  
ALPHA GROSS: 2 NET: .85 +/-1.28 dpm/cm2: 4.04E-2 +/-6.13E-2  
BETA GROSS: 3 NET: .58 +/-1.15 dpm/cm2: 2.90E-2 +/-5.75E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~#38~~ M-6 TIME (M): 2.00 TIME: 18:11:41 DATE: DEC 10, 1992  
ALPHA GROSS: 2 NET: .85 +/-1.28 dpm/cm2: 4.04E-2 +/-6.13E-2  
BETA GROSS: 5 NET: 1.58 +/-1.60 dpm/cm2: 7.90E-2 +/-9.00E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~#39~~ A-7 TIME (M): 2.00 TIME: 18:14:04 DATE: DEC 10, 1992  
ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/-3.98E-2  
BETA GROSS: 6 NET: 2.18 +/-2.08 dpm/cm2: .10 +/- .10  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~#40~~ B-7 TIME (M): 2.00 TIME: 18:16:28 DATE: DEC 10, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/-8.08E-3  
BETA GROSS: 1 NET: 0 +/- .38 dpm/cm2: 0 +/-1.90E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000



EXPOSE TIME (M): 20.00  
VOL (cm<sup>2</sup>): 100.00  
ALARM (dpm/V): 200.00  
USER EQUATION:

SAMPLE ~~11~~C-7 TIME (M): 2.00 TIME: 08:01:12 DATE: DEC 11, 1992  
ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm<sup>2</sup>: 1.66E-2 +/- 3.98E-2  
BETA GROSS: 5 NET: 1.68 +/- 1.84 dpm/cm<sup>2</sup>: 8.40E-2 +/- 9.21E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~11~~D-7 TIME (M): 2.00 TIME: 08:03:35 DATE: DEC 11, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm<sup>2</sup>: 0 +/- 8.08E-3  
BETA GROSS: 3 NET: .75 +/- 1.25 dpm/cm<sup>2</sup>: 3.75E-2 +/- 6.29E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~11~~E-7 TIME (M): 2.00 TIME: 08:05:58 DATE: DEC 11, 1992  
ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm<sup>2</sup>: 1.66E-2 +/- 3.98E-2  
BETA GROSS: 4 NET: 1.17 +/- 1.56 dpm/cm<sup>2</sup>: 5.89E-2 +/- 7.80E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~11~~F-7 TIME (M): 2.00 TIME: 08:08:22 DATE: DEC 11, 1992  
ALPHA GROSS: 2 NET: .85 +/- 1.28 dpm/cm<sup>2</sup>: 4.04E-2 +/- 6.13E-2  
BETA GROSS: 3 NET: .58 +/- 1.15 dpm/cm<sup>2</sup>: 2.90E-2 +/- 5.75E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~11~~G-7 TIME (M): 2.00 TIME: 08:10:45 DATE: DEC 11, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm<sup>2</sup>: 0 +/- 8.08E-3  
BETA GROSS: 0 NET: 0 +/- .38 dpm/cm<sup>2</sup>: 0 +/- 1.90E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~11~~H-7 TIME (M): 2.00 TIME: 08:13:08 DATE: DEC 11, 1992  
ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm<sup>2</sup>: 1.66E-2 +/- 3.98E-2  
BETA GROSS: 3 NET: .68 +/- 1.21 dpm/cm<sup>2</sup>: 3.40E-2 +/- 6.07E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~11~~I-7 TIME (M): 2.00 TIME: 08:15:31 DATE: DEC 11, 1992  
ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm<sup>2</sup>: 1.66E-2 +/- 3.98E-2  
BETA GROSS: 3 NET: .68 +/- 1.21 dpm/cm<sup>2</sup>: 3.40E-2 +/- 6.07E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~11~~J-7 TIME (M): 2.00 TIME: 08:17:54 DATE: DEC 11, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm<sup>2</sup>: 0 +/- 8.08E-3  
BETA GROSS: 2 NET: .25 +/- .79 dpm/cm<sup>2</sup>: 1.25E-2 +/- 3.95E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~11~~K-7 TIME (M): 2.00 TIME: 08:20:17 DATE: DEC 11, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm<sup>2</sup>: 0 +/- 8.08E-3  
BETA GROSS: 3 NET: .75 +/- 1.25 dpm/cm<sup>2</sup>: 3.75E-2 +/- 6.29E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~11~~L-7 TIME (M): 2.00 TIME: 08:22:40 DATE: DEC 11, 1992  
ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm<sup>2</sup>: 1.66E-2 +/- 3.98E-2  
BETA GROSS: 1 NET: 0 +/- .41 dpm/cm<sup>2</sup>: 0 +/- 2.07E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~11~~M-7 TIME (M): 2.00 TIME: 08:25:04 DATE: DEC 11, 1992  
ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm<sup>2</sup>: 1.66E-2 +/- 3.98E-2  
BETA GROSS: 2 NET: .18 +/- .71 dpm/cm<sup>2</sup>: 8.99E-3 +/- 3.59E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~11~~A-8 TIME (M): 2.00 TIME: 08:27:27 DATE: DEC 11, 1992  
ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm<sup>2</sup>: 0 +/- 8.08E-3  
BETA GROSS: 0 NET: 0 +/- .38 dpm/cm<sup>2</sup>: 0 +/- 1.90E-2  
GAMMA GROSS: 0 C FACTOR: 1.0000



SAMPLE	TIME (M)	TIME	DATE
SAMPLE <del>14</del> B-8	TIME (M): 2.00	TIME: 08:32:13	DATE: DEC 11, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 4	NET: 1.17	+/-1.56	dpm/cm2: 5.89E-2 +/-7.80E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>14</del> C-8	TIME (M): 2.00	TIME: 08:32:13	DATE: DEC 11, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 1	NET: 0	+/- .41	dpm/cm2: 0 +/-2.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>15</del> D-8	TIME (M): 2.00	TIME: 08:34:36	DATE: DEC 11, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 9	NET: 3.68	+/-2.69	dpm/cm2: .18 +/- .13
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>16</del> E-8	TIME (M): 2.00	TIME: 08:36:59	DATE: DEC 11, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 6	NET: 2.18	+/-2.08	dpm/cm2: .10 +/- .10
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>17</del> F-8	TIME (M): 2.00	TIME: 08:39:22	DATE: DEC 11, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2 +/-3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>18</del> G-8	TIME (M): 2.00	TIME: 08:41:45	DATE: DEC 11, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 3	NET: .75	+/-1.25	dpm/cm2: 3.75E-2 +/-6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>19</del> H-8	TIME (M): 2.00	TIME: 08:44:09	DATE: DEC 11, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 0	NET: 0	+/- .38	dpm/cm2: 0 +/-1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>20</del> I-8	TIME (M): 2.00	TIME: 08:46:32	DATE: DEC 11, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 8	NET: 3.18	+/-2.50	dpm/cm2: .15 +/- .12
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>21</del> J-8	TIME (M): 2.00	TIME: 08:48:55	DATE: DEC 11, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 3	NET: .68	+/-1.21	dpm/cm2: 3.40E-2 +/-6.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>22</del> K-8	TIME (M): 2.00	TIME: 08:51:18	DATE: DEC 11, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 4	NET: 1.17	+/-1.56	dpm/cm2: 5.89E-2 +/-7.80E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>23</del> L-8	TIME (M): 2.00	TIME: 08:53:41	DATE: DEC 11, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 4	NET: 1.25	+/-1.59	dpm/cm2: 6.25E-2 +/-7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>24</del> M-8	TIME (M): 2.00	TIME: 08:56:04	DATE: DEC 11, 1992
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2 +/-3.98E-2
BETA GROSS: 2	NET: .18	+/- .71	dpm/cm2: 8.99E-3 +/-3.59E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>25</del> A-9	TIME (M): 2.00	TIME: 08:58:27	DATE: DEC 11, 1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0 +/-8.08E-3
BETA GROSS: 5	NET: 1.75	+/-1.87	dpm/cm2: 8.75E-2 +/-9.36E-2
GAMMA GROSS: 0	C FACTOR: 1.0000		
SAMPLE <del>26</del> B-9	TIME (M): 2.00	TIME: 09:00:50	DATE: DEC 11, 1992

BETA GROSS: 5		NET: 1.66	+/- 1.84	dpm/cm2: 8.40E-2	+/- 9.21E-2
GAMMA GROSS: 0		C FACTOR: 1.0000			

SAMPLE <del>#27</del> D-9	TIME (M): 2.00	TIME: 09:03:14	DATE: DEC 11, 1992		
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3	
BETA GROSS: 4	NET: 1.25	+/- 1.59	dpm/cm2: 6.25E-2	+/- 7.97E-2	
GAMMA GROSS: 0	C FACTOR: 1.0000				

SAMPLE <del>#28</del> E-9	TIME (M): 2.00	TIME: 09:05:37	DATE: DEC 11, 1992		
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3	
BETA GROSS: 11	NET: 4.75	+/- 3.04	dpm/cm2: .23	+/- .15	
GAMMA GROSS: 0	C FACTOR: 1.0000				

SAMPLE <del>#29</del> F-9	TIME (M): 2.00	TIME: 09:08:00	DATE: DEC 11, 1992		
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3	
BETA GROSS: 7	NET: 2.75	+/- 2.32	dpm/cm2: .13	+/- .11	
GAMMA GROSS: 0	C FACTOR: 1.0000				

SAMPLE <del>#30</del> G-9	TIME (M): 2.00	TIME: 09:10:23	DATE: DEC 11, 1992		
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3	
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2	+/- 3.95E-2	
GAMMA GROSS: 0	C FACTOR: 1.0000				

SAMPLE <del>#31</del> H-9	TIME (M): 2.00	TIME: 09:12:46	DATE: DEC 11, 1992		
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3	
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2	+/- 3.95E-2	
GAMMA GROSS: 0	C FACTOR: 1.0000				

SAMPLE <del>#32</del> I-9	TIME (M): 2.00	TIME: 09:15:09	DATE: DEC 11, 1992		
ALPHA GROSS: 3	NET: 1.35	+/- 1.61	dpm/cm2: 6.42E-2	+/- 7.71E-2	
BETA GROSS: 2	NET: 0	+/- .49	dpm/cm2: 0	+/- 2.49E-2	
GAMMA GROSS: 0	C FACTOR: 1.0000				

SAMPLE <del>#33</del> J-9	TIME (M): 2.00	TIME: 09:17:32	DATE: DEC 11, 1992		
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3	
BETA GROSS: 1	NET: 0	+/- .38	dpm/cm2: 0	+/- 1.90E-2	
GAMMA GROSS: 0	C FACTOR: 1.0000				

SAMPLE <del>#34</del> K-9	TIME (M): 2.00	TIME: 09:19:55	DATE: DEC 11, 1992		
ALPHA GROSS: 2	NET: .85	+/- 1.28	dpm/cm2: 4.04E-2	+/- 6.13E-2	
BETA GROSS: 4	NET: 1.07	+/- 1.51	dpm/cm2: 5.40E-2	+/- 7.55E-2	
GAMMA GROSS: 0	C FACTOR: 1.0000				

SAMPLE <del>#35</del> L-9	TIME (M): 2.00	TIME: 09:22:18	DATE: DEC 11, 1992		
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2	+/- 3.98E-2	
BETA GROSS: 4	NET: 1.17	+/- 1.56	dpm/cm2: 5.89E-2	+/- 7.80E-2	
GAMMA GROSS: 0	C FACTOR: 1.0000				

SAMPLE <del>#36</del> M-9	TIME (M): 2.00	TIME: 09:24:42	DATE: DEC 11, 1992		
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3	
BETA GROSS: 10	NET: 4.25	+/- 2.88	dpm/cm2: .21	+/- .14	
GAMMA GROSS: 0	C FACTOR: 1.0000				

PROGRAM # 1  
 PRE FT COUNT 99999 BETA  
 NET TIME (M) 2 00  
 HIGH VOLTAGE 850V  
 DISC WINDOW 1000  
 START SAMPLE 1  
 STOP SAMPLE 50  
 ERROR (SIGMA) 1 96  
 REPEAT # 0  
 A EFFIC (%) 20 00  
 A CROSTLK (%) 20 00  
 A BKND (CPM) 15  
 B EFFIC (%) 20 00  
 B BKND (CPM) 75  
 BYCD TIME (M) 20 00  
 VOL (cm) 1 100 00  
 ALARM (dpm/V) 200 00  
 USER EQUATION

Floor Survey

Rm 131 Taylor Hall

Final Survey

SAMPLE ~~1-1~~ C-10 TIME (M) 2 00 TIME: 09:56:28 DATE: DEC 11, 1992  
 ALPHA GROSS: 0 NET: 0 +/- 16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 4 NET: 1.25 +/- 1.59 dpm/cm2: 6.25E-2 +/- 7.97E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-2~~ D-10 TIME (M) 2 00 TIME: 09:58:51 DATE: DEC 11, 1992  
 ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
 BETA GROSS: 7 NET: 2.68 +/- 2.30 dpm/cm2: .13 +/- .11  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-3~~ E-10 TIME (M) 2 00 TIME: 10:01:14 DATE: DEC 11, 1992  
 ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
 BETA GROSS: 2 NET: .10 +/- .71 dpm/cm2: 8.99E-3 +/- 3.59E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-4~~ F-10 TIME (M) 2 00 TIME: 10:03:37 DATE: DEC 11, 1992  
 ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
 BETA GROSS: 0 NET: 0 +/- .41 dpm/cm2: 0 +/- 2.07E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-5~~ G-10 TIME (M) 2 00 TIME: 10:06:00 DATE: DEC 11, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 0 NET: 0 +/- .38 dpm/cm2: 0 +/- 1.90E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-6~~ H-10 TIME (M) 2 00 TIME: 10:08:23 DATE: DEC 11, 1992  
 ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
 BETA GROSS: 1 NET: 0 +/- .41 dpm/cm2: 0 +/- 2.07E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-7~~ I-10 TIME (M) 2 00 TIME: 10:10:46 DATE: DEC 11, 1992  
 ALPHA GROSS: 1 NET: .35 +/- .83 dpm/cm2: 1.66E-2 +/- 3.98E-2  
 BETA GROSS: 1 NET: 0 +/- .41 dpm/cm2: 0 +/- 2.07E-2  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~1-8~~ J-10 TIME (M) 2 00 TIME: 10:13:09 DATE: DEC 11, 1992  
 ALPHA GROSS: 0 NET: 0 +/- .16 dpm/cm2: 0 +/- 8.08E-3  
 BETA GROSS: 6 NET: 2.25 +/- 2.11 dpm/cm2: .11 +/- .10  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE	TIME	(M)	TIME	DATE
ALPHA GROSS: 1	NET: 35	+/- 53	dpm/cm2: 1.04E-2	+/- 3.98E-2
BETA GROSS: 1	NET: 35	+/- 53	dpm/cm2: 1.04E-2	+/- 3.98E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>11</del> L-10	TIME (M): 2.00	TIME: 10:17:56	DATE: DEC 11, 1992	
ALPHA GROSS: 2	NET: 85	+/- 1.78	dpm/cm2: 4.04E-2	+/- 6.13E-2
BETA GROSS: 5	NET: 1.58	+/- 1.60	dpm/cm2: 7.90E-2	+/- 9.00E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>11</del> M-10	TIME (M): 2.00	TIME: 10:20:19	DATE: DEC 11, 1992	
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS: 24	NET: 12.25	+/- 4.86	dpm/cm2: .61	+/- .24
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>11</del> A-11	TIME (M): 2.00	TIME: 10:22:42	DATE: DEC 11, 1992	
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS: 4	NET: 1.25	+/- 1.59	dpm/cm2: 6.25E-2	+/- 7.97E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>11</del> B-11	TIME (M): 2.00	TIME: 10:25:05	DATE: DEC 11, 1992	
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2	+/- 3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>11</del> C-11	TIME (M): 2.00	TIME: 10:27:28	DATE: DEC 11, 1992	
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS: 3	NET: .75	+/- 1.25	dpm/cm2: 3.75E-2	+/- 6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>11</del> D-11	TIME (M): 2.00	TIME: 10:29:51	DATE: DEC 11, 1992	
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS: 1	NET: 0	+/- .38	dpm/cm2: 0	+/- 1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>11</del> E-11	TIME (M): 2.00	TIME: 10:32:14	DATE: DEC 11, 1992	
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS: 2	NET: .25	+/- .79	dpm/cm2: 1.25E-2	+/- 3.95E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>11</del> F-11	TIME (M): 2.00	TIME: 10:34:38	DATE: DEC 11, 1992	
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2	+/- 3.98E-2
BETA GROSS: 5	NET: 1.68	+/- 1.84	dpm/cm2: 8.40E-2	+/- 9.21E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>11</del> G-11	TIME (M): 2.00	TIME: 10:37:01	DATE: DEC 11, 1992	
ALPHA GROSS: 1	NET: .35	+/- .83	dpm/cm2: 1.66E-2	+/- 3.98E-2
BETA GROSS: 0	NET: 0	+/- .41	dpm/cm2: 0	+/- 2.07E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>11</del> H-11	TIME (M): 2.00	TIME: 10:39:24	DATE: DEC 11, 1992	
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS: 3	NET: .75	+/- 1.25	dpm/cm2: 3.75E-2	+/- 6.29E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>11</del> I-11	TIME (M): 2.00	TIME: 10:41:47	DATE: DEC 11, 1992	
ALPHA GROSS: 2	NET: 85	+/- 1.78	dpm/cm2: 4.04E-2	+/- 6.13E-2
BETA GROSS: 2	NET: 7.99E-2	+/- .60	dpm/cm2: 3.99E-3	+/- 3.01E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>11</del> J-11	TIME (M): 2.00	TIME: 10:44:10	DATE: DEC 11, 1992	
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2: 0	+/- 8.08E-3
BETA GROSS: 0	NET: 0	+/- .38	dpm/cm2: 0	+/- 1.90E-2
GAMMA GROSS: 0	C FACTOR: 1.0000			
SAMPLE <del>11</del> K-11	TIME (M): 2.00	TIME: 10:46:33	DATE: DEC 11, 1992	

BETA GROSS 0 NET 0 +/- 45 dpm/cm2:0 +/-2.29E-2  
GAMMA GROSS 0 C FACTOR:1.0000

SAMPLE # ~~1~~ <sup>L-11</sup> TIME (M):2:00 TIME:10:48:56 DATE:DEC 11,1992  
ALPHA GROSS 0 NET:0 +/- 16 dpm/cm2:0 +/-8.08E-3  
BETA GROSS 1 NET:75 +/-1.25 dpm/cm2:3.75E-2 +/-6.29E-2  
GAMMA GROSS 0 C FACTOR:1.0000

SAMPLE # ~~1~~ <sup>M-11</sup> TIME (M):2:00 TIME:10:51:19 DATE:DEC 11,1992  
ALPHA GROSS 0 NET:0 +/- 16 dpm/cm2:0 +/-8.08E-3  
BETA GROSS 8 NET:3.25 +/-2.52 dpm/cm2:16 +/-12  
GAMMA GROSS 0 C FACTOR:1.0000

SAMPLE # ~~1~~ <sup>A-12</sup> TIME (M):2:00 TIME:10:53:43 DATE:DEC 11,1992  
ALPHA GROSS 0 NET:0 +/- 16 dpm/cm2:0 +/-8.08E-3  
BETA GROSS 8 NET:3.25 +/-2.52 dpm/cm2:16 +/-12  
GAMMA GROSS 0 C FACTOR:1.0000

SAMPLE # ~~1~~ <sup>B-12</sup> TIME (M):2:00 TIME:10:56:06 DATE:DEC 11,1992  
ALPHA GROSS 0 NET:0 +/- 16 dpm/cm2:0 +/-8.08E-3  
BETA GROSS 3 NET:75 +/-1.25 dpm/cm2:3.75E-2 +/-6.29E-2  
GAMMA GROSS 0 C FACTOR:1.0000

SAMPLE # ~~1~~ <sup>C-12</sup> TIME (M):2:00 TIME:10:58:29 DATE:DEC 11,1992  
ALPHA GROSS 1 NET:35 +/- 83 dpm/cm2:1.66E-2 +/-3.98E-2  
BETA GROSS 4 NET:1.17 +/-1.56 dpm/cm2:5.89E-2 +/-7.80E-2  
GAMMA GROSS 0 C FACTOR:1.0000

SAMPLE # ~~1~~ <sup>D-12</sup> TIME (M):2:00 TIME:11:00:52 DATE:DEC 11,1992  
ALPHA GROSS 0 NET:0 +/- 16 dpm/cm2:0 +/-8.08E-3  
BETA GROSS 3 NET:75 +/-1.25 dpm/cm2:3.75E-2 +/-6.29E-2  
GAMMA GROSS 0 C FACTOR:1.0000

SAMPLE # ~~1~~ <sup>E-12</sup> TIME (M):2:00 TIME:11:03:15 DATE:DEC 11,1992  
ALPHA GROSS 1 NET:35 +/- 83 dpm/cm2:1.66E-2 +/-3.98E-2  
BETA GROSS 4 NET:1.17 +/-1.56 dpm/cm2:5.89E-2 +/-7.80E-2  
GAMMA GROSS 0 C FACTOR:1.0000

SAMPLE # ~~1~~ <sup>F-12</sup> TIME (M):2:00 TIME:11:05:38 DATE:DEC 11,1992  
ALPHA GROSS 0 NET:0 +/- 16 dpm/cm2:0 +/-8.08E-3  
BETA GROSS 2 NET:25 +/-1.79 dpm/cm2:1.25E-2 +/-3.95E-2  
GAMMA GROSS 0 C FACTOR:1.0000

SAMPLE # ~~1~~ <sup>G-12</sup> TIME (M):2:00 TIME:11:08:01 DATE:DEC 11,1992  
ALPHA GROSS 0 NET:0 +/- 16 dpm/cm2:0 +/-8.08E-3  
BETA GROSS 7 NET:2.75 +/-2.32 dpm/cm2:13 +/-11  
GAMMA GROSS 0 C FACTOR:1.0000

SAMPLE # ~~1~~ <sup>H-12</sup> TIME (M):2:00 TIME:11:10:24 DATE:DEC 11,1992  
ALPHA GROSS 1 NET:35 +/- 83 dpm/cm2:1.66E-2 +/-3.98E-2  
BETA GROSS 3 NET:68 +/-1.21 dpm/cm2:3.40E-2 +/-6.07E-2  
GAMMA GROSS 0 C FACTOR:1.0000

SAMPLE # ~~1~~ <sup>I-12</sup> TIME (M):2:00 TIME:11:12:47 DATE:DEC 11,1992  
ALPHA GROSS 0 NET:0 +/- 16 dpm/cm2:0 +/-8.08E-3  
BETA GROSS 4 NET:1.25 +/-1.59 dpm/cm2:6.25E-2 +/-7.97E-2  
GAMMA GROSS 0 C FACTOR:1.0000

SAMPLE # ~~1~~ <sup>J-12</sup> TIME (M):2:00 TIME:11:15:11 DATE:DEC 11,1992  
ALPHA GROSS 1 NET:35 +/- 83 dpm/cm2:1.66E-2 +/-3.98E-2  
BETA GROSS 3 NET:68 +/-1.21 dpm/cm2:3.40E-2 +/-6.07E-2  
GAMMA GROSS 0 C FACTOR:1.0000

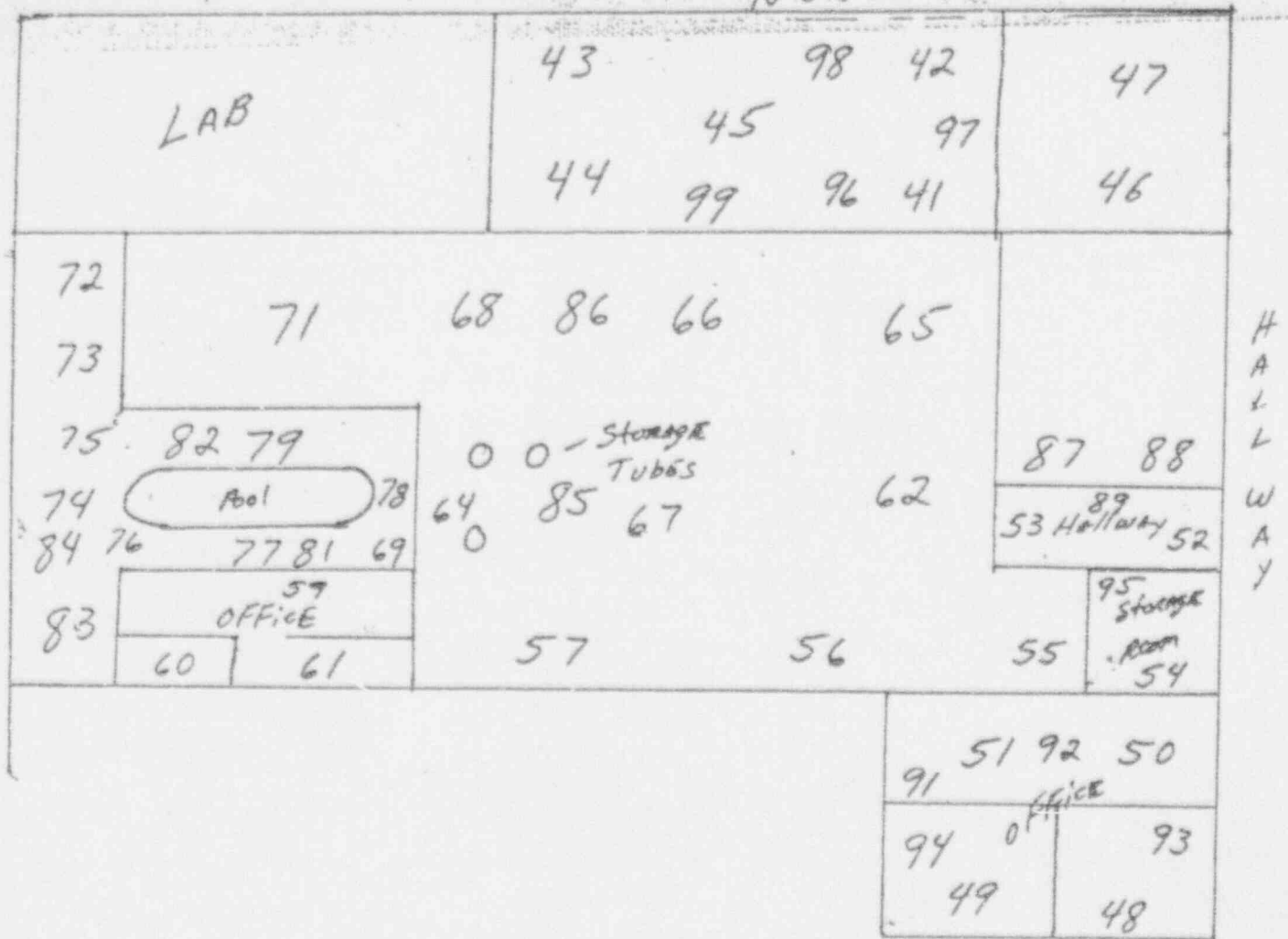
SAMPLE # ~~1~~ <sup>K-12</sup> TIME (M):2:00 TIME:11:17:34 DATE:DEC 11,1992  
ALPHA GROSS 0 NET:0 +/- 16 dpm/cm2:0 +/-8.08E-3  
BETA GROSS 14 NET:6.25 +/-3.46 dpm/cm2:31 +/-17  
GAMMA GROSS 0 C FACTOR:1.0000

FOR SMEARS  
SMEARS  
TA (LSC)

GROSS BETA-dpm	BACKGROUND BETA-dpm	NET BETA-dpm	LIMIT REG. GUIDE 1.86
58.0855	41.4348	16.6507	1000 dpm
22.5384	41.4348	0	1000 dpm
37.5742	41.4348	0	1000 dpm
29.4988	41.4348	0	1000 dpm
32.7357	41.4348	0	1000 dpm
35.2539	41.4348	0	1000 dpm
38.2844	41.4348	0	1000 dpm
45.5301	41.4348	4.0953	1000 dpm
28.8699	41.4348	0	1000 dpm
40.5193	41.4348	0	1000 dpm
32.5264	41.4348	0	1000 dpm
55.493	41.4348	14.0582	1000 dpm
47.7914	41.4348	6.3566	1000 dpm
31.034	41.4348	0	1000 dpm
34.6441	41.4348	0	1000 dpm
37.3917	41.4348	0	1000 dpm
26.0803	41.4348	0	1000 dpm
42.0839	41.4348	0.6191	1000 dpm
28.3587	41.4348	0	1000 dpm
36.1773	41.4348	0	1000 dpm
32.6143	41.4348	0	1000 dpm
31.6946	41.4348	0	1000 dpm
33.2102	41.4348	0	1000 dpm
29.5272	41.4348	0	1000 dpm
31.0869	41.4348	0	1000 dpm
34.6788	41.4348	0	1000 dpm
32.509	41.4348	0	1000 dpm
38.5809	41.4348	0	1000 dpm
34.2757	41.4348	0	1000 dpm
41.5492	41.4348	0.1144	1000 dpm
28.9736	41.4348	0	1000 dpm
35.9603	41.4348	0	1000 dpm
24.4569	41.4348	0	1000 dpm
29.9012	41.4348	0	1000 dpm
32.883	41.4348	0	1000 dpm
33.9586	41.4348	0	1000 dpm
42.9455	41.4348	1.5107	1000 dpm
38.1521	41.4348	0	1000 dpm
28.6106	41.4348	0	1000 dpm
30.6084	41.4348	0	1000 dpm
39.6029	41.4348	0	1000 dpm
40.7293	41.4348	0	1000 dpm
32.341	41.4348	0	1000 dpm
33.6101	41.4348	0	1000 dpm
31.223	41.4348	0	1000 dpm
29.6717	41.4348	0	1000 dpm
33.6968	41.4348	0	1000 dpm



North



BLANK #'s  
 #58 #80  
 #63 #90  
 #70 #100

REMARKS:				
SAMPLES SENT TO QUADREX CORP GAINVILLE FL, FOR COUNTING				
Date:	Time:	Location of Survey:	Reason for Survey:	<input checked="" type="checkbox"/> Beta-Swipe <input type="checkbox"/> Alpha Swipe <input type="checkbox"/> Airborne <input type="checkbox"/> Airborne Beta Gamma Alpha
12-8-92	7:00 AM	Taylor Hall Bldg. RM. 131, 125, 127, 135, 133	Final Survey	
Instrument Used:	Serial No.:	Signature of Surveyor:	Signature of Reviewing Supervisor:	Page ___ of ___
		Richard E. Miller	Richard E. Miller	



QUADREX RECYCLE CENTER  
REQUEST FOR ANALYSIS  
AND CHAIN OF CUSTODY

1 of 2

Material Registration # 22430

PURCHASE ORDER #

DATE SAMPLE SHIPPED 12-9-92

AIRBILL # 5683249784

# OF SAMPLES 60

QUADREX CONTACT LEE YOUNG

UNITS REQUESTED DPM PER SAMPLE

PROJECT NUMBER UTM-9100

SAMPLE TYPE

AIR SAMPLE

SWIPES X

SEWER

WATER

OTHER (SPECIFY)

ANALYSES REQUESTED GROSS BETA Activity

SPECIFIC ANALYSIS REQUESTED

ITEM	VOLUME	ITEM	VOLUME	ITEM	VOLUME
1 41 swipes	100cm <sup>3</sup>	16 56	100cm <sup>3</sup>	31 71	100cm <sup>3</sup>
2 42		17 57		32 72	
3 43		18 58		33 73	
4 44		19 59		34 74	
5 45		20 60		35 75	
6 46		21 61		36 76	
7 47		22 62		37 77	
8 48		23 63		38 78	
9 49		24 64		39 79	
10 50		25 65		40 80	
11 51		26 66		41 81	
12 52		27 67		42 82	
13 53		28 68		43 83	
14 54		29 69		44 84	
15 55	✓	30 70	✓	45 85	✓

TURNAROUND TIME REQUIRED

ROUTINE

SPECIAL X 1 5 DAYS

SPECIAL IDENTIFICATION/INSTRUCTIONS:

RELINQUISHED BY Robert E. Miller DATE 12 9 1992 TIME 5:00 PM

SAMPLES REC'D BY Tom Luens DATE 12 10 1992 TIME 11:30 A.M.

SEALS INTACT

YES ✓

NO

OVER

QUADREX RECYCLE CENTER  
REQUEST FOR ANALYSIS  
AND CHAIN OF CUSTODY

2 of 2

PURCHASE ORDER # \_\_\_\_\_ DATE SAMPLE SHIPPED \_\_\_\_\_  
AIRBILL # \_\_\_\_\_ # OF SAMPLES \_\_\_\_\_  
QUADREX CONTACT \_\_\_\_\_ UNITS REQUESTED \_\_\_\_\_  
PROJECT NUMBER \_\_\_\_\_

SAMPLE TYPE

AIR SAMPLE \_\_\_\_\_ SMEAR \_\_\_\_\_  
SEWER \_\_\_\_\_ WATER \_\_\_\_\_  
OTHER (SPECIFY) \_\_\_\_\_

ANALYSES REQUESTED \_\_\_\_\_  
\_\_\_\_\_

SPECIFIC ANALYSIS REQUESTED

ITEM	VOLUME	ITEM	VOLUME	ITEM	VOLUME
1 86 SWPC 100 CM <sup>3</sup>		16		31	
2 87		17		32	
3 88		18		33	
4 89		19		34	
5 90		20		35	
6 91		21		36	
7 92		22		37	
8 93		23		38	
9 94		24		39	
10 95		25		40	
11 96		26		41	
12 97		27		42	
13 98		28		43	
14 99		29		44	
15 100 ✓		30		45	

TURNAROUND TIME REQUIRED

ROUTINE \_\_\_\_\_ SPECIAL \_\_\_\_\_ / \_\_\_\_\_ DAYS

SPECIAL IDENTIFICATION/INSTRUCTIONS: \_\_\_\_\_  
\_\_\_\_\_

RELINQUISHED BY \_\_\_\_\_ DATE / / TIME

SAMPLES REC'D BY \_\_\_\_\_ DATE / / TIME

SEALS INTACT

YES \_\_\_\_\_ NO \_\_\_\_\_

## SMEAR ANALYSIS RECORD

RECEIVED: 10-Dec-92 LS3001 AUTO CALIBRATION  
 GENERATOR: QE DAIRIDGE COUNT TIME 2 MIN.  
 TYPE: BETA SMEAR/100cm<sup>2</sup>  
 COUNTED: 11-Dec-92 H-3 GROSS BKG  
 BxG= 26.5946 41.4348

\* NaI CALIBRATION DATA  
 \* COUNTED BY: TOM OWENS  
 \* GROSS BKG 896  
 \* BKG/MIN 179  
 \* MDA 242  
 \* CNT TIME 5

SLOT #	SAMPLE	ISOTOPE	dpm/sample	net dpm	ISOTOPE	CPM	CPM-MDA	DFM	uCi/ml
1	41	H3	20.2147	0.0000				0	0 0.0000
		GROSS BETA	58.0855	16.8507				0	0 0.0000
2	42	H3	10.1474	0.0000				0	0 0.0000
		GROSS BETA	22.5384	0.0000				0	0 0.0000
3	43	H3	18.0339	0.0000				0	0 0.0000
		GROSS BETA	37.5742	0.0000				0	0 0.0000
4	44	H3	10.5785	0.0000				0	0 0.0000
		GROSS BETA	29.4988	0.0000				0	0 0.0000
5	45	H3	18.5785	0.0000				0	0 0.0000
		GROSS BETA	32.7357	0.0000				0	0 0.0000
6	46	H3	14.0731	0.0000				0	0 0.0000
		GROSS BETA	35.2539	0.0000				0	0 0.0000
7	47	H3	21.4788	0.0000				0	0 0.0000
		GROSS BETA	38.2844	0.0000				0	0 0.0000
8	48	H3	25.4055	0.0000				0	0 0.0000
		GROSS BETA	45.5301	4.0953				0	0 0.0000
9	49	H3	7.9104	0.0000				0	0 0.0000
		GROSS BETA	28.8699	0.0000				0	0 0.0000
10	50	H3	20.3075	0.0000				0	0 0.0000
		GROSS BETA	40.5193	0.0000				0	0 0.0000
11	51	H3	7.0395	0.0000				0	0 0.0000
		GROSS BETA	32.5264	0.0000				0	0 0.0000
12	52	H3	27.6104	1.0158				0	0 0.0000
		GROSS BETA	55.493	14.0582				0	0 0.0000
13	53	H3	25.7815	0.0000				0	0 0.0000
		GROSS BETA	47.7914	6.3566				0	0 0.0000
14	54	H3	12.0559	0.0000				0	0 0.0000
		GROSS BETA	31.034	0.0000				0	0 0.0000
15	55	H3	19.1033	0.0000				0	0 0.0000
		GROSS BETA	34.6441	0.0000				0	0 0.0000
16	56	H3	17.2483	0.0000				0	0 0.0000
		GROSS BETA	37.3917	0.0000				0	0 0.0000
17	57	H3	11.0924	0.0000				0	0 0.0000
		GROSS BETA	26.0803	0.0000				0	0 0.0000

18	58	H3	20.6903	0.0000	*	0	0	0.0000	*
		GROSS BETA	42.0839	0.6491	*	0	0	0.0000	*
					*	0	0	0.0000	*
19	59	H3	12.7566	0.0000	*	0	0	0.0000	*
		GROSS BETA	28.3587	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
20	60	H3	18.0082	0.0000	*	0	0	0.0000	*
		GROSS BETA	36.1773	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
21	61	H3	10.4078	0.0000	*	0	0	0.0000	*
		GROSS BETA	32.6143	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
22	62	H3	11.4153	0.0000	*	0	0	0.0000	*
		GROSS BETA	31.6946	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
23	63	H3	14.3827	0.0000	*	0	0	0.0000	*
		GROSS BETA	33.2102	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
24	64	H3	10.6026	0.0000	*	0	0	0.0000	*
		GROSS BETA	29.5272	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
25	65	H3	12.7159	0.0000	*	0	0	0.0000	*
		GROSS BETA	31.0869	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
26	66	H3	20.4793	0.0000	*	0	0	0.0000	*
		GROSS BETA	34.6788	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
27	67	H3	18.9274	0.0000	*	0	0	0.0000	*
		GROSS BETA	32.509	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
28	68	H3	13.1614	0.0000	*	0	0	0.0000	*
		GROSS BETA	38.5809	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
29	69	H3	19.3918	0.0000	*	0	0	0.0000	*
		GROSS BETA	34.2757	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
30	70	H3	19.4798	0.0000	*	0	0	0.0000	*
		GROSS BETA	41.5492	0.1144	*	0	0	0.0000	*
					*	0	0	0.0000	*
31	71	H3	9.3672	0.0000	*	0	0	0.0000	*
		GROSS BETA	28.9736	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
32	72	H3	22.4617	0.0000	*	0	0	0.0000	*
		GROSS BETA	35.9603	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
33	73	H3	2.579	0.0000	*	0	0	0.0000	*
		GROSS BETA	24.4569	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
34	74	H3	18.3051	0.0000	*	0	0	0.0000	*
		GROSS BETA	29.9012	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
35	75	H3	16.6677	0.0000	*	0	0	0.0000	*
		GROSS BETA	32.883	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
36	76	H3	19.7291	0.0000	*	0	0	0.0000	*
		GROSS BETA	33.9586	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
37	77	H3	22.2003	0.0000	*	0	0	0.0000	*
		GROSS BETA	42.9455	1.5107	*	0	0	0.0000	*

38	78	H3	23.3306	0.0000	*	0	0	0.0000	*
		GROSS BETA	38.1523	0.0000	*	0	0	0.0000	*
39	79	H3	11.6227	0.0000	*	0	0	0.0000	*
		GROSS BETA	18.6106	0.0000	*	0	0	0.0000	*
40	80	H3	17.7017	0.0000	*	0	0	0.0000	*
		GROSS BETA	30.6084	0.0000	*	0	0	0.0000	*
41	81	H3	22.1624	0.0000	*	0	0	0.0000	*
		GROSS BETA	39.6029	0.0000	*	0	0	0.0000	*
42	82	H3	23.9241	0.0000	*	0	0	0.0000	*
		GROSS BETA	40.7293	0.0000	*	0	0	0.0000	*
43	83	H3	10.7688	0.0000	*	0	0	0.0000	*
		GROSS BETA	32.341	0.0000	*	0	0	0.0000	*
44	84	H3	13.38	0.0000	*	0	0	0.0000	*
		GROSS BETA	33.6101	0.0000	*	0	0	0.0000	*
45	85	H3	12.9748	0.0000	*	0	0	0.0000	*
		GROSS BETA	31.223	0.0000	*	0	0	0.0000	*
46	86	H3	14.6786	0.0000	*	0	0	0.0000	*
		GROSS BETA	29.6717	0.0000	*	0	0	0.0000	*
47	87	H3	20.1196	0.0000	*	0	0	0.0000	*
		GROSS BETA	33.6968	0.0000	*	0	0	0.0000	*
48	88	H3	12.0269	0.0000	*	0	0	0.0000	*
		GROSS BETA	31.0006	0.0000	*	0	0	0.0000	*
49	89	H3	27.137	0.5424	*	0	0	0.0000	*
		GROSS BETA	41.9527	0.5179	*	0	0	0.0000	*
50	90	H3	5.6902	0.0000	*	0	0	0.0000	*
		GROSS BETA	26.6243	0.0000	*	0	0	0.0000	*
51	91	H3	17.7569	0.0000	*	0	0	0.0000	*
		GROSS BETA	39.2018	0.0000	*	0	0	0.0000	*
52	92	H3	20.9452	0.0000	*	0	0	0.0000	*
		GROSS BETA	37.7988	0.0000	*	0	0	0.0000	*
53	93	H3	18.372	0.0000	*	0	0	0.0000	*
		GROSS BETA	37.2591	0.0000	*	0	0	0.0000	*
54	94	H3	20.6649	0.0000	*	0	0	0.0000	*
		GROSS BETA	45.3564	3.9216	*	0	0	0.0000	*
55	95	H3	16.1728	0.0000	*	0	0	0.0000	*
		GROSS BETA	34.3913	0.0000	*	0	0	0.0000	*
56	96	H3	15.4443	0.0000	*	0	0	0.0000	*
		GROSS BETA	33.0226	0.0000	*	0	0	0.0000	*
57	97	H3	19.7771	0.0000	*	0	0	0.0000	*
		GROSS BETA	34.0095	0.0000	*	0	0	0.0000	*

56	98	H3	16.855	0.0000	*	0	0	0.0000	*
		GROSS BETA	35.7086	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
59	99	H3	19.4249	0.0000	*	0	0	0.0000	*
		GROSS BETA	31.0132	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*
60	100	H3	16.9894	0.0000	*	0	0	0.0000	*
		GROSS BETA	31.8727	0.0000	*	0	0	0.0000	*
					*	0	0	0.0000	*

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UNDER FLOOR ROOM 131  
FINAL SURVEY SMEARS  
FOR BETA / ALPHA

AMPLE # LOCATION	GROSS BETA/GAMMA	GROSS ALPHA	NET BETA/dpm	NET ALPHA/dpm	LIMIT REG. GUID 1.86
WEST END OF VESSEL	14	0	31	MDA	1000dpm
WEST END OF VESSEL	8	0	16	MDA	1000dpm
WEST END OF VESSEL	3	0	3.7	MDA	1000dpm
WEST END OF VESSEL	2	0	1.25	MDA	1000dpm
WEST END OF VESSEL	5	1	8.4	MDA	1000dpm
WEST END OF VESSEL	5	0	8.75	MDA	1000dpm

North

Δ-North



Δ-East

Δ-South

REMARKS: 9				
Date: 12-7-92	Time: 11:00 AM	Location of Survey: Ground Level Under Floor	Reason for Survey: Final Survey	<input checked="" type="checkbox"/> Beta-Gamma Swipe = 0 <input type="checkbox"/> Alpha Swipe Airborne <input type="checkbox"/> Airborne Beta Gamma Alpha <input checked="" type="checkbox"/> Soil Samples = Δ
Instrument Used: 0 SWIRE Δ GAMMA SPEC.	Serial No.:	Signature of Surveyor: <i>m. j. m.</i>	Signature of Reviewing Supervisor: <i>Richard E. Miller</i>	Page 1 of 4

PROGRAM #:1  
 PRESET COUNT:999999. BETA  
 PSET TIME (M):2.00  
 HIGH VOLTAGE:1500.  
 DISC WINDOW:1000.  
 START SAMPLE :1.  
 STOP SAMPLE:50.  
 ERROR (SIGMA):1.96  
 REPEAT #:0  
 A EFFIC (%):21.00  
 A CROSTLK (%):20.00  
 A BKGND (CPM):.15  
 B EFFIC (%):20.00  
 B BKGND (CPM):.75  
 BKGD TIME (M):20.00  
 VOL(cm2):100.00  
 ALARM (dpm/V):200.00  
 USER EQUATION:

SAMPLE #:1.	TIME (M):2.00	TIME:17:03:03	DATE:DEC 07,1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2:0 +/-8.08E-3
BETA GROSS: 14.	NET: 6.25	+/-3.48	dpm/cm2:.31 +/- .17
GAMMA GROSS: 0	C FACTOR:1.0000		

SAMPLE #:2.	TIME (M):2.00	TIME:17:05:26	DATE:DEC 07,1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2:0 +/-8.08E-3
BETA GROSS: 8.	NET: 3.25	+/-2.52	dpm/cm2:.16 +/- .12
GAMMA GROSS: 0	C FACTOR:1.0000		

SAMPLE #:3.	TIME (M):2.00	TIME:17:07:49	DATE:DEC 07,1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2:0 +/-8.08E-3
BETA GROSS: 3.	NET: .75	+/-1.25	dpm/cm2:3.75E-2 +/-6.29E-2
GAMMA GROSS: 0	C FACTOR:1.0000		

SAMPLE #:4.	TIME (M):2.00	TIME:17:10:12	DATE:DEC 07,1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2:0 +/-8.08E-3
BETA GROSS: 2.	NET: .25	+/- .79	dpm/cm2:1.25E-2 +/-3.95E-2
GAMMA GROSS: 0	C FACTOR:1.0000		

SAMPLE #:5.	TIME (M):2.00	TIME:17:12:36	DATE:DEC 07,1992
ALPHA GROSS: 1.	NET: .35	+/- .83	dpm/cm2:1.66E-2 +/-3.98E-2
BETA GROSS: 5.	NET: 1.68	+/-1.84	dpm/cm2:8.40E-2 +/-9.21E-2
GAMMA GROSS: 0	C FACTOR:1.0000		

SAMPLE #:6.	TIME (M):2.00	TIME:17:14:59	DATE:DEC 07,1992
ALPHA GROSS: 0	NET: 0	+/- .16	dpm/cm2:0 +/-8.08E-3
BETA GROSS: 5.	NET: 1.75	+/-1.87	dpm/cm2:8.75E-2 +/-9.36E-2
GAMMA GROSS: 0	C FACTOR:1.0000		

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 \*\*\*\*\* 07-DEC-92 13:38:54 \*\*\*\*\*  
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-WALL-CRAWLSPACE-SOIL - Release sample

SPECTRAL FILE NAME: DATA\0053.DAT  
 SAMPLE DATE: 07-DEC-92 11:00:00  
 SAMPLE IDENTIFICATION: 0053  
 TYPE OF SAMPLE: SOIL  
 SAMPLE QUANTITY: 212.0000  
 SAMPLE GEOMETRY: CAN210ML  
 EFFICIENCY FILE NAME: CAN210.EFF

UNITS: GRAM

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 \*  
 ACQUIRE DATE: 07-DEC-92 12:38:33 \* FWHM(1332) 3.275  
 PRESET TIME(LIVE): 3600. SEC \* SENSITIVITY: 3.000  
 ELAPSED REAL TIME: 3600. SEC \* SHAPE PARAMETER: 10.0 %  
 ELAPSED LIVE TIME: 3600. SEC \* NBR ITERATIONS: 10.  
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 \*  
 DETECTOR: germanium \* LIBRARY: URANIUM.LIB  
 CALIB DATE: 22-JUL-91 09:46:56 \* ENERGY TOLERANCE: 2.000 KEV  
 EV/CHNL: .4997236 \* HALF LIFE RATIO: 0.00  
 FFSET: .8890784 KEV \* ABUNDANCE LIMIT: 80.00%  
 \*

ENERGY WINDOW 25.88 TO 2047.76

PK	IT	ENERGY	AREA	BKGND	FWHM	CHANNEL	LEFT	PW	CTS/SEC	%ERR	FIT
1	3	73.94	95.	143.	1.60	146.18	139	16	2.63E-02	27.9	9.19E+00
2	3	77.19	99.	61.	1.60	152.69	139	16	2.76E-02	14.8	
3	10	86.79	165.	280.	3.82	171.90	162	41	4.58E-02	27.3	3.20E+00
4	10	92.34	162.	361.	3.93	183.00	162	41	4.51E-02	34.4	
5	0	116.58	95.	319.	7.57	231.51	221	20	2.64E-02	52.6	
6	0	140.09	52.	143.	.85	294.56	290	10	1.43E-02	48.0	
7	0	184.49	145.	247.	8.38	367.40	356	22	4.02E-02	29.7	
8	0	238.48	183.	232.	1.44	475.44	470	20	5.08E-02	22.8	
9	0	295.28	73.	78.	1.59	589.11	583	13	2.03E-02	30.6	
10	0	337.94	38.	26.	1.11	674.48	672	7	1.05E-02	29.9	
11	0	351.48	136.	63.	1.54	701.58	690	21	3.77E-02	17.8	
12	0	510.47	61.	45.	1.86	1019.73	1011	18	1.69E-02	29.5	
13	0	582.91	48.	38.	1.40	1164.69	1155	19	1.33E-02	34.0	
14	0	608.22	46.	67.	1.72	1215.33	1210	21	1.27E-02	42.8	
15	0	722.23	7.	36.	5.41	1443.48	1443	21	1.96E-03	****	
16	0	794.39	26.	5.	1.39	1587.87	1580	16	7.13E-03	26.2	
17	0	910.49	30.	12.	2.57	1820.21	1815	10	8.43E-03	26.4	
18	0	1241.95	4.	15.	.99	2483.50	2474	11	1.19E-03	****	
19	0	1459.72	79.	11.	2.14	2919.28	2908	18	2.19E-02	13.2	

PEAK SEARCH COMPLETED (REV 15.8 - ND PC VERSION MAR 90)

MISSION PRODUCT

NUCLIDE	SBHR	ENERGY	AREA	BKGND	%ABN	%EFF	PCI/ GRAM	1-SIGMA ERROR
D-109	FP	88.03	165.	280.	3.72*	1.488E+00	1.055E 1	2.876E 0

NATURAL PRODUCT

NUCLIDE	SBHR	ENERGY	AREA	BKGND	%ABN	%EFF	PCI/ GRAM	1-SIGMA ERROR
TH-234	NP	63.30	0.	0.	3.80	0.000E+00	.000E 0	.000E 0
		92.60	162.	361.	5.41*	1.619E+00	6.559E 0	2.257E 0
-235	NP	143.80	0.	0.	10.50	0.000E+00	.000E 0	.000E 0
		185.70	145.	247.	54.00*	1.623E+00	5.843E -1	1.735E -1
A-226	NP	186.20	145.	247.	3.20*	1.623E+00	9.620E 0	2.857E 0
B-212	NP	238.60	183.	232.	44.60*	1.411E+00	1.020E 0	2.347E -1
PB-214	NP	295.00	73.	78.	19.00	1.230E+00	1.107E 0	3.388E -1
		352.00	136.	63.	37.00*	1.020E+00	1.273E 0	2.269E -1
L-208	NP	510.84	61.	45.	21.60	6.979E-01	1.431E 0	4.215E -1
		583.00	48.	38.	84.20*	6.095E-01	3.312E -1	1.126E -1
BI-214	NP	609.30	46.	67.	46.30*	5.836E-01	5.995E -1	2.563E -1
		1120.29	0.	0.	15.10	0.000E+00	.000E 0	.000E 0
		1764.49	0.	0.	15.80	0.000E+00	.000E 0	.000E 0
AC-228	NP	338.32	38.	26.	11.40	1.065E+00	1.106E 0	3.304E -1
		911.00	30.	12.	27.70*	4.012E-01	9.676E -1	2.554E -1
		969.11	0.	0.	16.60	0.000E+00	.000E 0	.000E 0
K-40	NP	1461.00	79.	11.	10.70*	2.737E-01	9.530E 0	1.257E 0

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 \*\*\*\*\* 07-DEC-92 15:23:49 \*\*\*\*\*  
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-WALL-CRAWLSPACE-SOIL - *Reference sample*

SPECTRAL FILE NAME: DATA\0054.DAT

SAMPLE DATE: 07-DEC-92 11:00:00

SAMPLE IDENTIFICATION: 0054

TYPE OF SAMPLE: SOIL

SAMPLE QUANTITY: 257.0000

UNITS: GRAM

SAMPLE GEOMETRY: CAN210ML

EFFICIENCY FILE NAME: CAN210.EFF

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ACQUIRE DATE: 07-DEC-92 14:23:40 \* FWHM(1332) 3.275  
 PRESET TIME(LIVE): 3600. SEC \* SENSITIVITY: 3.000  
 LAPSED REAL TIME: 3600. SEC \* SHAPE PARAMETER : 10.0 %  
 LAPSED LIVE TIME: 3600. SEC \* NBR ITERATIONS: 10.  
 \*

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DETECTOR: germanium \* LIBRARY: URANIUM.LIB  
 CALIB DATE: 22-JUL-91 09:46:56 \* ENERGY TOLERANCE: 2.000 KEV  
 EV/CHNL: .4997236 \* HALF LIFE RATIO: 8.00  
 OFFSET: .8890784 KEV \* ABUNDANCE LIMIT: 80.00%  
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ENERGY WINDOW 25.88 TO 2047.76

PK	IT	ENERGY	AREA	BKGD	FWHM	CHANNEL	LEFT	PW	CTS/SEC	%ERR	FIT
1	0	74.69	138.	245.	3.82	147.68	140	19	3.83E-02	31.7	
2	0	111.28	47.	310.	5.77	220.90	209	21	1.31E-02	****	
3	0	185.72	52.	100.	2.17	369.87	366	9	1.46E-02	40.5	
4	0	217.57	53.	97.	4.76	433.59	429	12	1.48E-02	43.5	
5	0	238.63	156.	103.	1.70	475.75	470	18	4.34E-02	14.7	3.21E+00
6	0	241.60	39.	74.	1.70	481.70	470	18	1.07E-02	53.5	
7	0	254.66	11.	53.	2.85	507.83	502	8	3.07E-03	****	
8	0	293.42	91.	72.	5.78	585.38	575	18	2.53E-02	25.7	
9	0	337.25	36.	73.	.98	673.09	667	16	1.01E-02	65.1	
10	0	351.89	65.	71.	1.19	702.38	695	18	1.01E-02	33.6	
11	0	510.53	45.	39.	2.52	1019.05	1013	17	1.26E-02	32.8	
12	0	582.72	41.	26.	1.34	1164.30	1160	15	1.13E-02	30.5	
13	0	609.11	46.	15.	1.52	1217.12	1214	9	1.27E-02	20.5	
14	0	910.75	21.	20.	1.42	1820.73	1809	18	5.96E-03	45.4	
15	0	950.29	7.	7.	1.29	1899.86	1895	10	2.08E-03	63.2	
16	0	1120.37	15.	15.	1.93	2240.19	2230	18	4.23E-03	53.3	
17	0	1460.50	80.	15.	.99	2920.83	2907	21	2.23E-02	14.3	

PEAK SEARCH COMPLETED (REV 15.8 - ND PC VERSION MAR 90)

NATURAL PRODUCT

NUCLIDE	SBHR	ENERGY	AREA	BKGND	%ABN	%EFF	PCI/ GRAM	1-SIGMA ERROR
-235	NP	143.80	0.	0.	10.50	0.000E+00	.000E 0	.000E 0
		185.70	52.	100.	54.00*	1.613E+00	1.758E -1	7.119E -2
RA-226	NP	186.20	52.	100.	3.28*	1.613E+00	2.894E 0	1.172E 0
OB-212	NP	238.60	156.	103.	44.60*	1.411E+00	7.254E -1	1.070E -1
B-214	NP	295.00	91.	72.	19.00	1.237E+00	1.131E 0	2.909E -1
		352.00	65.	71.	37.00*	1.019E+00	5.057E -1	1.698E -1
TL-208	NP	510.84	45.	39.	21.60	6.979E-01	8.765E -1	2.877E -1
		583.00	41.	26.	84.20*	6.097E-01	2.317E -1	7.073E -2
I-214	NP	609.30	46.	15.	46.30*	5.827E-01	4.957E -1	1.016E -1
		1120.29	15.	15.	15.10	3.396E-01	8.685E -1	4.628E -1
		1764.49	0.	0.	15.80	0.000E+00	.000E 0	.000E 0
C-228	NP	338.32	76.	73.	11.40	1.068E+00	8.703E -1	5.665E -1
		911.00	21.	20.	27.70*	4.011E-01	5.645E -1	2.563E -1
		969.11	0.	0.	16.60	0.000E+00	.000E 0	.000E 0
-40	NP	1461.00	80.	15.	10.70*	2.735E-01	8.020E 0	1.146E 0



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 \*\*\*\*\* 07-DEC-92 17:09:33 \*\*\*\*\*  
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-WALL-CRAWLSPACE-SOIL - Release sample

SPECTRAL FILE NAME: DATA\0055.DAT

SAMPLE DATE: 07-DEC-92 11:00:00

SAMPLE IDENTIFICATION: 0055

TYPE OF SAMPLE: SOIL

SAMPLE QUANTITY: 239.0000

UNITS: GRAM

SAMPLE GEOMETRY: CAN210ML

EFFICIENCY FILE NAME: CAN210.EFF

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ACQUIRE DATE: 07-DEC-92 16:09:25 \* FWHM(1332) 3.275  
 PRESET TIME(LIVE): 3600. SEC \* SENSITIVITY: 3.000  
 LAPSED REAL TIME: 3600. SEC \* SHAPE PARAMETER : 10.0 %  
 LAPSED LIVE TIME: 3600. SEC \* NBR ITERATIONS: 10.

\*\*\*\*\*

DETECTOR: germanium \* LIBRARY:URANIUM.LIB  
 CALIB DATE: 22-JUL-91 09:46:56 \* ENERGY TOLERANCE: 2.000 KEV  
 EV/CHNL: .4997236 \* HALF LIFE RATIO: 8.00  
 OFFSET: .8890784 KEV \* ABUNDANCE LIMIT: 80.00%

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ENERGY WINDOW 25.88 TO 2047.76

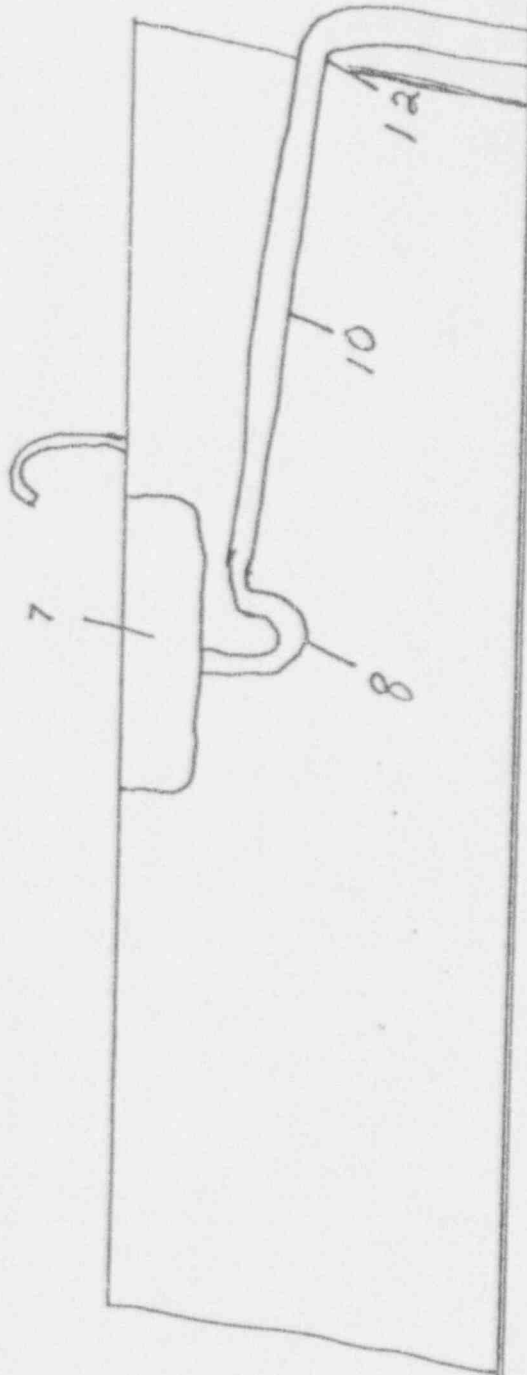
PK	IT	ENERGY	AREA	BKGND	FWHM	CHANNEL	LEFT	PW	CTS/SEC	%ERR	FIT
1	0	39.85	32.	148.	4.02	77.96	73	12	9.00E-03	83.8	
2	0	49.79	68.	227.	8.14	97.85	89	21	1.89E-02	60.5	
3	3	73.80	77.	152.	1.92	145.90	140	22	2.15E-02	36.9	4.94E+00
4	3	76.36	100.	153.	1.92	151.03	140	22	2.78E-02	28.9	
5	0	179.45	17.	71.	1.18	357.32	356	5	4.76E-03	81.3	
6	0	184.69	46.	121.	.95	367.81	364	8	1.28E-02	44.6	
7	0	200.20	27.	77.	1.02	415.01	411	8	7.41E-03	67.1	
8	5	238.37	118.	108.	1.70	475.23	463	25	3.27E-02	18.7	1.20E+00
9	5	241.50	22.	106.	1.70	481.48	463	25	6.18E-03	93.4	
10	0	295.07	42.	53.	1.14	588.69	585	8	1.16E-02	35.4	
11	0	337.75	30.	63.	1.76	674.09	668	13	8.22E-03	62.9	
12	0	351.33	83.	105.	1.05	701.27	690	21	2.31E-02	34.5	
13	0	463.14	24.	17.	1.95	925.00	921	8	6.78E-03	36.9	
14	0	511.43	56.	46.	2.91	1021.65	1011	20	1.55E-02	29.9	
15	0	583.44	36.	13.	2.06	1165.76	1161	9	9.86E-03	24.2	
16	0	600.80	76.	25.	1.53	1216.65	1206	19	2.12E-02	19.9	
17	0	909.55	11.	22.	.96	1818.33	1810	16	2.98E-03	95.2	
18	0	967.62	24.	12.	.73	1934.53	1927	14	6.80E-03	33.9	
19	0	1460.54	66.	19.	1.60	2920.91	2909	19	1.84E-02	16.2	

PEAK SEARCH COMPLETED (REV 15.8 - ND PC VERSION MAR 90)

NATURAL PRODUCT

NUCLIDE	SBHR	ENERGY	AREA	BKGD	%ABN	%EFF	PC1/ GRAM	1-SIGMA ERROR
U-235	NP	143.80	0.	0.	10.50	0.000E+00	.000E 0	.000E 0
		185.70	46.	121.	54.00*	1.621E+00	1.653E -1	7.379E -2
RA-226	NP	186.20	46.	121.	3.28*	1.621E+00	2.721E 0	1.215E 0
PB-212	NP	238.60	110.	108.	44.60*	1.412E+00	5.876E -1	1.101E -1
B-214	NP	295.00	42.	53.	19.00	1.230E+00	5.613E -1	1.989E -1
		352.00	83.	105.	37.00*	1.021E+00	6.918E -1	2.385E -1
TL-208	NP	510.84	56.	46.	21.60	6.966E-01	1.166E 0	3.492E -1
		583.00	36.	13.	84.20*	6.089E-01	2.175E -1	5.261E -2
I-214	NP	609.30	76.	25.	46.30*	5.830E-01	8.884E -1	1.770E -1
		1120.29	0.	0.	15.10	0.000E+00	.000E 0	.000E 0
C-228	NP	1764.49	0.	0.	15.80	0.000E+00	.000E 0	.000E 0
		338.32	30.	63.	11.40	1.066E+00	7.653E -1	4.812E -1
		911.00	11.	22.	27.70*	4.015E-01	3.027E -1	2.882E -1
-40	NP	969.11	24.	12.	16.60	3.820E-01	1.212E 0	4.105E -1
		1461.00	66.	19.	10.70*	2.735E-01	7.106E 0	1.151E 0





REMARKS:					
<i>GROSS MIRROR/Hr Readings @ contact</i>					
Date:	12-10-92	Time:	1:00 PM	Location of Survey:	131 A
Instrument Used:	MICRO MEASUR	Serial No.:	75477	Signature of Surveyor:	<i>Stanley White</i>
Reason for Survey: <i>Final Survey</i>			CONTAMINATION CHECK		Signature of Reviewing Supervisor:
Beta-Gamma Swipe			Alpha Swipe		Signature of Reviewing Supervisor:
Airborne Beta Gamma			Airborne Alpha		Signature of Reviewing Supervisor:
X MIRROR/Hr.			Page 1 of 1		

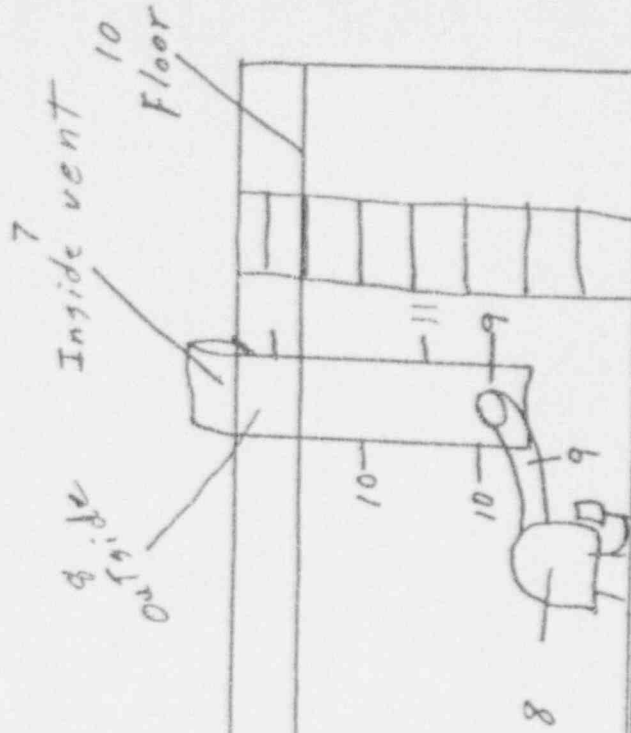
Model #14C

Ser# 95035

Inst# Q-471

No Reading Above D.G.

Roof of 2nd Level  
Roof of 1st Level

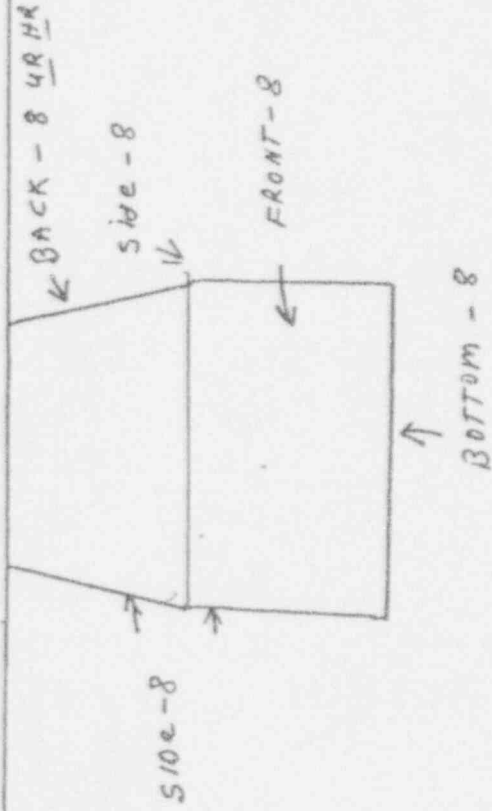


REMARKS: * READINGS MARKED ARE MICRO-HA. @ contact			
Date: 12-10-92	Time: 9:45	Location of Survey: Roof of RM-131 HepA	Reason for Survey: Contamination check fixed source
Instrument Used: model-#19 MICRO METER Inst# 8-435	Serial No.: 95477	Signature of Surveyor: Stacy White	Signature of Reviewing Supervisor: Richard E. Mills
			Page 2 of 2

Beta-Gamma Swipe  
Alpha Swipe  
Airborne Beta Gamma Alpha

KM-131

HEPA Duct



Get  
Background

Model 14C

SER# 95035

INST# Q-471

NO READING ABOVE B.G.

REMARKS: <i>Readings are Gross Micro-R/hr @ contact. With Hepa Filter in place</i>				
Date: 12-10-92	Time: 0835	Location of Survey: KM-131 HEPA	Reason for Survey: Final Survey	Beta-Gamma Swipe _____ Alpha Swipe _____ Airborne _____ Airborne Beta Gamma Alpha _____
Instrument Used: Model - # 19 MICRO METEC INST# Q-435	Serial No.: 95477	Signature of Surveyor: <i>[Signature]</i>	Signature of Reviewing Supervisor: <i>[Signature]</i>	Page 1 of 2

AIR SAMPLES  
INSIDE CONTAINMENT TENT  
ROOM 131

	SAMPLE #	VOLUME CUBIC/FT.	ALPHA uCi/ml	BETA uCi/ml	FMPC (Co-60)*
1-11-92	01	239.7	MDA	6.6E-13	.22%
1-12-92	02	VOID			
1-13-92	03	761.4	3.7E-13	9.0E-13	.30%
1-16-92	04	571	1.3E-12	2.5E-12	.83%
1-17-92	05	789.6	MDA	2.7E-13	.09%
1-18-92	06	253.8	MDA	2.5E-13	.08%
1-19-92	07	423	MDA	MDA	
1-20-92	08	746	5.6E-13	1.2E-12	.40%
1-21-92	09	592	MDA	2.1E-13	.07%
2-1-92	10	550	MDA	MDA	
2-4-92	11	677	MDA	1.3E-13	.04%
2-7-92	12	592	MDA	9.9E-14	.03%
2-8-92	13	507.6	MDA	3.4E-13	.11%

ISOTOPIC IDENTIFICATION OF CONTAMINATION BY  
GAMMA SPECTROSCOPY INDICATED Co-60 AND Eu-152

10CFR 20, APPENDIX B, TABLE II, COL 1-AIR

\*  
Co-60 3E-10 uCi / ml  
Eu-152 4E-10 uCi / ml



AIR SAMPLES  
INSIDE CONTAINMENT TENT  
ROOM 131

	SAMPLE #	VOLUME CUBIC/FT.	ALPHA uCi/ml	BETA uCi/ml	FmPC (Co-60)*
1-11-92	01	239.7	<del>MDA</del> 5.8E-14	6.6E-13	0.22%
1-11-92	02	VOID			
1-11-92	03	761.4	3.7E-13	9.0E-13	0.30%
1-16-92	04	571	1.3E-12	2.5E-12	0.83%
1-17-92	05	789.6	<del>MDA</del> 9.4E-15	2.7E-13	0.09%
1-18-92	06	253.8	<del>MDA 2.9E-14</del>	2.5E-13	0.08%
1-18-92	07	423	<del>MDA</del> 1.8E-14	<del>MDA</del> 1.5E-13	—
1-30-92	08	746	5.6E-13	1.2E-12	0.40%
2-1-92	09	592	<del>MDA</del> 2.0E-14	2.1E-13	0.07%
2-1-92	10	550	<del>MDA</del> 1.3E-14	<del>MDA</del> 1.3E-13	—
2-4-92	11	677	<del>MDA</del> 4.4E-15	1.3E-13	0.04%
2-9-92	12	592	MDA	9.9E-14	0.03%
2-8-92	13	507.6	<del>MDA</del> 1.1E-14	3.4E-13	0.11%

Notes: Isotope Identification of Contamination  
by Gamma Spectroscopy Indicated  
Co-60 and Eu-152.

10 CFR 20, Appendix B, Table II, Column 1-A:-  
\*Co-60  $3E^{-10}$  uCi/ml  
Eu-152  $4E^{-10}$  uCi/ml

## ATTACHMENT I

## AIR MONITORING

Date: 11-11-92 Building: Reactor #131 Area: Inside Containment  
Job Description: Cut Holes - Cut Aluminum liner - HSP # UT002  
Contaminant: Co<sup>60</sup>CS-137 Collection Media: 47mm Collector: RM Lot #: \_\_\_\_\_

=====

01 SAMPLE NUMBER RESULTS:  $\alpha = < MDA$   
 $\beta = 6.6E-13$

Sample Type: \_\_\_\_\_  
☒ Area Exact Location: Top ledge - Containment  
☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_  
Activity: \_\_\_\_\_ Resp. Prot.: Air line  
☐ Blank

Pump #: \_\_\_\_\_ Pre Cal N/A Time On 1400  
Post Cal N/A Time Off 1653  
Flow 40 LPM X Minutes 170 = 239.7  
Sampler: \_\_\_\_\_ Volume  
Other Personnel in Area: R. Maddox, R. Hawn, S. White

=====

\_\_\_\_\_ SAMPLE NUMBER RESULTS: \_\_\_\_\_

Sample Type: \_\_\_\_\_  
☐ Area Exact Location: \_\_\_\_\_  
☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_  
Activity: \_\_\_\_\_ Resp. Prot.: \_\_\_\_\_  
☐ Blank

Pump #: \_\_\_\_\_ Pre Cal \_\_\_\_\_ Time On \_\_\_\_\_  
Post Cal \_\_\_\_\_ Time Off \_\_\_\_\_  
Flow \_\_\_\_\_ X Minutes \_\_\_\_\_ = \_\_\_\_\_  
Sampler: \_\_\_\_\_ Volume  
Other Personnel in Area: \_\_\_\_\_

## ATTACHMENT I

## AIR MONITORING

Date: 11-12-92 Building: Reactor RM 131 Area: Inside Containment  
Job Description: Cut Liner - drill holes in tank bottom  
Contaminant: Co-60 Collection Media: 47MM Collector: RM Lot #: \_\_\_\_\_

=====

02 SAMPLE NUMBER RESULTS: \_\_\_\_\_

Sample Type:

☒ Area Exact Location: Top Ledge Containment

☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_

☐ Blank Activity: D Resp. Prot.: Air line

Pump #: ✓ Pre Cal N/A Time On 0940

Post Cal N/A Time Off \_\_\_\_\_

Flow 40 Lpm X Minutes \_\_\_\_\_ = \_\_\_\_\_

Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: R. Hawn, S. White

=====

\_\_\_\_\_ SAMPLE NUMBER RESULTS: \_\_\_\_\_

Sample Type:

☐ Area Exact Location: \_\_\_\_\_

☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_

☐ Blank Activity: \_\_\_\_\_ Resp. Prot.: \_\_\_\_\_

Pump #: \_\_\_\_\_ Pre Cal \_\_\_\_\_ Time On \_\_\_\_\_

Post Cal \_\_\_\_\_ Time Off \_\_\_\_\_

Flow \_\_\_\_\_ X Minutes \_\_\_\_\_ = \_\_\_\_\_

Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: \_\_\_\_\_

GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

Location: Taylor Hall - Inside Containment RHC Sample No.: 01

Sample Taken By: R. Maddox

Sampler Serial No.: \_\_\_\_\_

SAMPLE COLLECTION DATA

Filter Type: 47 MM

	Date	Time	Flow Rate (cfm)
Off	11-11-92	1650	40 Lpm 1.41
On	11-11-92	1400	40 Lpm 1.41

Sample Duration X Avg. Flow Rate      Sample Volume

170 min X 1.41 cfm = 239.7 ft.

Counter ID: 2404

COUNTING DATA	$\alpha$ ALPHA			$\beta$ BETA		
Counting Date/Time	11-16/1150			11-16/1212		
Hours from End of Sampling	115			115		
Gross Counts	3			67		
Sample Count Time (min)	20			20		
Gross cpm	.15			3.35		
Background Counts	19			77		
Background Count Time (min)	60			60		
Background cpm	.32			1.28		
Alpha Crosstalk cpm	0	0	0	0		
Net cpm	$\emptyset$			2.07		
Counter Efficiency (fract.)	.21			.21		
Filter Correction Factor	0.65	0.85	0.85	0.95	0.95	0.95
Volume (ft <sup>3</sup> )	239.7			239.7		
Activity (uCi/ml)	5.6E-14			6.6E-13		
Counting Error (uCi/ml)	$\pm 8.2E-14$			$\pm 2.8E-13$		
MDA (uCi/ml)	1.9E-13			3.4E-13		

Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Technician

11-16-92

Date



## ATTACHMENT I

## AIR MONITORING

Date: 11-13-92 Building: Reactor #131 Area: Inside Containment  
Job Description: Cutting Aluminum Tank HSP # UT 002  
Contaminant: Co-60, Cs-137 Collection Media: 47mm Collector: RM Lot #: \_\_\_\_\_

=====

03 SAMPLE NUMBER RESULTS: A 3.7 E-13 uCi/ml  
B 9.0 E-13 uCi/ml

Sample Type:

☒ Area Exact Location: Inside Containment - upper ledge  
☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_  
☐ Blank Activity: \_\_\_\_\_ Resp. Prot.: \_\_\_\_\_

Pump #: \_\_\_\_\_ Pre Cal N/A Time On 0735  
Post Cal N/A Time Off 1626  
Flow 40 Lpm X Minutes \_\_\_\_\_ = \_\_\_\_\_

Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: R. Hawn, S. White

=====

\_\_\_\_\_ SAMPLE NUMBER RESULTS: \_\_\_\_\_

Sample Type:

☐ Area Exact Location: \_\_\_\_\_  
☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_  
☐ Blank Activity: \_\_\_\_\_ Resp. Prot.: \_\_\_\_\_

Pump #: \_\_\_\_\_ Pre Cal \_\_\_\_\_ Time On \_\_\_\_\_  
Post Cal \_\_\_\_\_ Time Off \_\_\_\_\_  
Flow \_\_\_\_\_ X Minutes \_\_\_\_\_ = \_\_\_\_\_

Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: \_\_\_\_\_

GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

Location: Taylor Hall Room 131 Inside RMC Sample No.: 03  
Sample Taken By: R. Maddox Containment

Sampler Serial No.: \_\_\_\_\_

SAMPLE COLLECTION DATA

Filter Type: 47mm

1992	Date	Time	Flow Rate (cfm)
Off	11-13/1630	—	40 lpm 1.41
On	11-13/0730	—	40 lpm 1.41

Sample Duration X Avg. Flow Rate      Sample Volume  
540 min X 1.41 cfm = 761.4 ft.

Counter ID: 2404

COUNTING DATA	$\alpha$ ALPHA	$\beta$ BETA
Counting Date/Time	11-16/1200	11-16/1200
Hours from End of Sampling	67.5	67.5
Gross Counts	69	200
Sample Count Time (min)	20	20
Gross cpm	3.45	10.0
Background Counts	<del>19</del> 19	<del>77</del> 77
Background Count Time (min)	60	60
Background cpm	.3	1.29
Alpha Crosstalk cpm	0	0
Net cpm	3.15	8.71
Counter Efficiency (fract.)	.21	.21
Filter Correction Factor	0.85	0.95
Volume (ft <sup>3</sup> )	761.4	761.4
Activity (uCi/ml)	3.7E-13	9.0E-13
Counting Error (uCi/ml)	$\pm 9.7E-14$	$\pm 1.5E-13$
MHA (uCi/ml)	6.1E-14	1.1E-13

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

W. J. P. 11-16-92  
Technician Date



## ATTACHMENT I

## AIR MONITORING

Date: 11-16-92 Building: Reactor room #131 Area: Inside Containment  
Job Description: Remove Aluminum walls and flooring / Package material  
Contaminant: Co-60, Cs-137 Collection Media: 47MM Collector: RM Lot #: \_\_\_\_\_

=====

04 SAMPLE NUMBER RESULTS:  $2.5 \times 10^{-12}$  mCi/ml  
 $1.3 \times 10^{-12}$  mCi/ml

Sample Type:

☒ Area Exact Location: Inside Containment☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_☐ Blank Activity: \_\_\_\_\_ Resp. Prot.: Air line

Pump #: \_\_\_\_\_ Pre Cal \_\_\_\_\_ Time On 10:08  
Post Cal \_\_\_\_\_ Time Off 16:53  
Flow 90 Lpm X Minutes 405 = 571. CF

Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: S. White, R. Hawyn

=====

\_\_\_\_\_ SAMPLE NUMBER RESULTS: \_\_\_\_\_

Sample Type:

☐ Area Exact Location: \_\_\_\_\_☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_☐ Blank Activity: \_\_\_\_\_ Resp. Prot.: \_\_\_\_\_

Pump #: \_\_\_\_\_ Pre Cal \_\_\_\_\_ Time On \_\_\_\_\_  
Post Cal \_\_\_\_\_ Time Off \_\_\_\_\_  
Flow \_\_\_\_\_ X Minutes \_\_\_\_\_ = \_\_\_\_\_

Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: \_\_\_\_\_

GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

Location: Taylor Hall Rm 131 Inside Containment RHC Sample No.: 04

Sample Taken By: R. Maddox

Sampler Serial No.: \_\_\_\_\_

SAMPLE COLLECTION DATA

Filter Type: 47MM

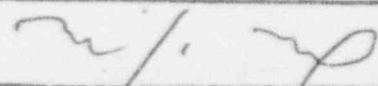
	Date	Time	Flow Rate (cfm)
Off	11-16-92	1653	40 Lpm 1.41
On	11-16-92	1008	40 Lpm 1.41

Sample Duration X Avg. Flow Rate      Sample Volume  
405 min X 1.41 cfm = 571. ft.

Counter ID: 2404

COUNTING DATA	$\alpha$	ALPHA		$\beta$	BETA	
Counting Date/Time	11-18/1024	11-19/0906		11-18/1024	11-19/0906	
Hours from End of Sampling	42	65		42	65	
Gross Counts	686	168		1648	383	
Sample Count Time (min)	20	20		20	20	
Gross cpm	34.3	8.4		82.4	19.2	
Background Counts	19	8		77	76	
Background Count Time (min)	60	60		60	60	
Background cpm	.3	.13		1.29	1.3	
Alpha Crosstalk cpm	0	0	0	0	0	
Net cpm	34.14	8.25		74.82	16.75	
Counter Efficiency (fract.)	.21	.21		.21	.21	
Filter Correction Factor	0.85	0.85	0.85	0.95	0.95	0.95
Volume (ft <sup>3</sup> )	571.	571		571.	571	
Activity (uCi/ml)	5.3E-12	1.3E-12		1.13E-11	2.5E-12	
Counting Error (uCi/ml)	$\pm 4.0E-13$	2.0E-13	$\pm$	5.6E-13	2.7E-13	
MDA (uCi/ml)	8.2E-14	8.2E-14		1.4E-13	1.4E-13	

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

  
 Technician 11-18-92  
 Date

PROGRAM # 4  
PRESET COUNT: 999999 BETA  
PSET TIME (M): 20.00  
HIGH VOLTAGE: 1500  
DISC WINDOW: 1000  
START SAMPLE: 1  
STOP SAMPLE: 50  
ERROR (SIGMA): 1.96  
REPEAT #: 0  
A EFFIC (%): 21.00  
A CROSTLK (%): 20.00  
A BKGND (CPM): 15  
B EFFIC (%): 20.00  
B BKGND (CPM): 75  
BKGD TIME (M): 20.00  
VOL(EA): 1.00  
ALARM (dpm/V): 9999.00  
USER EQUATION:

SAMPLE #: 104 TIME (M): 20.00 TIME: 09:06:37 DATE: NOV 19, 1992  
ALPHA GROSS: 168 NET: 8.25 +/- 1.27 dpm: 39.28 +/- 6.04  
BETA GROSS: 383 NET: 16.75 +/- 1.85 dpm: 83.75 +/- 9.25  
GAMMA GROSS: 0 C FACTOR: 1.0000



## ATTACHMENT I

## AIR MONITORING

Date: 11-17-92 Building: Taylor Hall #131 Area: Inside Containment  
Job Description: Chip Concrete

Contaminant: C069 CS-137 Collection Media: 47 mm Collector: RM Lot #: \_\_\_\_\_

=====

05 SAMPLE NUMBER RESULTS: see attached sheets

Sample Type:

☒ Area

☐ Personal

☐ Blank

Exact Location: Inside Containment - on ledge

Name: \_\_\_\_\_ SSN: \_\_\_\_\_

Activity: \_\_\_\_\_ Resp. Prot.: Airline

Pump #: \_\_\_\_\_

Pre Cal 40

Time On 0740

Post Cal 30

Time Off 1700

Flow 40 LPM

X

Minutes 560

= 789.6 CF

Sampler: \_\_\_\_\_

Volume

Other Personnel in Area: R. Hawn, S. White

=====

\_\_\_\_\_ SAMPLE NUMBER RESULTS: \_\_\_\_\_

Sample Type:

☐ Area

☐ Personal

☐ Blank

Exact Location: \_\_\_\_\_

Name: \_\_\_\_\_ SSN: \_\_\_\_\_

Activity: \_\_\_\_\_ Resp. Prot.: \_\_\_\_\_

Pump #: \_\_\_\_\_

Pre Cal \_\_\_\_\_

Time On \_\_\_\_\_

Post Cal \_\_\_\_\_

Time Off \_\_\_\_\_

Flow \_\_\_\_\_

X

Minutes \_\_\_\_\_

=

Volume

Sampler: \_\_\_\_\_

Other Personnel in Area: \_\_\_\_\_

GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

Location: Taylor Hall RM131 Inside Containment RMC Sample No.: 05

Sample Taken By: R. Maddox

Sampler Serial No.: \_\_\_\_\_

SAMPLE COLLECTION DATA

Filter Type: 47mm

	Date	Time	Flow Rate (cfm)
Off	11-17-92	1700	40 LPM 1.41
On	11-17-92	0740	40 LPM 1.41

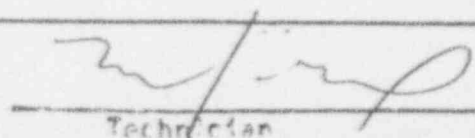
Sample Duration X Avg. Flow Rate      Sample Volume

560 min X 1.41 cfm = 789.6 ft.

Counter ID: 2404

COUNTING DATA	$\alpha$ ALPHA		$\beta$ BETA		
Counting Date/Time	11-18/1451	11-24 0804	11-18/14:51	11-24 08:04	
Hours from End of Sampling	22	159	22	159	
Gross Counts	326	8	2372	81	
Sample Count Time (min)	20	20	20	20	
Gross cpm	16.3	.4	118.6	4.1	
Background Counts	19	—	77	—	
Background Count Time (min)	60	60	60	60	
Background cpm	.3	—	1.29	—	
Alpha Crosstalk cpm	0	0	0		
Net cpm	16.15	.25	114.62	3.25	
Counter Efficiency (fract.)	.21	.21	.21	.21	
Filter Correction Factor	0.85	0.85	0.95	0.95	0.95
Volume (ft <sup>3</sup> )	789.6	—	789.6	—	
Activity (uCi/ml)	1.8E-12	9.4E-15	1.2E-11	2.7E-13	
Counting Error (uCi/ml)	± 2.0E-13	3.5E-14	± 4.8E-13	9.4E-14	
MNA (uCi/ml)	5.9E-14	—	1.0E-13	—	

Comments: \_\_\_\_\_


 11-18-92  
 Technician      Date

BETA GROSS 43  
GAMMA GROSS 0

NET 1.35 +/- 0.3  
C FACTOR 1.0000

dpm 0.75 +/- 0.10

counted on:  
11-24-92

PROGRAM #: 4  
PRESET COUNT: 999999 BETA  
PSET TIME (M): 20.00  
HIGH VOLTAGE: 1500.  
DISC WINDOW: 1000  
START SAMPLE: 1  
STOP SAMPLE: 50  
ERROR (SIGMA): 1.96  
REPEAT #: 0  
A EFFIC (%): 21.00  
A CROSTLK (%): 20.00  
A BKGND (CPM): 15  
B EFFIC (%): 20.00  
B BKGND (CPM): 75  
BKGD TIME (M): 20.00  
VOL(EA): 1.00  
ALARM (dpm/V): 99999.00  
USER EQUATION:

SAMPLE # T.05 TIME (M): 20.00 TIME: 08:04:40 DATE: NOV 24, 1992  
ALPHA GROSS: 8 NET: .25 +/- .27 dpm: 1.19 +/- 1.31  
BETA GROSS: 81 NET: 3.25 +/- .87 dpm: 16.25 +/- 4.39  
GAMMA GROSS: 0 C FACTOR: 1.0000



counted on:  
11-24-92

## ATTACHMENT I

## AIR MONITORING

Date: 11-18-92 Building: Taylor Hall 131 Area: Inside Containment

Job Description: \_\_\_\_\_

Contaminant: \_\_\_\_\_ Collection Media: \_\_\_\_\_ Collector: RM Lot #: \_\_\_\_\_

=====

06

SAMPLE NUMBER

RESULTS: See attached sheets

Sample Type:

☒ Area Exact Location: Inside Containment☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_☐ Blank Activity: \_\_\_\_\_ Resp. Prot.: \_\_\_\_\_Pump #: \_\_\_\_\_ Pre Cal 40 Lpm Time On 0922Post Cal 40 " Time Off 1220Flow 40 " X Minutes 180 = 253.8 cu ft.

Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: R. Hawy, S. White

=====

SAMPLE NUMBER

RESULTS: \_\_\_\_\_

Sample Type:

☐ Area Exact Location: \_\_\_\_\_☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_☐ Blank Activity: \_\_\_\_\_ Resp. Prot.: \_\_\_\_\_

Pump #: \_\_\_\_\_ Pre Cal \_\_\_\_\_ Time On \_\_\_\_\_

Post Cal \_\_\_\_\_ Time Off \_\_\_\_\_

Flow \_\_\_\_\_ X Minutes \_\_\_\_\_ = \_\_\_\_\_

Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: \_\_\_\_\_

GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

Location: Taylor Hall - Rm 131 Inside containment RMC Sample No.: 06

Sample Taken By: R. Maddox

Sampler Serial No.: \_\_\_\_\_

SAMPLE COLLECTION DATA

Filter Type: 47mm

	Date	Time	Flow Rate (cfm)
Off	11-18-92	1220	40 Lpm 1.41
On	11-18-92	0920	40 Lpm 1.41

Sample Duration X Avg. Flow Rate      Sample Volume

180 min X 1.41 cfm = 253.8 ft.

Counter ID: 2404

COUNTING DATA	<input checked="" type="checkbox"/> ALPHA	<input type="checkbox"/> BETA
Counting Date/Time	11-24 0825	11-24 0825
Hours from End of Sampling	140	140
Gross Counts	8	43
Sample Count Time (min)	20	20
Gross cpm	.4	2.15
Background Counts	19	77
Background Count Time (min)	60	60
Background cpm	.3	1.29
Alpha Crosstalk cpm	0	0
Net cpm	.25	1.35
Counter Efficiency (fract.)	.21	.21
Filter Correction Factor	0.85	0.85
Volume (ft <sup>3</sup> )	253.8	253.8
Activity (uCi/ml)	2.9E-14	2.5E-13
Counting Error (uCi/ml)	$\pm 1.1E-13$	$\pm 2.2E-13$
MDA (uCi/ml)	1.8E-13	3.2E-13

Comments: \_\_\_\_\_

Technician

Date

11-24-92

## ATTACHMENT I

## AIR MONITORING

Date: 11-24-92 Building: Taylor Hall #131 Area: Inside Containment  
Job Description: Remove Concrete Rubble - break Concrete  
Contaminant: Co-60, Cs-137 Collection Media: 47MM Collector: RM Lot #: \_\_\_\_\_

=====

07 SAMPLE NUMBER RESULTS: see attached sheet

Sample Type:

☒ Area Exact Location: Inside Containment  
☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_  
Activity: \_\_\_\_\_ Resp. Prot.: \_\_\_\_\_  
☐ Blank

Pump #: \_\_\_\_\_ Pre Cal \_\_\_\_\_ Time On 0730  
Post Cal \_\_\_\_\_ Time Off 1230  
Flow 40 LPM X Minutes \_\_\_\_\_ = \_\_\_\_\_  
Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: R. Hawn, S. White

=====

\_\_\_\_\_ SAMPLE NUMBER RESULTS: \_\_\_\_\_

Sample Type:

☐ Area Exact Location: \_\_\_\_\_  
☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_  
Activity: \_\_\_\_\_ Resp. Prot.: \_\_\_\_\_  
☐ Blank

Pump #: \_\_\_\_\_ Pre Cal \_\_\_\_\_ Time On \_\_\_\_\_  
Post Cal \_\_\_\_\_ Time Off \_\_\_\_\_  
Flow \_\_\_\_\_ X Minutes \_\_\_\_\_ = \_\_\_\_\_  
Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: \_\_\_\_\_

GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

Location: Taylor Hall Rm 131 Inside Containment RMC Sample No.: 07

Sample Taken By: R.M.

Sampler Serial No.: \_\_\_\_\_

SAMPLE COLLECTION DATA

Filter Type: 47mm

	Date	Time	Flow Rate (cfm)
Off	11-24-92	1230	40 Lpm 1.41
On	11-24-92	0730	40 Lpm 1.41

Sample Duration X Avg. Flow Rate      Sample Volume

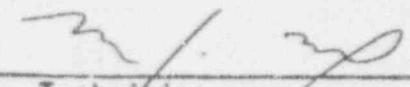
300 min X 1.41 cfm = 423 ft.

Counter ID: 2404

COUNTING DATA	$\alpha$ ALPHA		$\beta$ BETA		
Counting Date/Time	11/30 1145		11/30 1145		
Hours from End of Sampling	143		143		
Gross Counts	8		43		
Sample Count Time (min)	20		20		
Gross cpm	.4		2.15		
Background Counts	7		63		
Background Count Time (min)	60		60		
Background cpm	.12		1.1		
Alpha Crosstalk cpm	0	0	0		
Net cpm	.28		1.1		
Counter Efficiency (fract.)	.21		.21		
Filter Correction Factor	0.85	0.85	0.95	0.95	0.95
Volume (ft <sup>3</sup> )	423		423		
Activity (uCi/ml)	1.8E-14		1.5E-13		
Counting Error (uCi/ml)	$\pm 6.7E-14$		$\pm 1.3E-13$		
MDA (uCi/ml)	1.1E-13		1.9E-13		

Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_


11/30/92  
 Technician Date

PROGRAM #:4  
 PRESET COUNT:999999 BETA  
 PSET TIME (M):20.00  
 HIGH VOLTAGE:1500  
 DISC WINDOW:1000  
 START SAMPLE:1  
 STOP SAMPLE:50  
 ERROR (SIGMA):1.96  
 REPEAT #:0  
 A EFFIC (%):21.00  
 A CROSTLK (%):20.00  
 A BKGND (CPM):15  
 B EFFIC (%):20.00  
 B BKGND (CPM):75  
 BKGD TIME (M):20.00  
 VOL(EA):1.00  
 ALARM (dpm/V):99999.00  
 USER EQUATION:

SAMPLE #:1	TIME (M):20.00	TIME:11:45:28	DATE:NOV 30,1992
ALPHA GROSS: 8	NET: .25	+/- .27	dpm: 1.19 +/-1.31
BETA GROSS: 43	NET: 1.35	+/- .63	dpm: 6.75 +/-3.18
GAMMA GROSS: 0	C FACTOR:1.000u		

## ATTACHMENT I

## AIR MONITORING

Date: 11-30-92 Building: RM 131 Taylor Hall Area: Inside Containment  
Job Description: Break out concrete  
Contaminant: Cs-137, Co-60 Collection Media: 47 mm Collector: RM Lot #: \_\_\_\_\_

=====

08 SAMPLE NUMBER RESULTS: See attached sheet

Sample Type:

☒ Area Exact Location: Inside Containment

☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_

☐ Blank Activity: \_\_\_\_\_ Resp. Prot.: Air line

Pump #: \_\_\_\_\_ Pre Cal \_\_\_\_\_ Time On 0721

Post Cal \_\_\_\_\_ Time Off 1630

Flow 70 LPM X Minutes \_\_\_\_\_ = 746 cu ft.

Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: \_\_\_\_\_

=====

\_\_\_\_\_ SAMPLE NUMBER RESULTS: \_\_\_\_\_

Sample Type:

☐ Area Exact Location: \_\_\_\_\_

☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_

☐ Blank Activity: \_\_\_\_\_ Resp. Prot.: \_\_\_\_\_

Pump #: \_\_\_\_\_ Pre Cal \_\_\_\_\_ Time On \_\_\_\_\_

Post Cal \_\_\_\_\_ Time Off \_\_\_\_\_

Flow \_\_\_\_\_ X Minutes \_\_\_\_\_ = \_\_\_\_\_

Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: \_\_\_\_\_



GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

Location: RM 131 - Taylor Hall - Inside Containment RMC Sample No.: 08

Sample Taken By: R. M.

Sampler Serial No.: —

SAMPLE COLLECTION DATA

Filter Type: 47mm

	Date	Time	Flow Rate (cfm)
Off	11-30-92	1630	40 Lpm 1.41
On	11-30-92	0721	40 Lpm 1.41

Sample Duration X Avg. Flow Rate      Sample Volume

529 min X 1.41 cfm = 746 ft.

Counter ID: 2404

COUNTING DATA	$\alpha$ ALPHA			$\beta$ BETA		
Counting Date/Time	12-3 /035			12-3 /035		
Hours from End of Sampling	66			66		
Gross Counts	100			248		
Sample Count Time (min)	20			20		
Gross cpm	5.0			12.4		
Background Counts	10			73		
Background Count Time (min)	60			60		
Background cpm	.17			1.2		
Alpha Crosstalk cpm	0	0	0	0		
Net cpm	4.8			11.2		
Counter Efficiency (fract.)	.21			.21		
Filter Correction Factor	0.85	0.85	0.85	0.95	0.95	0.95
Volume (ft <sup>3</sup> )	746			746		
Activity (uCi/ml)	5.6 E <sup>-13</sup>			1.18 E <sup>-12</sup>		
Counting Error (uCi/ml)	$\pm$ 3.3 E <sup>-13</sup>			$\pm$ 1.7 E <sup>-13</sup>		
MDA (uCi/ml)	6.2 E <sup>-14</sup>			1.1 E <sup>-13</sup>		

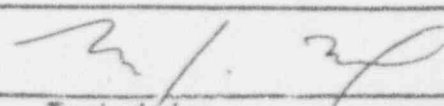
Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

  
 Technician 12/3/92  
 Date

PROGRAM # 4  
 PRESET COUNT: 999999 BETA  
 PSET TIME (M): 20.00  
 HIGH VOLTAGE: 1500  
 DISC WINDOW: 1000  
 START SAMPLE: 1  
 STOP SAMPLE: 50  
 ERROR (SIGMA): 1.96  
 REPEAT # 0  
 A EFFIC (%): 21.00  
 A CROSTLK (%): 20.00  
 A BKGND (CPM): 15  
 B EFFIC (%): 20.00  
 B BKGND (CPM): 25  
 BKGD TIME (M): 20.00  
 VOL/EA: 1.00  
 ALARM (dpm/V): 99999.00  
 USER EQUATION:

SAMPLE # 1	TIME (M): 20.00	TIME: 10:35:39	DATE: DEC 03, 1992
ALPHA GROSS: 100	NET: 4.85	+/- 98	dpm: 23.09 +/- 4.66
BETA GROSS: 248	NET: 10.67	+/- 1.49	dpm: 53.39 +/- 7.47
GAMMA GROSS: 0	C FACTOR: 1.0000		

## ATTACHMENT I

## AIR MONITORING

Date: 12-1-92 Building: Taylor Hall RM 131 Area: Inside Containment  
Job Description: Remove Concrete, Chip concrete walls and floor  
Contaminant: G-137, Co-60 Collection Media: 47MM Collector: RM Lot #: \_\_\_\_\_

=====

09 SAMPLE NUMBER RESULTS: \_\_\_\_\_

Sample Type:

☒ Area Exact Location: Inside Containment  
☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_  
Activity: \_\_\_\_\_ Resp. Prot.: Air line  
☐ Blank

Pump #: \_\_\_\_\_ Pre Cal \_\_\_\_\_ Time On 0745  
Post Cal \_\_\_\_\_ Time Off 1515  
Flow 40 Lpm X Minutes \_\_\_\_\_ = \_\_\_\_\_  
Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: R. Hawn, S. White, R. Maddox

=====

\_\_\_\_\_ SAMPLE NUMBER RESULTS: \_\_\_\_\_

Sample Type:

☐ Area Exact Location: \_\_\_\_\_  
☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_  
Activity: \_\_\_\_\_ Resp. Prot.: \_\_\_\_\_  
☐ Blank

Pump #: \_\_\_\_\_ Pre Cal \_\_\_\_\_ Time On \_\_\_\_\_  
Post Cal \_\_\_\_\_ Time Off \_\_\_\_\_  
Flow \_\_\_\_\_ X Minutes \_\_\_\_\_ = \_\_\_\_\_  
Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: \_\_\_\_\_

GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

Location: RM 131 - Taylor Hall - Inside Container RNC Sample No.: 09

Sample Taken By: R.M.

Sampler Serial No.: \_\_\_\_\_

SAMPLE COLLECTION DATA

Filter Type: 47mm

	Date	Time	Flow Rate (cfm)
Off	12-1-92	1515	40 Lpm 1.41
On	12-1-92	0745	40 Lpm 1.41

Sample Duration X Avg. Flow Rate      Sample Volume

$$420 \text{ min} \times 1.41 \text{ cfm} = 592 \text{ ft.}$$

Counter ID: 2404

COUNTING DATA	$\alpha$	ALPHA		$\beta$	BETA	
Counting Date/Time	12-7 10:19			12-7 10:19		
Hours from End of Sampling	139			139		
Gross Counts	9			58		
Sample Count Time (min)	20			20		
Gross cpm	.45			2.9		
Background Counts	10			73		
Background Count Time (min)	60			60		
Background cpm	.17			1.2		
Alpha Crosstalk cpm	0	0	0	0		
Net cpm	.3			1.7		
Counter Efficiency (fract.)	.21			.21		
Filter Correction Factor	0.85	0.85	0.85	0.95	0.95	0.95
Volume (ft <sup>3</sup> )	592			592		
Activity (uCi/ml)	2.0E-14			2.1E-13		
Counting Error (uCi/ml)	$\pm$ 4.9E-14			$\pm$ 1.1E-13		
MDA (uCi/ml)	7.9E-14			1.4E-13		

Comments: \_\_\_\_\_

## Technician

724

PROGRAM #: 4  
 PRESET COUNT: 999999 BETA  
 PSET TIME (M): 20.00  
 HIGH VOLTAGE: 1500  
 DISC WINDOW: 1000  
 START SAMPLE: 1  
 STOP SAMPLE: 50  
 ERROR (SIGMA): 1.96  
 REPEAT #: 0  
 A EFFIC (%): 21.00  
 A CROSTLK (%): 20.00  
 A BKEND (CPM): 15  
 B EFFIC (%): 20.00  
 B BKEND (CPM): 75  
 BKGD TIME (M): 20.00  
 VOL(EA): 1.00  
 ALARM (dpm/V): 99999.00  
 USER EQUATION:

SAMPLE ~~T~~ #9 TIME (M): 20.00 TIME: 10:19:36 DATE: DEC 07, 1992  
 ALPHA GROSS: 9 NET: 29 +/- 29 dpm: 1.42 +/- 1.40  
 BETA GROSS: 58 NET: 2.09 +/- .74 dpm: 10.45 +/- 3.70  
 GROSS: 0 C FACTOR: 1.0000

## ATTACHMENT I

## AIR MONITORING

Date: 12-2-92 Building: Taylor Hall #131 Area: Inside ContainmentJob Description: Chop concrete floorContaminant: Cs-137, Co-60 Collection Media: 47mm Collector: RM Lot #: EU-152

=====

# 10

SAMPLE NUMBER

RESULTS: \_\_\_\_\_

Sample Type:

☒ AreaExact Location: Inside Containment Rm 131☐ Personal

Name: \_\_\_\_\_ SSN: \_\_\_\_\_

Activity: \_\_\_\_\_ Resp. Prot.: Air line☐ Blank

Pump #: \_\_\_\_\_

Pre Cal \_\_\_\_\_

Time On 0830

Post Cal \_\_\_\_\_

Time Off 1500Flow 40 Lpm X

Minutes \_\_\_\_\_

Volume \_\_\_\_\_

Sampler: \_\_\_\_\_

Other Personnel in Area: \_\_\_\_\_

=====

SAMPLE NUMBER

RESULTS: \_\_\_\_\_

Sample Type:

☐ Area

Exact Location: \_\_\_\_\_

☐ Personal

Name: \_\_\_\_\_ SSN: \_\_\_\_\_

Activity: \_\_\_\_\_ Resp. Prot.: \_\_\_\_\_

☐ Blank

Pump #: \_\_\_\_\_

Pre Cal \_\_\_\_\_

Time On \_\_\_\_\_

Post Cal \_\_\_\_\_

Time Off \_\_\_\_\_

Flow \_\_\_\_\_ X

Minutes \_\_\_\_\_

Volume \_\_\_\_\_

Sampler: \_\_\_\_\_

Other Personnel in Area: \_\_\_\_\_



GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

Location: Taylor Hall Rm 131 Inside Containment RMC Sample No.: 10

Sample Taken By: R. Maddox

Sampler Serial No.: -

SAMPLE COLLECTION DATA

Filter Type: 47mm

	Date	Time	Flow Rate (cfm)
Off	12-2-92	1500	40 Lpm 1.41
On	12-2-92	0830	40 Lpm 1.41

Sample Duration X Avg. Flow Rate      Sample Volume  
390 min X 1.41 cfm = 550 ft.

Counter ID: 2404

COUNTING DATA	$\alpha$ ALPHA	$\beta$ BETA
Counting Date/Time	12-7 10:40	12-7 10:40
Hours from End of Sampling		
Gross Counts	8	45
Sample Count Time (min)	20	20
Gross cpm	.4	2.3
Background Counts	10	73
Background Count Time (min)	60	60
Background cpm	.17	1.2
Alpha Crosstalk cpm	0	0
Net cpm	.23	1.1
Counter Efficiency (fract.)	.21	.21
Filter Correction Factor	0.85	0.95
Volume (ft <sup>3</sup> )	550	550
Activity (uCi/ml)	1.3 E-14	1.3 E-13
Counting Error (uCi/ml)	$\pm$ 5.0 E-14	$\pm$ 1.0 E-13
MDA (uCi/ml)	8.5 E-14	1.5 E-13

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Technician [Signature]

12-7-92

Date



## ATTACHMENT I

## AIR MONITORING

Date: 12-4-92 Building: Taylor Hall Area: Rm 131  
Job Description: Remove Containment tent - Pull Source Tubes  
Contaminant: \_\_\_\_\_ Collection Media: 47mm Collector: RM Lot #: \_\_\_\_\_

=====

# 11 SAMPLE NUMBER RESULTS: \_\_\_\_\_

Sample Type:

☒ Area Exact Location: East Wall near entry Foyer  
☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_  
Activity: \_\_\_\_\_ Resp. Prot.: NONE REQUIRED  
☐ Blank

Pump #: \_\_\_\_\_ Pre Cal \_\_\_\_\_ Time On 0820  
Post Cal \_\_\_\_\_ Time Off 1625  
Flow 40 Lpm X Minutes \_\_\_\_\_ = \_\_\_\_\_

Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: R. Hawn, S. White, R. Miller, R. Maddox

=====

SAMPLE NUMBER RESULTS: \_\_\_\_\_

Sample Type:

☐ Area Exact Location: \_\_\_\_\_  
☐ Personal Name: \_\_\_\_\_ SSN: \_\_\_\_\_  
Activity: \_\_\_\_\_ Resp. Prot.: \_\_\_\_\_  
☐ Blank

Pump #: \_\_\_\_\_ Pre Cal \_\_\_\_\_ Time On \_\_\_\_\_  
Post Cal \_\_\_\_\_ Time Off \_\_\_\_\_  
Flow \_\_\_\_\_ X Minutes \_\_\_\_\_ = \_\_\_\_\_

Sampler: \_\_\_\_\_ Volume

Other Personnel in Area: \_\_\_\_\_

GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

Location: Taylor Hall RM 131

RMC Sample No.: 11

Sample Taken By: R. Maddox

Sampler Serial No.: \_\_\_\_\_

SAMPLE COLLECTION DATA

Filter Type: 47mm

	Date	Time	Flow Rate (cfm)
Off	12-4-92	1625	40 Lpm (1.41)
On	12-4-92	0820	40 Lpm (1.41)

Sample Duration X Avg. Flow Rate      Sample Volume

480 min X 1.41 cfm = 677 ft.

Counter ID: 2404

COUNTING DATA	$\alpha$ ALPHA	$\beta$ BETA
Counting Date/Time	12-11/1216	12-11/1216
Hours from End of Sampling	164	164
Gross Counts	7	49
Sample Count Time (min)	20	20
Gross cpm	35	2.45
Background Counts	16	66
Background Count Time (min)	60	60
Background cpm	3	1.1
Alpha Crosstalk cpm	0	0
Net cpm	0.05	1.35
Counter Efficiency (fract.)	0.21	0.21
Filter Correction Factor	0.85	0.95
Volume (ft <sup>3</sup> )	677	677
Activity (uCi/ml)	4.9E-15	1.3E-13
Counting Error (uCi/ml)	$\pm 3.9E-14$	$\pm 8.8E-14$
MDA (uCi/ml)	6.9E-14	1.2E-13

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Technician

12-11-92

Date

## ATTACHMENT I

## AIR MONITORING

Date: 12-7-92 Building: Taylor Hall RM 131 Area: East WallJob Description: De mobilizeContaminant:        Collection Media: 47mm Collector: RM Lot #:       

=====

# 12 SAMPLE NUMBER RESULTS:       

Sample Type:

       Area Exact Location: Taylor Hall RM 131       Personal Name:        SSN:              Activity:        Resp. Prot.: NONE       BlankPump #:        Pre Cal        Time On 0800Post Cal        Time Off 1500Flow 40 Lpm X Minutes        =       Sampler:        VolumeOther Personnel in Area: R. Hawn, R. Maddox, S. White, R. Miller

=====

SAMPLE NUMBER RESULTS:       

Sample Type:

       Area Exact Location:              Personal Name:        SSN:              Activity:        Resp. Prot.:              BlankPump #:        Pre Cal        Time On       Post Cal        Time Off       Flow        X Minutes        =       Sampler:        VolumeOther Personnel in Area:

GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

Location: Taylor Hall Rm 131

RMC Sample No.: 12

Sample Taken By: R. Maddox

Sampler Serial No.: —

SAMPLE COLLECTION DATA

Filter Type: 47mm

	Date	Time	Flow Rate (cfm)
Off	12-7-92	1500	40 Lpm (1.41)
On	12-7-92	0800	40 Lpm (1.41)

Sample Duration X Avg. Flow Rate      Sample Volume

420 min X 1.41 cfm = 592 ft.

Counter ID: 2404

COUNTING DATA	ALPHA			BETA		
Counting Date/Time	12-11-92			12-11-92		
Hours from End of Sampling	93.5			93.5		
Gross Counts	3			42		
Sample Count Time (min)	20			20		
Gross cpm	15			2.1		
Background Counts	16			66		
Background Count Time (min)	60			60		
Background cpm	3			1.1		
Alpha Crosstalk cpm	0	0	0	0		
Net cpm	0			1.0		
Counter Efficiency (fract.)	.21			.21		
Filter Correction Factor	0.85	0.85	0.85	0.95	0.95	0.95
Volume (ft <sup>3</sup> )	592			592		
Activity (uCi/ml)	< MDA			9.9E-14		
Counting Error (uCi/ml)	±			± 9.4E-14		
MDA (uCi/ml)	7.8E-14			1.4E-14		

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Technician

12-11-92

Page

## ATTACHMENT I

## AIR MONITORING

Date: 12-8-92 Building: Taylor Hall 131 Area: RM 131 E.Job Description: Clean up - generalContaminant: — Collection Media: 47MM Collector: RM Lot #: —

=====

# 13 SAMPLE NUMBER RESULTS: —

Sample Type:

☒ Area Exact Location: S.E. Room☐ Personal Name: — SSN: —Activity: — Resp. Prot.: NONE☐ BlankPump #: — Pre Cal — Time On 0730Post Cal — Time Off 1330Flow 40 Lpm X Minutes — = —Sampler: — VolumeOther Personnel in Area: R. Hawn, S. White, R. Maddox, R. Miller

=====

SAMPLE NUMBER RESULTS: —

Sample Type:

☐ Area Exact Location: —☐ Personal Name: — SSN: —Activity: — Resp. Prot.: —☐ BlankPump #: — Pre Cal — Time On —Post Cal — Time Off —Flow — X Minutes — = —Sampler: — VolumeOther Personnel in Area: —

GROSS ALPHA/BETA ANALYSIS OF AIR PARTICULATES  
ANALYSIS DATA SHEET

Location: Taylor Hall Rm 131 RMC Sample No.: 13  
 Sample Taken By: R. Maddox  
 Sampler Serial No.:       

Filter Type: 47mm

SAMPLE COLLECTION DATA

	Date	Time	Flow Rate (cfm)
Off	12-8-92	1330	40 Lpm (1.41)
On	12-8-92	0730	40 Lpm (1.41)

Sample Duration X Avg. Flow Rate      Sample Volume  
360 min X 1.41 cfm = 507.6 ft.

Counter ID:       

COUNTING DATA	$\alpha$ ALPHA	$\beta$ BETA
Counting Date/Time	12-11/1257	12-11/12:57
Hours from End of Sampling	72	72
Gross Counts	11	70
Sample Count Time (min)	20	20
Gross cpm	1.55	3.5
Background Counts	16	66
Background Count Time (min)	60	60
Background cpm	.3	1.1
Alpha Crosstalk cpm	0	0
Net cpm	.25	2.4
Counter Efficiency (fract.)	.21	.21
Filter Correction Factor	0.85	0.95
Volume (ft <sup>3</sup> )	507.6	507.6
Activity (uCi/ml)	<del>6.2E-14</del> 9.1E-14	3.4E-13
Counting Error (uCi/ml)	$\pm 6.2E-14$	$\pm 1.4E-13$
MDA (uCi/ml)	9.2E-14	1.6E-13

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Technician

12-11-92  
Date



PROGRAM # 4  
 THRESHOLD COUNT: 999999 ELTA  
 PSET TIME (M): 20.00  
 HIGH VOLTAGE: 1500  
 DISC WINDOW: 1000  
 START SAMPLE: 1  
 STOP SAMPLE: 50  
 ERROR (SIGMA): 1.96  
 REPEAT #: 0  
 A EFFIC (%): 21.00  
 A CROSSLK (%): 20.00  
 A BKEND (CFM): 15  
 B EFFIC (%): 20.00  
 B BKEND (CFM): 25  
 BEGD TIME (M): 20.00  
 VOL (CA): 1.00  
 ALARM (dpm/V): 99999.00  
 USER EQUATION:

SAMPLE ~~#1~~ #11 TIME (M): 20.00 TIME: 12:16:59 DATE: DEC 11, 1992  
 ALPHA GROSS: 7 NET: 19 +/- 25 dpm: 95 +/- 1.23  
 BETA GROSS: 49 NET: 1.66 +/- .68 dpm: 8.30 +/- 3.41  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~#2~~ #12 TIME (M): 20.00 TIME: 12:37:23 DATE: DEC 11, 1992  
 ALPHA GROSS: 3 NET: 0 +/- 16 dpm: 0 +/- .80  
 BETA GROSS: 42 NET: 1.34 +/- .63 dpm: 6.74 +/- 3.18  
 GAMMA GROSS: 0 C FACTOR: 1.0000

SAMPLE ~~#3~~ #13 TIME (M): 20.00 TIME: 12:57:47 DATE: DEC 11, 1992  
 ALPHA GROSS: 11 NET: 40 +/- 32 dpm: 1.90 +/- 1.54  
 BETA GROSS: 70 NET: 2.67 +/- .81 dpm: 13.35 +/- 4.06  
 GAMMA GROSS: 0 C FACTOR: 1.0000



ATTACHMENT G  
DAILY EFFICIENCY CHECK

Scaler

Model # 3

Model # 44-9

Calibration Date: 10-29-92

-Model # 20138

Serial # 094014

Source Name: Sr Y 90

Serial

Source Strength 7150 dpm

Serial # SR-090-01

DATE	TIME	BATT CK.	AUDIO CK.	SOURCE (Gross Counts)	TECH INT.	REMARK
11-9-92	0745	OK	OK	2600	RM	
11-10-92	0740	OK	OK	2500	RM	
11-11-92	0719	OK	OK	2400	RM	
11-12-92	0840	OK	OK	2400	RM	
11-13-92	0715	OK	OK	2300	RM	
11-16-92	0755	OK	OK	2300	RM	
11-17-92	0728	OK	OK	2300	RM	
11-18-92	0752	OK	OK	2300	RM	
11-19-92	0749	OK	OK	2300	RM	
11-20-92	0710	OK	OK	2300	RM.	
11-23-92	0710	OK	OK	2300	RM.	
11-24-92	0721	OK	OK	2300	RM	
11-25-92	0725	OK	OK	2300	RM	
11-30	0712	OK	OK	2300	RM	

ATTACHMENT G  
DAILY EFFICIENCY CHECK

Scaler

Model # 3

Model # 44-9

Calibration Date: 10-29-92

~~Model # 20138~~

Serial # 094014

Source Name: SrY 90

Serial

Source Strength 7150 dpm

Serial # SR-090-01

DATE	TIME	BATT CK.	AUDIO CK.	SOURCE (Gross Counts)	TECH INT.	REMARK
12/1/92	0739	OK	OK	2200	RM	
12/2	0819	OK	OK	2200	RM	
12/3	0738	OK	OK	2200	RM	
12/4	0720	OK	OK	2200	RM	
12/7	0723	OK	OK	2200	RM	
12/8	0729	OK	OK	2200	RM	
12/9	0715	OK	OK	2200	RM	
<del>12/10</del>	<del>0700</del>	<del>OK</del>	<del>OK</del>	<del>2200</del>	<del>RM</del>	

ATTACHMENT G  
DAILY EFFICIENCY CHECK

Scaler

Model # 3

Model # 44-9

Calibration Date: 10-29-92

Model # 27866

Serial # 094004

Source Name: SrY 90

Serial

Source Strength 7150 dpm

Serial # SR 090 01

DATE	TIME	BATT CK.	AUDIO CK.	SOURCE (Gross Counts)	TECH INT.	REMARK
11-9-92	0748	OK	OK	2200	RM	
11-10-92	0732	OK	OK	2300	RM	
11-11-92	0716	OK	OK	2200	RM	
11-12-92	0840	OK	OK	2200	RM	
11-13-92	0718	OK	OK	2200	RM	
11-16-92	0802	OK	OK	2200	RM	
11-17-92	0730	OK	OK	2200	RM	
11-18-92	0755	OK	OK	2200	RM	
11-19-92	0751	OK	OK	2200	RM	
11-20-92	0715	OK	OK	2200	RM	
11-23-92	0710	OK	OK	2300	RM	
11-24-92	0720	OK	OK	2300	RM	
11-25-92	0724	OK	OK	2200	RM	
11-30	0714	OK	OK	2300	RM	

ATTACHMENT G  
DAILY EFFICIENCY CHECK

Scaler

Model # 3

Model # 44-9

Calibration Date: 10-29-92

~~Model # 27866~~

Serial # 094004

Source Name: SR-90

serial

Source Strength 7150 dpm

Serial # SR-090-01

DATE	TIME	BATT CK.	AUDIO CK.	SOURCE (Gross Counts)	TECH INT.	REMARK
12/1	0735	OK	OK	2200	RM	
12/2	0820	OK	OK	2200	RM	
12/3	0740	OK	OK	2300	RM	
12/4	0717	OK	OK	2300	RM	
12/7	0724	OK	OK	2300	RM	
12/8	0730	OK	OK	2300	RM	

ATTACHMENT G  
DAILY EFFICIENCY CHECK

Scaler

Model # 3

Model # 44-9

Calibration Date: 10-30-92

\*Model # 27956

Serial # 094002

Source Name: Sr Y 90

Serial

Source Strength 7150 dpm

Serial # SR09001

DATE	TIME	BATT CK.	AUDIO CK.	SOURCE (Gross Counts)	TECH INT.	REMARK
11-9-92	0800	OK	SEL COMMENT	2300	RM	NO AUDIO
11-10-92	0733	OK	"	2300	RM	" "
11-11-92	0717	OK	"	2300	RM	" "
11-12-92	0840	OK	"	2300	RM	" "
11-13-92	0715	OK	"	2200	RM	" "
11-16-92	0758	OK	"	2300	RM	" "
11-17-92	0729	OK	"	2300	RM	" "
11-18-92	0757	OK	"	2400	RM	" "
11-19-92	0752	OK	"	2400	RM	" "
11-20-92	0715	OK	NONE	2200	RM	" "
11-23-92	0710	OK	NONE	2300	RM	" "
11-24-92	0722	OK	"	2300	RM	" "
11-25-92	0730	OK	NONE	2300	RM	Replaced Batteries
11-30	0715	OK	NONE	2300	RM	NO AUDIO

ATTACHMENT G  
DAILY EFFICIENCY CHECK

Scaler

Model # 3

Model # 44-7

Calibration Date: 10-30-92

Model # 27956

Serial # 094002

Source Name: SrY90

Serial

Source Strength 7150 dpm

Serial # SR-090-01

DATE	TIME	BATT CK.	AUDIO CK.	SOURCE (Gross Counts)	TECH INT.	REMARK
12/1	0740	OK	SEE COMMENT	2300	RM	NO AUDIO
12/2	0818	OK	"	2300	RM	" "
12/3	0742	OK	"	2300	RM	" "
12/4	0716	OK	"	2200	RM	" "
12/7	0725	OK	"	2200	RM	" "
12/8	0730	OK	"	2200	RM	" "

ATTACHMENT G  
DAILY EFFICIENCY CHECK

Scaler

Model # 19

Model # N/A

Calibration Date: 9-19-92

Model # 95477

Serial # N/A

Source Name: Sr Y-90

Serial

Source Strength N/A dpm

Serial # N/A

BACKGROUND AND OPERATIONAL CHECK ONLY

DATE	TIME	BATT CK.	AUDIO CK.	SOURCE (Gross Counts)	TECH INT.	REMARK
11-9-92	0800	OK	OK	10 $\mu$ R/hr	RM	
11-10-92	0740	OK	OK	10 $\mu$ R/hr	RM	
11-11-92	0720	OK	OK	11 $\mu$ R/hr	RM	
11-12-92	0945	OK	OK	10 $\mu$ R/hr	RM	
11-13-92	0718	OK	OK	10 $\mu$ R/hr	RM	
11-16-92	0804	OK	OK	11 $\mu$ R/hr	RM	
11-17-92	0730	OK	OK	10 $\mu$ R/hr	RM	
11-18-92	0800	OK	OK	10 $\mu$ R/hr	RM	
11-19-92	0754	OK	OK	11 $\mu$ R/hr	RM	
11-20-92	0719	OK	OK	11 $\mu$ R/hr	REM.	
11-23-92	0715	OK	OK	11 $\mu$ R/hr	REM.	
11-24-92	0725	OK	OK	11 $\mu$ R/hr	RM	
11-25-92	0726	OK	OK	11 $\mu$ R/hr	RM	
11-30	0720	OK	OK	11 $\mu$ R/hr	RM	



ATTACHMENT G  
DAILY EFFICIENCY CHECK

Scaler

Model # 19      Model # N/A      Calibration Date: 9-19-92  
 Model # 95477      Serial # N/A      Source Name: SrY 90  
 Serial      Source Strength N/A dpm  
 Serial # N/A

BACKGROUND AND OPERATIONAL CHECK ONLY

DATE	TIME	BATT CK.	AUDIO CK.	SOURCE (Gross Counts)	TECH INT.	REMARK
12/1	0742	OK	OK	11 $\mu$ R/hr	RM	
12/2	0821	OK	OK	11 $\mu$ R/hr	RM	
12/3	0743	OK	OK	11 $\mu$ R/hr	RM	
12/4	0719	OK	OK	11 $\mu$ R/hr	RM	
12/7	0726	OK	OK	11 $\mu$ R/hr	RM	
12/8	0730	OK	OK	11 $\mu$ R/hr	RM	
12/9	0716	OK	OK	11 $\mu$ R/hr	RM	

ATTACHMENT G  
DAILY EFFICIENCY CHECK

Scaler

Model # 14C

Model # 44-6

Calibration Date: 10-28-92

Model # 95035

Serial # 092841

Source Name: N/A

Serial

Source Strength N/A dpm

Serial # N/A

BACKGROUND AND OPERATIONAL CHECK ONLY

DATE	TIME	BATT CK.	AUDIO CK.	SOURCE (Gross Counts)	TECH INT.	REMARK				
11-9-92	0800	OK	OK	<table><tr><td>OPEN</td><td>CLOSED</td></tr><tr><td>.02</td><td>.02</td></tr></table>	OPEN	CLOSED	.02	.02	RM	
OPEN	CLOSED									
.02	.02									
11-10-92	0745	OK	OK	.02/.02	RM					
11-11-92	0722	OK	OK	.02/.02	RM					
11-12-92	0940	OK	OK	.02/.02	RM					
11-13-92	0719	OK	OK	.02/.02	RM					
11-16-92	0805	OK	OK	.02/.02	RM					
11-17-92	0732	OK	OK	.02/.02	RM					
11-18-92	0757	OK	OK	.02/.02	RM					
11-19-92	0755	OK	OK	.02/.02	RM					
11-20-92	0720	OK	OK	.02/.02	R.E.M.					
11-23-92	0715	OK	OK	.02/.02	REM					
11-24-92	0728	OK	OK	.02/.02	RM					
11-25-92	0728	OK	OK	.02/.02	RM					
11-30	0715	OK	OK	.02/.02	RM					

ATTACHMENT G  
DAILY EFFICIENCY CHECK

Scaler

Model # 14 C

Model # 44-6 Calibration Date: 10-28-92

Model # 95035

Serial # 092841 Source Name: N/A

Serial

Source Strength N/A dpm

Serial # N/A

BACKGROUND AND OPERATIONAL CHECK ONLY

DATE	TIME	BATT CK.	AUDIO CK.	SOURCE (Gross Counts) <small>OPEN CLOSED</small>	TECH INT.	REMARK
12/1	0745	OK	OK	.02   .02	RM	
12/2	0823	OK	OK	.02 / .02	RM	
12/3	0759	OK	OK	.02 / .02	RM	
12/4	0721	OK	OK	.02 / .02	RM	
12/7	0730	OK	OK	.02 / .02	RM	
12/8	0731	OK	OK	.02 / .02	RM	
12/9	0720	OK	OK	.02 / .02	RM	

**QUADREX RECYCLE CENTER  
CERTIFICATE OF CALIBRATION**

Date: 10-29-92

Technician: Wayne Allen

Instrument: Q-63

High Voltage: 900vdc

Serial No: 20138

Detector Type: 44-9

Model No: 3/cpm

Detector Serial No: QP-102

Humidity: 55%

Temperature: 72.8°F

SCALE	PULSE RATE	METER INDICATION
X.1	400	400
X 1	4,000	4,000
X10	40,000	40,000
X100	400,000	400,000
X.1	B.G.	60.4

**CALIBRATION SOURCE CHECK**

EFFICIENCY	CPM	SOURCE
.2576	104,825.4	Q-41 $S_{K}^{90}$
.2333	13,017.2	Q-42 $T_{L}^{204}$
.1949	22,371.6	Q-43 $T_{C}^{99}$

**SURVEY SOURCE CHECK**

Check Source: $Cs^{137}$	ID No: Q-45
Average CPM: 25,225.6	Eff: .1419

**ACTUAL CALIBRATION WITH SOURCE**

Source: $Cs^{137}$	Detector Area: 15.21 cm <sup>2</sup>	Efficiency: .3754
Source ID No: Q-53	DPM: 13366.26	CPM: 763.2
Source: $Cs^{137}$	Detector Area: 15.21 cm <sup>2</sup>	Efficiency: .5284
Source ID No: Q-90	DPM: 4451.68	CPM: 357.8

**SUMMARY OF REPAIRS**

Replaced Meter Movement

Lab Supervisor: *[Signature]*

QUADREX RECYCLE CENTER  
CERTIFICATE OF CALIBRATION

Date: 10-29-92

Technician: WAYNE ALLEN

Instrument: Q-473

High Voltage: 900 vdc

Serial No: 27866

Detector Type: 44-9

Model No: 3/cpm

Detector Serial No: QP-101

Humidity: 56%

Temperature: 72.6°F

SCALE	PULSE RATE	METER INDICATION
X.1	400	400
X1	4,000	4,000
X10	40,000	40,000
X100	400,000	400,000
X.1	B.G.	59.8

## CALIBRATION SOURCE CHECK

CALIBRATION SOURCE CHECK		
EFFICIENCY	CPM	SOURCE
.2589	105,353.4	Q-41 $S_{R}^{90}$
.2364	13,189.2	Q-42 $T_{L}^{204}$
.1890	21,690.2	Q-43 $T_{C}^{99}$

### SURVEY SOURCE CHECK

Check Source:	C <sub>3</sub> 137	ID No:	Q-45
Average CPM:	23,259.6	Eff:	.1309

### ACTUAL CALIBRATION WITH SOURCE

Source: $Cs^{137}$	Detector Area: $15.21\text{cm}^2$	Efficiency: .3451
Source ID No: Q-53	DPM: 13366.26	CPM: 701.6
Source: $Cs^{137}$	Detector Area: $15.21\text{cm}^2$	Efficiency: .5101
Source ID No: Q-90	DPM: 4451.68	CPM: 345.4

### SUMMARY OF REPAIRS

Lab Supervisor: U. Hill

**QUADREX RECYCLE CENTER  
CERTIFICATE OF CALIBRATION**

Date: 10-30-92	Technician: WAYNE ALLEN
Instrument: Q-474	High Voltage: 900vdc
Serial No: 27956	Detector Type: 44-9
Model No: 3/cpm	Detector Serial No: QP-100
Humidity: 57%	Temperature: 73.1°F

SCALE	PULSE RATE	METER INDICATION
X.1	400	400
X1	4,000	4,000
X10	40,000	40,000
X100	400,000	400,000
X.1	B.G.	62.4

**CALIBRATION SOURCE CHECK**

EFFICIENCY	CPM	SOURCE
.2656	108,057.2	Q-41 $^{90}\text{Sr}$
.2401	13,399.2	Q-42 $^{204}\text{Tl}$
.1926	22,105.8	Q-43 $^{99}\text{Tc}$

**SURVEY SOURCE CHECK**

Check Source: $\text{Cs}^{137}$	ID No: Q-45
Average CPM: 23,661.2	Eff: .1331

**ACTUAL CALIBRATION WITH SOURCE**

Source: $\text{Cs}^{137}$	Detector Area: 15.21 $\text{cm}^2$	Efficiency: .3970
Source ID No: Q-53	DPM: 13366.26	CPM: 807.2
Source: $\text{Cs}^{137}$	Detector Area: 15.21 $\text{cm}^2$	Efficiency: .5004
Source ID No: Q-90	DPM: 4451.68	CPM: 338.8

**SUMMARY OF REPAIRS**


Lab Supervisor: *W. Allen*



QUADREX RECYCLE CENTER  
 CERTIFICATE OF SOURCE CALIBRATION

Source Check  
 Q-122 Co60  
 270 mR

CUSTOMER: Q-435

Temp.: 74.2°F  
 Hum.: 59%

Description of Instrument

Manufacturer: Ludlum

Model No.: 19

Serial No.: 95477

HV at Calibration:

Probe Type: N/A

Probe Model No.: N/A

Probe Serial No.: N/A

Source ID

Isotope: Cs<sup>137</sup>

Activity: 1.2 Ci

Certificate: 67608

Source Field Strength mR/Hr.	Readings mR/Hr.	Readings Before Adjustment	Source Field Strength mR/Hr.	Readings mR/Hr.	Readings Before Adjustment
4	4	3.8	.180	.180	.180
.4	.4	.36	.042	.042	.041
.4	.4	.35	.042	.042	.041
.2	.2	.18	.023	.023	.022
.180	.180	.175	.023	.023	.022

THIS IS TO CERTIFY THE ABOVE NAMED INSTRUMENT HAS BEEN CALIBRATED  
 IN ACCORDANCE WITH STATE REGULATIONS FOR RADIATION CONTROL  
 AND 10 CFR REGULATIONS

ALL SOURCES AND/OR INSTRUMENTS USED IN THE CALIBRATION OF THE ABOVE  
 LISTED ITEMS HAVE CALIBRATIONS TRACEABLE TO THE NATIONAL INSTITUTE OF  
 STANDARDS AND TESTING.

LICENSE NO.: R-01037-J94

CALIBRATION DATE: 09-19-92

NEXT CALIBRATION DUE: 03-19-93

CALIBRATED BY: Wayne Allen

Signature

Approved By:



QUADREX RECYCLE CENTER  
CERTIFICATE OF SOURCE CALIBRATION

SOURCE CHECK  
 Co60 Q-86  
 130 mR

CUSTOMER: Q-471

Temp = 72.6°F  
 Hum = 49%

Description of Instrument

Source ID

Manufacturer: Ludlum

Probe Type: G.M.

Isotope: Cs<sup>137</sup>

Model No.: 14-C

Probe Model No.: 44-6

Activity: 1.2ci

Serial No.: 95035

Probe Serial No.: QP-103

Certificate: 67608

HV at Calibration: 900vdc

Source Field

Strength  
mR/hr.

Readings  
mR/hr.

Readings  
Before  
Adjustment

Source Field  
Strength  
mR/hr.

Readings  
mR/hr.

Readings  
Before  
Adjustment

1500

1500

1485

5

5

5

500

500

495

1.5

1.5

1.5

150

150

148

.5

.5

.5

50

50

49

.15

.15

.15

15

15

15

.05

.05

.05

THIS IS TO CERTIFY THE ABOVE NAMED INSTRUMENT HAS BEEN CALIBRATED  
 IN ACCORDANCE WITH STATE REGULATIONS FOR RADIATION CONTROL  
 AND 10 CFR REGULATIONS

ALL SOURCES AND/OR INSTRUMENTS USED IN THE CALIBRATION OF THE ABOVE  
 LISTED ITEMS HAVE CALIBRATIONS TRACEABLE TO THE NATIONAL INSTITUTE OF  
 STANDARDS AND TESTING.

LICENSE NO.: R-01037-J94

CALIBRATED BY: Wayne Allen

CALIBRATION DATE: 10-28-92

Wayne Allen  
 Signature

NEXT CALIBRATION DUE: 04-28-93

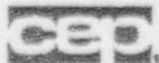
Approved By:

17-Dec-92

TEXAS PROJECT  
TLD RECORD EXPOSURE  
4TH QTR 1992

NAME	PHONE	REC EXP
=====		
RANDALE		0
ROBERT		0
RICE		0
STACY		10
=====		

... L. Young .



Controls for Environmental Pollution, Inc.

P.O. BOX 5351 • Santa Fe, New Mexico 87502

OUT OF STATE 800/845-2188 • FAX- 505-832-9289

Controls for Environmental  
Pollution, Inc.

P.O. Box 5351

Santa Fe, NM 87502

Phone: (305) 982-9841/(800) 545-2188

Quadrex Recycle Center  
109 Flint Road  
Oak Ridge, TN 37830

Attn: Jim Robinson

Order #: 92-11-469

Date: 12/15/92 16:16

Work ID: Urine (NR)

Date Received: 11/20/92

Date Completed: 12/14/92

Purchase Order: 6352 (UTN-9100)

Invoice Number:

Client Code: QUADREX\_TN

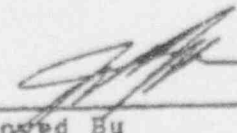
ND - No corrosion or fission products detected.

SAMPLE IDENTIFICATION

<u>Sample Number</u>	<u>Sample Description</u>
01	Randale
02	Robert

<u>Sample Number</u>	<u>Sample Description</u>
03	Richard E.
04	Stacy

Remainder of sample(s) for routine analysis will be disposed  
of three weeks from final report date. Sample(s) for bacteria  
analysis only, will be disposed of immediately after analysis.  
This is not applicable if other arrangements have been made.

  
Approved By



Controls for Environmental Pollution, Inc.

P.O. BOX 5351 • Santa Fe, New Mexico 87502

OUT OF STATE 800/545-2182 • FAX - 505-282-3229

Order # 92-11-469

12/13/92 16:16

Controls for Environmental

TEST RESULTS BY SAMPLE

Page 2

Sample: 01A

Randale

Collected: 11/09/92 Category: URINE

Test Description

Gamma Spectral Analysis

Result

ND

D.L.Units

dpm/liter

Analuzed

12/11/92

By

LJ

Sample: 02A

Robert

Collected: 11/09/92 Category: URINE

Test Description

Gamma Spectral Analysis

Result

ND

D.L.Units

dpm/liter

Analuzed

12/11/92

By

LJ

Sample: 03A

Richard E.

Collected: 11/09/92 Category: URINE

Test Description

Gamma Spectral Analysis

Result

ND

D.L.Units

dpm/liter

Analuzed

12/11/92

By

LJ

Sample: 04A

Stacy

Collected: 11/09/92 Category: URINE

Test Description

Gamma Spectral Analysis

Result

ND

D.L.Units

dpm/liter

Analuzed

12/11/92

By

LJ

Quadrex Recycle Center  
109 Flint Road  
Oak Ridge, TN 37830

Phone: (615) 482-5532

Analysis was performed in accordance with EPA standard method 7010-D for gamma spectrum analysis. The following data is presented.

#### SAMPLE IDENTIFICATION

Sample Number	Sample Description
<u>D13140</u>	<u>RANDALL</u> <u>RETURN BIO FROM TEXAS</u>
<u>D23141</u>	<u>RICHARD</u> <u>RETURN BIO FROM TEXAS</u>
<u>D13136</u>	<u>BOB</u> <u>RETURN BIO FROM TEXAS</u>
<u>D13183</u>	<u>STACY</u> <u>RETURN BIO FROM TEXAS</u>

#### TEST RESULTS BY SAMPLE

Sample #	Isotope	Result	D.L.	Units	Date Analyzed	By
<u>D13140</u>	<u>N.D.</u>	<u>&lt;LLD</u>		<u>uCi/mL</u>	<u>12/16/92</u>	<u>CM</u>
<u>D23141</u>	<u>N.D.</u>	<u>&lt;LLD</u>		<u>uCi/mL</u>	<u>12/16/92</u>	<u>GEW</u>
<u>D13136</u>	<u>N.D.</u>	<u>&lt;LLD</u>		<u>uCi/mL</u>	<u>12/16/92</u>	<u>GEW</u>
<u>D13183</u>	<u>N.D.</u>	<u>&lt;LLD</u>		<u>uCi/mL</u>	<u>12/17/92</u>	<u>GEW</u>


  
Approved by

TABLE 1.4

SIGNIFICANT NEUTRON-ACTIVATION RADIONUCLIDES  
AND THEIR RADIATION CHARACTERISTICS

RADIO-NUCLIDE	PRODUCTION REACTION	HALF-LIFE	MAJOR RADIATIONS (Type, Energy in MeV, Intensity)	REMARKS
Ar-39	Ar-38 (n, $\gamma^-$ )	270 y	$\gamma^-$ : No $\gamma^-$	(1)
Ca-41	Ca-40 (n, $\gamma^-$ )	$10^5$ y	$\beta^-$ : 0.565 $\beta^-$ (max)	(1)
Ca-45	Ca-44 (n, $\gamma^-$ )	167 d	$\gamma^-$ : Potassium X-rays	(1)
			$\gamma^-$ : 0.0125 (< 1.0%)	(1)
			$\beta^-$ : 0.255 $\beta^-$	(1)
Mn-54	Mn-55 (n, 2n)	303 d	$\gamma^-$ : 0.835 (100%)	
Fe-55	Fe-54 (n, $\gamma^-$ )	2.7 y	$\gamma^-$ : Mn X-rays	(1)
Co-60	Co-59 (n, $\gamma^-$ )	5.3 y	$\gamma^-$ : 1.17 (100%), 1.33 (100%)	
			$\beta^-$ : 1.48 $\beta^-$ (max)	(1)
Ni-59	Ni-58 (n, $\gamma^-$ )	$7.5 \times 10^4$ y	$\gamma^-$ : Co X-rays	(1)
Ni-63	Ni-62 (n, $\gamma^-$ )	100 y	$\gamma^-$ : No $\gamma^-$	(1)
			$\beta^-$ : 0.067 $\beta^-$ (max)	(1)
Zn-65	Zn-64 (n, $\gamma^-$ )	245 d	$\gamma^-$ : 1.115 (49%), Cu X-rays	
			$\beta^-$ : 0.327 $\beta^-$ (max)	(1)
Eu-152	Eu-151 (n, $\gamma^-$ )	13 y	$\gamma^-$ : 0.222 (37%), 0.245 (8%), 0.344 (27%), 0.779 (14%), 0.965 (15%), 1.087 (12%), 1.113 (14%), 1.408 (22%)	
			$\beta^-$ : 1.48 $\beta^-$ (max), 0.71 $\beta^+$ (max)	(1)

Note: Sources for half-life and major radiations: Lederer, C.M., Table of Isotopes, (7th edition); U S HEW, Radiological Health Handbook, 1970.

- (1) Insignificant, as far as external radiation dose is concerned, and thus not included in dose calculations.

TABLE 1.8

SHUTDOWN INVENTORY OF RADIONUCLIDES IN  
NEUTRON-ACTIVATED 5052 ALUMINUM LINER

RADIONUCLIDE	ACTIVITY CONCENTRATION ( $\mu\text{Ci}/\text{cm}^3$ )	
	Side	Floor
Mn-54	$1.0 \times 10^{-4}$	$2.3 \times 10^{-4}$
Fe-55	$7.1 \times 10^{-3}$	$1.6 \times 10^{-2}$
Co-60	$3.5 \times 10^{-6}$	$8.0 \times 10^{-6}$
Ni-63	$8.7 \times 10^{-7}$	$2.0 \times 10^{-6}$
Zn-65	$7.3 \times 10^{-3}$	$1.7 \times 10^{-2}$



QRC MANIFEST DATA: U of TX

SOURCE TERM BASED ON: RUBBLE = 5.0 pCi/gm Co-60, 6.6 pCi/gm Eu-152

\* ALUMINUM 5.0 1.5

BOX	NET WT #	Co-60 mCi	Eu-152 mCi	TOTAL ACT
1	3100	7.0E-3	9.3E-3	1.63E-2 millicuries
2	4000	9.1E-3	1.2E-2	2.11E-2
3	3700	8.4E-3	1.1E-2	1.94E-2
4	3650	8.3E-3	1.1E-2	1.93E-2
5	400	9.1E-4	1.2E-3	2.11E-3
6	1200	2.7E-3	3.6E-3	6.3E-3
7	1200	2.7E-3	3.6E-3	6.3E-3
8 *	1500	3.4E-3	1.0E-3	4.4E-3
9	400	9.1E-4	1.2E-3	2.11E-3

=====

9.732E-2 millicuries

(97 microcuries)

## STRAIGHT BILL OF LADING - SHORT FORM - ORIGINAL - Not Negotiable

RECEIVED, subject to the classification and tariffs in effect on the date of the issue of this Bill of Lading.

FREIGHT BILL NUMBER

UTQ120993

SHIPPER'S NUMBER

UT-001

FROM UNIVERSITY OF TEXAS AT AUSTIN DATE SHIPPED 12-9-92

AT Taylor Hall Bldg. Room 131

ORIGINATING CARRIER Kindrick Trucking Inc.

QUADREX, HPS 405 Flint Road, Oak Ridge, TN 37890

(615) 402-6638

INSIGNED TO QUADREX RECYCLE CENTER

(Mail or street address of consignee - For purposes of notification only.)

DESTINATION 109 Flint Rd. OAK RIDGE, TN. 37830 Anderson

DELIVERY ADDRESS SAME AS DESTINATION

CONNECTING CARRIER(S)

N/A

DELIVERING CARRIER

Kindrick Trucking

TRACTOR NO.

K-931

TRAILER NO.

F-861

NUMBER PACKAGES	KIND OF PACKAGE, DESCRIPTION OF ARTICLES, SPECIAL MARKS, AND EXCEPTIONS	WEIGHT (Subject to Corrections)	CLASS OR RATE	CR. COR.
9	Radioactive Material Low Specific Activity, N.G.S. - Radioactive Material - UN2912 Containers: Strong Tight Metal Bins 2-B25's and 7-B12's Contents: concrete Rubble, metals, plastic, and filters CO60, EU152 9.732E-2 MCI Total Activity	24,550		
2	Containers: 1-B25, and 2-B12 Clean Equipment	9,000		
1	Container: pallet Clean Filters, Rags	500		
	Placards Affixed	Total wt.	29,050	
	Exclusive Use Shipment		30,050	
Dimensions CARGO BEFORE LOADED	LENGTH FT IN	WIDTH FT IN	HEIGHT FT IN	TOTAL FEET OF TRAILER SPACE OCCUPIED FT IN

UNLESS A GREATER VALUE IS DECLARED, THE SHIPPER HEREBY RELEASES THE VALUE TO \$5000.00 PER TON OF 2000 POUNDS FOR EACH ARTICLE. THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION, ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.

Sharon Z. Bauer

UNLESS OTHERWISE NOTED VEHICLE CONTAINS HAZARDOUS MATERIALS PROPERLY PLACARDED IN ACCORDANCE WITH 49CFR172.506.

ARRIVED AT SHIPPER	DATE 12-9-92	TIME 7:00 PM	PREARRANGED SCHEDULE	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	DATE	TIME A.M. P.M.	LOADING STARTED	DATE 12/9/92	TIME 7:00 PM
LOADING COMPLETED	DATE 12-9-92	TIME 10:00 PM	VEHICLE RELEASED	DATE 12-9-92	TIME 12:30 PM	SHIPPER'S SIGNATURE Sharon Z. Bauer			
THIRD PARTY BILLING, BILL TO:					SHIPPER, PER		AGENT, PER		

SIGNATURE TALLY RECEIPT - Must be filled out and signed at origin and each time the shipment changes custody.

DATE SHIPMENT RECEIVED FROM CONSIGNOR				2ND TIME CARGO CHANGED CUSTODY				4TH TIME CARGO CHANGED CUSTODY			
DATE	TIME	TRACTOR NO.	DATE	TIME	TRACTOR NO.	DATE	TIME	TRACTOR NO.	DATE	TIME	TRACTOR NO.
12/9/92											
DRIVER'S SIGNATURE		HOME TERMINAL		DRIVER'S SIGNATURE		HOME TERMINAL		DRIVER'S SIGNATURE		HOME TERMINAL	
Doug Brock											
ARRIVED AT CONSIGNEE	DATE	TIME A.M. P.M.	PREARRANGED SCHEDULE	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	DATE	TIME A.M. P.M.	UNLOADING STARTED	DATE	TIME A.M. P.M.		
UNLOADING COMPLETE	DATE	TIME A.M. P.M.	VEHICLE RELEASED	DATE	TIME A.M. P.M.	CONSIGNEE'S SIGNATURE					
RECEIVED THE ABOVE DESCRIBED PROPERTY IN GOOD CONDITION EXCEPT AS NOTED						X					

**QUADREX VEHICLE CHECKLIST**  
INCOMING AND OUTGOING SHIPMENTS

BD11

Vehicle arrives: Date: 12-9-92 Time: 7:00 (AM/PM)  
 Shipment Number: UT-001  
 Tractor Number: K-931 Trailer Number: F861  
 Vehicle type: Flatbed Van Lowboy Other  
 Carrier Company Name: Kindrick Trucking Inc  
 Driver's Name: Gregory Brock  
 Driver's ID-License: 84364869 Th and Expiration Date: 6/12/95  
 Vehicle Registration: 2XKWD89X8PM584 Expiration Date: 2/28/93  
 Driver Qualification: Good Driver Fitness: Good  
 Vehicle Inspected: Yes ☒ No ☐  
 Copy of Vehicle Inspection: Yes ☐ No ☒ Date: 12/9/92

**DRIVER SIGN OFF SHEET**

1. Service brakes: Good Condition? yes Properly attached? yes
2. Parking brakes: Operational? yes On while loading? yes
3. Steering mechanism: Demonstrated operational and safe? yes
4. Coupling device (5th wheel): Attached properly? yes  
 Demonstrated Safe? yes
5. Trailer frame and head board: Free of defects (cracks)? yes  
 Level? yes Good Condition? yes
6. Driver daily log: In place in cab? yes Entries current? yes

12/8/92  
DATE

Gregory Brock  
DRIVERS SIGNATURE

**QUADREX SIGN OFF SHEET**

1. Front tire tread: Recaps? (not allowed) OK 4/32" OK
2. Other tire tread: 2/32"? YES
3. Windshield Wipers: Demonstrated operational? OK
4. Rear vision mirrors: Adequate? YES
5. Horn: Demonstrated operational? OK
6. Fire extinguishers: At least 2? OK Fully charged? OK
7. Load tiedowns: Adequate number for load? OK  
 Good condition? OK
8. Emergency Kit: Extra placards? OK Rad rope? OK  
 Pcs? OK
9. Carrier instructions to driver: With driver paperwork? OK  
 Pertinent? OK
10. Brake lights: Demonstrated operational? OK
11. Turn signals: Demonstrated operational? OK
12. Reflectors: At proper locations on trailer? OK  
 Unbroken? OK

Robert E. Mills  
Facility Manager

Project

Quality Assurance

DRIVER INSTRUCTIONS: EXCLUSIVE USE SHIPMENTS

BD4

SHIPMENT NUMBER: UT-001

TO BE DELIVERED BY: 12-11-92

1. This shipment is to be maintained as an exclusive use shipment for Quadrex Recycle Center, 109 Flint Road, Oak Ridge, Tennessee 37830.
2. This shipment was loaded by Quadrex Recycle Center and is to be unloaded by the consignee or his designated agent.
3. No cargo is to be added to or removed from this shipment while enroute to consignee.
4. Don't move 5th wheel, or change tractor without notifying shipper.

PROCEDURE TO BE FOLLOWED IN THE EVENT OF A SHIPPING ACCIDENT

1. Don't move package unless necessary for personnel rescue.
2. Keep unnecessary persons away from accident area. Keep all people who were in the vicinity at the time of the accident or who could have been contaminated in a segregated area until surveyed by a qualified radiation surveyor. Delay cleanup until radiation surveyor arrives.
3. Identify the isolate accident area. If a survey meter is available, establish a 2 mr/hr perimeter. If a survey meter is not available, establish a perimeter 100 feet from package or as far as practical, which ever is larger. Avoid contact around immediate area of package and areas downwind.
4. Call the appropriate Quadrex emergency personnel (see attached emergency phone list) inform him of the radioactive material shipment accident, the location, how accident occurred, shipment description, condition of packages, injuries and any other pertinent information. (615) 482-5532  
Dennis Howard
5. Call 911 or local police and state.
6. Direct traffic and people the greatest possible distance away from the accident area.

This certifies that I have read and understand the requirements of exclusive use.

George Brock  
Transport Driver

Shipment Number: UT-001  
Date: 12-9-92

BD13

CAB = 9

POSITION OF SEA-VAN AND BOXES ON TRAILER

UNDERNEATH = 18 Front of Trailer

Instructions

Quadrex Dose Rate  
Levels for Sea-Van  
150 mr/hr contact  
7.5 at 2 meters  
boxes 150 mr/hr if  
not inside van  
trailer.

All Dose Rates over  
Quadrex levels are  
to be approved  
before loading by  
Radwaste Manager.

Record all boxes  
over Quadrex mr/hr  
levels put (\*) on  
chart to show  
position of box onto  
truck and enter the  
dose rate below.

High Dose Rate

#	mr/hr	#	mr/hr
#	mr/hr	#	mr/hr
#	mr/hr	#	mr/hr

\*Comments: Readings  
in micro-R-hr.

Bckgd. = 8-10 micro-R-hr.

Verification

Packages have been  
loaded onto the  
vehicle as indicated  
on this diagram.

Number of boxes used subject to weight  
of Sea-van position of Sea-van and or  
boxes subject to over all weight.

Larry Hamilton  
Radwaste Manager

Richard L. Miller  
Quality Assurance

RADIATION SAFETY OFFICER - (ACTING) Proj Mgr

\* All readings at 1 meter







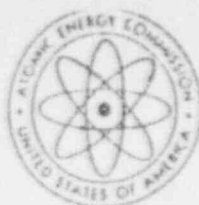
## Quadrex Recycle Center

109 Flint Road, Oak Ridge, Tennessee 37830-7033  
615-482-5532 TELECOPY 615-482-5605

This package conforms to the conditions and limitation specified in  
49 CFR 173.421 for excepted radioactive material, ~~limited quantity,~~  
~~n.e.s., UN2910.~~ *Low Specific Activity N.O.S. UN2912*

Signed: Sharon 2 Bauer





# REGULATORY GUIDE

DIRECTORATE OF REGULATORY STANDARDS

## REGULATORY GUIDE 1.86

## TERMINATION OF OPERATING LICENSES FOR NUCLEAR REACTORS

### A. INTRODUCTION

Section 50.51, "Duration of license, renewal," of 10 CFR Part 50, "Licensing of Production and Utilization Facilities," requires that each license to operate a production and utilization facility be issued for a specified duration. Upon expiration of the specified period, the license may be either renewed or terminated by the Commission. Section 50.82, "Applications for termination of licenses," specifies the requirements that must be satisfied to terminate an operating license, including the requirement that the dismantlement of the facility and disposal of the component parts not be inimical to the common defense and security or to the health and safety of the public. This guide describes methods and procedures considered acceptable by the Regulatory staff for the termination of operating licenses for nuclear reactors. The Advisory Committee on Reactor Safeguards has been consulted concerning this guide and has concurred in the regulatory position.

### B. DISCUSSION

When a licensee decides to terminate his nuclear reactor operating license, he may, as a first step in the process, request that his operating license be amended to restrict him to possess but not operate the facility. The advantage to the licensee of converting to such a possession-only license is reduced surveillance requirements in that periodic surveillance of equipment important to the safety of reactor operation is no longer required. Once this possession-only license is issued, reactor operation is not permitted. Other activities related to cessation of operations such as unloading fuel from the reactor and placing it in storage (either onsite or offsite) may be continued.

A licensee having a possession-only license must retain, with the Part 50 license, authorization for special nuclear material (10 CFR Part 70, "Special Nuclear Material"), byproduct material (10 CFR Part 30, "Rules of General Applicability to Licensing of Byproduct Material"), and source material (10 CFR Part 40, "Licensing of Source Material"), until the fuel, radioactive components, and sources are removed from the facility. Appropriate administrative controls and facility requirements are imposed by the Part 50 license and the technical specifications to assure that proper surveillance is performed and that the reactor facility is maintained in a safe condition and not operated.

A possession-only license permits various options and procedures for decommissioning, such as mothballing, entombment, or dismantling. The requirements imposed depend on the option selected.

Section 50.82 provides that the licensee may dismantle and dispose of the component parts of a nuclear reactor in accordance with existing regulations. For research reactors and critical facilities, this has usually meant the disassembly of a reactor and its shipment offsite, sometimes to another appropriately licensed organization for further use. The site from which a reactor has been removed must be decontaminated, as necessary, and inspected by the Commission to determine whether unrestricted access can be approved. In the case of nuclear power reactors, dismantling has usually been accomplished by shipping fuel offsite, making the reactor inoperable, and disposing of some of the radioactive components.

Radioactive components may be either shipped offsite for burial at an authorized burial ground or secured

### USAEC REGULATORY GUIDES

Regulatory Guides are issued to describe and make available to the public methods acceptable to the AEC Regulatory staff of implementing specific parts of the Commission's regulations, to delineate techniques used by the staff in evaluating specific problems or postulated accidents, or to provide guidance to applicants. Regulatory Guides are not substitutes for regulations and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the findings requisite to the issuance or continuance of a permit or license by the Commission.

Published guides will be revised periodically, as appropriate, to accommodate comments and to reflect new information or experience.

Copies of published guides may be obtained by request indicating the divisions desired to the U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Director of Regulatory Standards. Comments and suggestions for improvements in these guides are encouraged and should be sent to the Secretary of the Commission, U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Chief, Public Proceedings Staff.

The guides are issued in the following ten broad divisions:

- |                                   |                        |
|-----------------------------------|------------------------|
| 1. Power Reactors                 | 6. Products            |
| 2. Research and Test Reactors     | 7. Transportation      |
| 3. Fuel and Materials Facilities  | 8. Occupational Health |
| 4. Environmental and Siting       | 9. Antitrust Review    |
| 5. Materials and Plant Protection | 10. General            |

on the site. Those radioactive materials remaining on the site must be isolated from the public by physical barriers or other means to prevent public access to hazardous levels of radiation. Surveillance is necessary to assure the long term integrity of the barriers. The amount of surveillance required depends upon (1) the potential hazard to the health and safety of the public from radioactive material remaining on the site and (2) the integrity of the physical barriers. Before areas may be released for unrestricted use, they must have been decontaminated or the radioactivity must have decayed to less than prescribed limits (Table I).

The hazard associated with the retired facility is evaluated by considering the amount and type of remaining contamination, the degree of confinement of the remaining radioactive materials, the physical security provided by the confinement, the susceptibility to release of radiation as a result of natural phenomena, and the duration of required surveillance.

### C. REGULATORY POSITION

#### 1. APPLICATION FOR A LICENSE TO POSSESS BUT NOT OPERATE (POSSESSION-ONLY LICENSE)

A request to amend an operating license to a possession-only license should be made to the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545. The request should include the following information:

- a. A description of the current status of the facility.
- b. A description of measures that will be taken to prevent criticality or reactivity changes and to minimize releases of radioactivity from the facility.
- c. Any proposed changes to the technical specifications that reflect the possession-only facility status and the necessary disassembly/retirement activities to be performed.
- d. A safety analysis of both the activities to be accomplished and the proposed changes to the technical specifications.
- e. An inventory of activated materials and their location in the facility.

#### 2. ALTERNATIVES FOR REACTOR RETIREMENT

Four alternatives for retirement of nuclear reactor facilities are considered acceptable by the Regulatory staff. These are:

- a. **Mothballing.** Mothballing of a nuclear reactor facility consists of putting the facility in a state of protective storage. In general, the facility may be left intact except that all fuel assemblies and the radioactive

fluids and waste should be removed from the site. Adequate radiation monitoring, environmental surveillance, and appropriate security procedures should be established under a possession-only license to ensure that the health and safety of the public is not endangered.

- b. **In-Place Entombment.** In-place entombment consists of sealing all the remaining highly radioactive or contaminated components (e.g., the pressure vessel and reactor internals) within a structure integral with the biological shield after having all fuel assemblies, radioactive fluids and wastes, and certain selected components shipped offsite. The structure should provide integrity over the period of time in which significant quantities (greater than Table I levels) of radioactivity remain with the material in the entombment. An appropriate and continuing surveillance program should be established under a possession-only license.

- c. **Removal of Radioactive Components and Dismantling.** All fuel assemblies, radioactive fluids and waste, and other materials having activities above accepted unrestricted activity levels (Table I) should be removed from the site. The facility owner may then have unrestricted use of the site with no requirement for a license. If the facility owner so desires, the remainder of the reactor facility may be dismantled and all vestiges removed and disposed of.

- d. **Conversion to a New Nuclear System or a Fossil Fuel System.** This alternative, which applies only to nuclear power plants, utilizes the existing turbine system with a new steam supply system. The original nuclear steam supply system should be separated from the electric generating system and disposed of in accordance with one of the previous three retirement alternatives.

#### 3. SURVEILLANCE AND SECURITY FOR THE RETIREMENT ALTERNATIVES WHOSE FINAL STATUS REQUIRES A POSSESSION-ONLY LICENSE

A facility which has been licensed under a possession-only license may contain a significant amount of radioactivity in the form of activated and contaminated hardware and structural materials. Surveillance and commensurate security should be provided to assure that the public health and safety are not endangered.

- a. **Physical security** to prevent inadvertent exposure of personnel should be provided by multiple locked barriers. The presence of these barriers should make it extremely difficult for an unauthorized person to gain access to areas where radiation or contamination levels exceed those specified in Regulatory Position C.4. To prevent inadvertent exposure, radiation areas above 5 mR/hr, such as near the activated primary system of a power plant, should be appropriately marked and should not be accessible except by cutting of welded closures or the disassembly and removal of substantial structures

and/or shielding material. Means such as a remote-readout intrusion alarm system should be provided to indicate to designated personnel when a physical barrier is penetrated. Security personnel that provide access control to the facility may be used instead of the physical barriers and the intrusion alarm systems.

b. The physical barriers to unauthorized entrance into the facility, e.g., fences, buildings, welded doors, and access openings, should be inspected at least quarterly to assure that these barriers have not deteriorated and that locks and locking apparatus are intact.

c. A facility radiation survey should be performed at least quarterly to verify that no radioactive material is escaping or being transported through the containment barriers in the facility. Sampling should be done along the most probable path by which radioactive material such as that stored in the inner containment regions could be transported to the outer regions of the facility and ultimately to the environs.

d. An environmental radiation survey should be performed at least semiannually to verify that no significant amounts of radiation have been released to the environment from the facility. Samples such as soil, vegetation, and water should be taken at locations for which statistical data has been established during reactor operations.

e. A site representative should be designated to be responsible for controlling authorized access into and movement within the facility.

f. Administrative procedures should be established for the notification and reporting of abnormal occurrences such as (1) the entrance of an unauthorized person or persons into the facility and (2) a significant change in the radiation or contamination levels in the facility or the offsite environment.

g. The following reports should be made:

(1) An annual report to the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545, describing the results of the environmental and facility radiation surveys, the status of the facility, and an evaluation of the performance of security and surveillance measures.

(2) An abnormal occurrence report to the Regulatory Operations Regional Office by telephone within 24 hours of discovery of an abnormal occurrence. The abnormal occurrence will also be reported in the annual report described in the preceding item.

h. Records or logs relative to the following items should be kept and retained until the license is terminated, after which they may be stored with other plant records:

- (1) Environmental surveys,
- (2) Facility radiation surveys,
- (3) Inspections of the physical barriers, and
- (4) Abnormal occurrences.

#### 4. DECONTAMINATION FOR RELEASE FOR UNRESTRICTED USE

If it is desired to terminate a license and to eliminate any further surveillance requirements, the facility should be sufficiently decontaminated to prevent risk to the public health and safety. After the decontamination is satisfactorily accomplished and the site inspected by the Commission, the Commission may authorize the license to be terminated and the facility abandoned or released for unrestricted use. The licensee should perform the decontamination using the following guidelines:

a. The licensee should make a reasonable effort to eliminate residual contamination.

b. No covering should be applied to radioactive surfaces of equipment or structures by paint, plating, or other covering material until it is known that contamination levels (determined by a survey and documented) are below the limits specified in Table I. In addition, a reasonable effort should be made (and documented) to further minimize contamination prior to any such covering.

c. The radioactivity of the interior surfaces of pipes, drain lines, or ductwork should be determined by making measurements at all traps and other appropriate access points, provided contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or ductwork. Surfaces of premises, equipment, or scrap which are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement should be assumed to be contaminated in excess of the permissible radiation limits.

d. Upon request, the Commission may authorize a licensee to relinquish possession or control of premises, equipment, or scrap having surfaces contaminated in excess of the limits specified. This may include, but is not limited to, special circumstances such as the transfer of premises to another licensed organization that will continue to work with radioactive materials. Requests for such authorization should provide:

(1) Detailed, specific information describing the premises, equipment, scrap, and radioactive contaminants and the nature, extent, and degree of residual surface contamination.

(2) A detailed health and safety analysis indicating that the residual amounts of materials on surface areas, together with other considerations such as the prospective use of the premises, equipment, or scrap, are unlikely to result in an unreasonable risk to the health and safety of the public.

e. Prior to release of the premises for unrestricted use, the licensee should make a comprehensive radiation survey establishing that contamination is within the limits specified in Table 1. A survey report should be filed with the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545, with a copy to the Director of the Regulatory Operations Regional Office having jurisdiction. The report should be filed at least 30 days prior to the planned date of abandonment. The survey report should:

(1) Identify the premises;

(2) Show that reasonable effort has been made to reduce residual contamination to as low as practicable levels;

(3) Describe the scope of the survey and the general procedures followed; and

(4) State the finding of the survey in units specified in Table 1.

After review of the report, the Commission may inspect the facilities to confirm the survey prior to granting approval for abandonment.

## 5. REACTOR RETIREMENT PROCEDURES

As indicated in Regulatory Position C.2, several alternatives are acceptable for reactor facility retirement. If minor disassembly or "mothballing" is planned, this could be done by the existing operating and maintenance procedures under the license in effect. Any planned actions involving an unreviewed safety question

or a change in the technical specifications should be reviewed and approved in accordance with the requirements of 10 CFR §50.59.

If major structural changes to radioactive components of the facility are planned, such as removal of the pressure vessel or major components of the primary system, a dismantlement plan including the information required by §50.82 should be submitted to the Commission. A dismantlement plan should be submitted for all the alternatives of Regulatory Position C.2 except mothballing. However, minor disassembly activities may still be performed in the absence of such a plan, provided they are permitted by existing operating and maintenance procedures. A dismantlement plan should include the following:

a. A description of the ultimate status of the facility

b. A description of the dismantling activities and the precautions to be taken.

c. A safety analysis of the dismantling activities including any effluents which may be released.

d. A safety analysis of the facility in its ultimate status.

Upon satisfactory review and approval of the dismantling plan, a dismantling order is issued by the Commission in accordance with §50.82. When dismantling is completed and the Commission has been notified by letter, the appropriate Regulatory Operations Regional Office inspects the facility and verifies completion in accordance with the dismantlement plan. If residual radiation levels do not exceed the values in Table 1, the Commission may terminate the license. If these levels are exceeded, the licensee retains the possession-only license under which the dismantling activities have been conducted or, as an alternative, may make application to the State (if an Agreement State) for a byproduct materials license.

TABLE 1

## ACCEPTABLE SURFACE CONTAMINATION LEVELS

NUCLIDE <sup>a</sup>	AVERAGE <sup>b c</sup>	MAXIMUM <sup>b d</sup>	REMOVABLE <sup>b e</sup>
U-nat, U-235, U-238, and associated decay products	5,000 dpm $\alpha$ /100 cm <sup>2</sup>	15,000 dpm $\alpha$ /100 cm <sup>2</sup>	1,000 dpm $\alpha$ /100 cm <sup>2</sup>
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm <sup>2</sup>	300 dpm/100 cm <sup>2</sup>	20 dpm/100 cm <sup>2</sup>
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1000 dpm/100 cm <sup>2</sup>	3000 dpm/100 cm <sup>2</sup>	200 dpm/100 cm <sup>2</sup>
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5000 dpm $\beta$ - $\gamma$ /100 cm <sup>2</sup>	15,000 dpm $\beta$ - $\gamma$ /100 cm <sup>2</sup>	1000 dpm $\beta$ - $\gamma$ /100 cm <sup>2</sup>

<sup>a</sup>Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

<sup>b</sup>As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

<sup>c</sup>Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

<sup>d</sup>The maximum contamination level applies to an area of not more than 100 cm<sup>2</sup>.

<sup>e</sup>The amount of removable radioactive material per 100 cm<sup>2</sup> of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.





UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20565  
March 17, 1981

Docket No. 50-141

Dr. Roland A. Finston  
Director, Health Physics and Biosafety  
Stanford University  
67 Encina Hall  
Stanford, California 94305

Dear Dr. Finston:

By letters dated December 9, 1977 and June 3, 1980 you provided data on the residual activity at the dismantled Stanford Research Reactor. You further requested termination of reactor License No. R-60.

As discussed with you, we have now determined the levels of radiation that would be acceptable for release of the Stanford reactor facility to unrestricted access. Enclosure No. 1 provides that criteria. Enclosure No. 2 (Regulatory Guide 1.86) is also provided for your information.

Therefore, we can terminate License No. R-60 when our independent surveys confirm that you have removed sufficient residual radioactivity to meet the criteria of Enclosure No. 1.

By copy of this letter to the NRC Region V Office, we request that they complete a confirmatory survey when you notify the NRC that your facility is in compliance with Enclosure No. 1 criteria.

Sincerely,

A handwritten signature in cursive script, reading "John F. Stolz".

John F. Stolz, Chief  
Operating Reactors Branch #4  
Division of Licensing

Enclosures:

1. Radiation Levels for Release  
to Unrestricted Access
2. Regulatory Guide 1.86

cc w/enclosure 1 only:  
See next page

0103-4010a  
2pp

Enclosure 1

RADIATION LEVELS FOR RELEASE OF REACTOR  
FACILITY TO UNRESTRICTED  
ACCESS

Surface Contamination

Surfaces must be decontaminated to levels consistent with Table 1 of Reg. Guide 1.86.

Radioactive Material Other Than Surface Contamination (Co 60, Eu 152, Cs 137)

Co 60, Eu 152 and Cs 137 that may exist in concrete, components, structures, and soil must be removed such that the radiation level from these isotopes is less than 5  $\mu$ R/hr above natural background<sup>1)</sup> as measured at one meter from surface.

General

Site survey procedures acceptable to the NRC must be used.

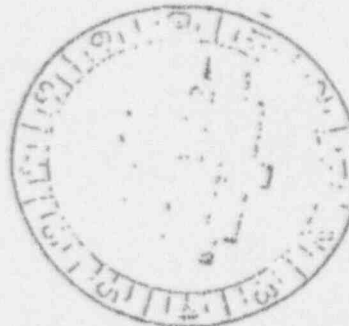
<sup>1)</sup> Radiation from naturally occurring radioisotopes as measured at a comparable uncontaminated structure or exterior soil surface.



APR 21 1982

Docket No. 50-141

Dr. Roland A. Finston, Director  
Health Physics and Biosafety  
Stanford University  
67 Encina Hall  
Stanford, California 94305



Dear Dr. Finston:

By letter dated March 17, 1981, we provided radiation criteria for release of the dismantled Stanford Research Reactor to unrestricted access. That criteria specified Reg. Guide 1.86 for surface contamination and 5 micro Rem per hour at one meter for reactor generated, gamma emitting isotopes.

Since March 17, 1981, we have refined further our position with respect to release criteria and have determined that radiation from gamma emitting isotopes is also acceptable if the potential exposure to individuals is less than 10 mRem per year with reasonable occupancy assumptions. If you wish to justify gamma exposure rates from reactor generated isotopes that are greater than 5 micro Rem per hour, you should show that reasonable occupancy of that area would be sufficiently less than 2000 hours per year, which would result in exposures of less than 10 mRem per year.

Sincerely,

ORIGINAL SIGNED BY  
JAMES R. MILLER

James R. Miller, Chief  
Standardization and Special  
Projects Branch  
Division of Licensing

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