DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control and Prevention
Office of Health and Safety

July 28, 2011   *Br 2*

U.S. Nuclear Regulatory Commission (NRC), Region I
Attn: Decommissioning Branch (Stephen Hammann)
475 Allendale Road
King of Prussia, PA 19406

License Amendment to Release Building 1 for Unrestricted Use

Dear Sir: *0300400l*

Re: NRC License Number 10-06772-01

RECEIVED REGION 1

1. At the attachment is the radiological decommissioning report for Building 1 on the Centers for Disease Control (CDC) and Prevention campus located at 1600 Clifton Road, NE, Atlanta, GA 30344. CDC conducts radiological operations under the NRC License Number 10-06772-01. As part of our public health modernization program, radiation laboratory activities in Building 1 have been relocated to a newly completed biomedical research laboratory building, Building 23 on campus. Contracts have been awarded to decommission, demolish, and dispose of the building contents in appropriate landfills based on their biological, chemical and radiological content. The fourteen impacted areas in Building 1 were decommissioned utilizing the guidance provided in NUREG 1757, "Consolidated Nuclear Materials Safety and Safeguards (NMSS) Decommissioning Guidance" and recommendations from NUREG 1575, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)".

The CDC Radiation Safety Team conducted comprehensive decommissioning of the areas in question ten years ago because the laboratories were transitioning to non-radiation laboratories. At that time, personnel, equipment, and licensed materials were moved to other laboratory buildings on campus. As each lab was vacated, any unneeded and potentially contaminated items were surveyed; all items were found to be uncontaminated, and released for unrestricted use. This history was useful in preparing the relevant areas for evaluation by the MARSSIM process.

The small microcurie quantities of radiological material that were used in the radiation laboratories (limited by the sensitivities needed for R & D studies), along with results of leak tests and radiological surveys, indicated that residual radioactivity would be several orders of magnitude less than the relevant derived concentration guideline (DCGL) levels (Appendix H).
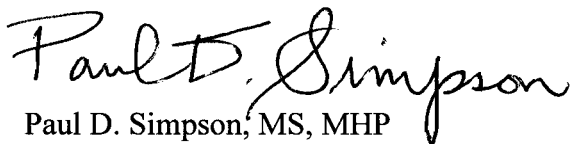
575 739

NMSS/RGN1 MATERIAL

The attached report provides data collection and analysis that supports the facts that the fourteen formerly impacted areas of Building 1 are below the radiological limits in NRC Regulatory Guide 1.86. **We request that our NRC License Number 10-06772-01 be amended to release Building 1 for unrestricted use based on the following results:**

- All scanning measurements were less than the Derived Concentration Guideline Level ($DCGL_w$) which was established using guidelines from the NRC Regulatory Guide 1.86.

- All static measurements were less than the established $DCGL_w$ of 5,000 dpm/100cm^2.

- All wipe survey results were below the established removable $DCGL_w$ of 1,000 dpm/100 cm^2.

For additional Information or discussion regarding this report, please contact my office at (404) 639-3145 or via email at pds1@cdc.gov.

Paul D. Simpson, MS, MHP
Radiation Safety Officer (RSO), MS=F05
Centers for Disease Control and Prevention
600 Clifton Road NE
Atlanta, GA 30333

Attachment

PHILOTECHNICS
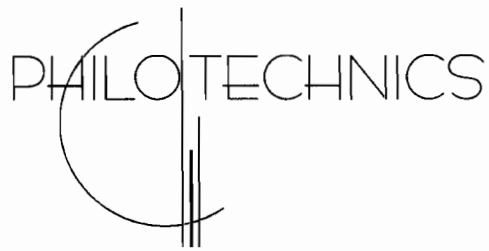
Radiological Decommissioning Report

Prepared for:
U.S. Department of Health & Human Services
Centers for Disease Control & Prevention
1600 Clifton Road, NE
Atlanta, GA 30333
Radioactive Materials License #10-06772-01

Survey Dates: April 18 – 20, 2011
Report Date: May 10, 2011

Prepared by:
Philotechnics, Ltd.
7384 Trade St.
San Diego, CA 92121

DECOMMISSIONING
REPORT CONTENTS

ACRONYM LIST

ALARA	*As Low As Reasonably Achievable*
Bldg	*Building*
CDC	*Centers for Disease Control and Prevention*
CFR	*Code of Federal Regulations*
CPM	*counts per minute*
D&D	*Decontamination and Decommissioning*
DCGL$_W$	*Derived Concentration Guideline Level – Wilcoxon Rank Sum*
DPM	*disintegrations per minute*
HASP	*Health and Safety Plan*
HSA	*Historical Site Assessment*
keV	*kiloelectron volt*
LBGR	*Lower Bound of the Gray Region*
MARSSIM	*Multi-Agency Radiation Survey and Site Investigation Manual*
MDC	*Minimum Detectable Concentration*
NRC	*U.S. Nuclear Regulatory Commission*
NUREG	*Nuclear Regulatory Commission Guidance Document*
RAM	*radioactive materials*
Rm	*Room*
TEDE	*Total effective dose equivalent*
RAM	*radioactive materials*

Section 1.0 – Executive Summary

A radiological survey was completed utilizing the guidance provided in NUREG 1757, "Consolidated Nuclear Materials Safety and Safeguards (NMSS) Decommissioning Guidance" and recommendations from NUREG 1575, "Multi-Agency Radiation Survey and Site Investigation Manual" (MARSSIM) in order to provide pertinent information for the radiological decommissioning of specified impacted areas at the U.S. Department of Health and Human Services Centers for Disease Control (CDC) facility located at 1600 Clifton Road, NE. A review of all data collection and analysis supports our professional opinion the fourteen formerly impacted areas of Building 1 Main are below the radiological limits in Regulatory Guide 1.86 and can be released for unrestricted use based upon the following:

- *All scanning measurements were less than the Derived Concentration Guideline Level ($DCGL_W$) which was established using guidelines from the NRC Regulatory Guide 1.86.*

- *All static measurements were less than the established $DCGL_W$ of 5,000 dpm/100cm^2.*

- *All wipe survey results were below the established removable $DCGL_w$ of 1,000 dpm/100cm^2.*

Section 2.0 – Project Scope, Findings and Summary

Prior to releasing the impacted areas, the Nuclear Regulatory Commission (NRC) requires that an appropriate decommissioning survey and report be submitted for their review. This document provides the licensee with appropriate information to release the fourteen laboratories being surveyed for unrestricted release.

In accordance with our agreement with the CDC, Philotechnics performed final status surveys of specific rooms in Building 1 Main (Rooms 1301, 1309, 1311, 1312, 1323, 1328, 1211, 1223, 1226, 2224, 2224A, 2309, 3301 and 3204). The final status survey, report and analytical data provide pertinent information for the radiological decommissioning and follow the guidance of the NUREG 1757, NUREG 1575 and NUREG-1507. Research involving the use of radioactive materials was performed in specific laboratories located in Building 1 Main.

The following summarizes the independent conclusions representing Philotechnics best professional judgment based on information and data available to us during the course of this project. Factual information regarding operations, conditions and test data provided by the client, owner or their representative has been assumed correct and complete based upon careful and diligent review of the radiation safety program and past inspection records. Additionally, the conclusions presented are based on the conditions that existed at the time of the assessment. Note that on-site observation of the above referenced facilities consisted of readily visible, accessible areas only.

Table 1: Assessment Review

Assessment Component	Acceptable	Unacceptable	Section
License Review & Historical Use	X		4.0
Radiation Surveys			
A) Static Measurements – Hand-held instruments	X		5.0
B) Static Measurements – Scintillation Counter	X		5.0
C) Scanning Measurements – Hand-held instruments	X		5.0

Conclusions and Recommendations

Based upon the results of our survey, it is our professional opinion the fourteen laboratory areas in Building 1 Main are free of any radioactive contamination and/or radioactive material sources and may be released for unrestricted use in accordance with Code of Federal Regulations Title 10, Section 30.36 "Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.". During the survey, Philotechnics verified that all labels, signs or other similar markings indicating the presence of radioactive materials had been removed or obliterated. Additionally, no concerns requiring further investigation exist at this time.

Project Team

The project team consisted of the following individuals:

Researched by: Timothy Pratt
Surveyed by: Dave Aguero and Justin Button
Written by: Dave Aguero

Project Manager and Contact: Dave Aguero

Closing

We appreciate the opportunity to provide this radiological decommissioning report and trust that the enclosed information is adequate for decision-making needs. Should you have any questions, please do not hesitate to call the undersigned.

Dave Aguero
Sr. Health Physics Technician
Philotechnics, Ltd.

Section 3.0 – Assessment, Methodology and Report Limitations

The decommissioning process evaluates a property's environmental status for release of affected areas to allow unrestricted use by current or future tenants. The assessment involves the review of operations as they pertain to radioactive materials (RAM) use in order to identify potential radioactive contamination.

Assessment activities related to the laboratory decommissioning for the facility included the following tasks:

- A visual survey of historic RAM use and storage areas in order to identify potential contamination and/or presence of radioactive materials

- Interviews with client personnel regarding the historical use of RAM at the facility

- Review of existing documentation, as provided, regarding prior inspections, investigations, events or conditions at the facility related to RAM use

- Direct surveys of all laboratory areas with the use of portable hand-held radiation detection equipment to identify the presence of radioactive materials

- Indirect surveys to test for removable contamination with the use of a scintillation counter and wipes taken throughout the impacted areas

- Preparation of a report documenting our findings, recommendations, and professional opinions regarding observed or suspected radiological concerns

Facility Point of Contact

At the facility, Dave Aguero met with Mr. Paul Simpson, who is the Radiation Safety Officer at CDC. Mr. Simpson was able to provide specific information regarding radioactive materials use based upon his historical knowledge of the facility and implemented practices.

Report Limitations

This report has been prepared solely for the use and benefit of the CDC in compliance with requirements and recommendations by the NRC. Our professional services have been performed, our findings obtained and our recommendations prepared in accordance with customary principles and practices in the field of environmental science. This warranty is in lieu of all other warranties either expressed or implied. Philotechnics is not responsible for the independent conclusions, opinions or recommendations made by others based on the field exploration presented in this report.

It must be noted that no investigation, or survey, can absolutely rule out the existence of radioactive materials. However, the survey was performed using acceptable industry practices and utilizing appropriate technology to provide statistical confidence with the data provided. This assessment has been based upon prior history, observable conditions, direct surveys and indirect surveys. There are limitations based upon this approach where contaminants can escape detection using these methods. Minimum detectable concentrations have been specified for the instrumentation used to qualify the detection limits.

Section 4.0 License Review and Historical Use

Radioactive Materials (RAM) License

This decommissioning project for unrestricted release pertains to all radiological impacted areas identified in Building 1 Main located at 1600 Clifton Road, NE operated under the CDC's Radioactive Materials License. A summary of areas where radionuclides were historically used or stored is detailed in the Restricted Area Summary (Table 3). It should be noted that the only radionuclide used in these areas was Tritium (H-3).

The CDC is currently authorized to possess the following radionuclides as referenced by amendment number 45 of Radioactive Materials License 10-06772-01:

Table 2: RAM License Possession Limits

	Nuclide	**Form**	**Possession Limit**
A.	Any byproduct material with atomic numbers 1 through 83, except as specified below	Any	100 millicuries per radionuclide and 5 curies total
B.	Any byproduct material with atomic numbers 84 through 96, except as specified below	Any	2 millicuries per radionuclide and 25 millicuries total
C.	Hydrogen 3	Any	250 millicuries
D.	Phosphorus 32	Any	350 millicuries
E.	Sulfur 35	Any	350 millicuries
F.	Chromium 51	Any	350 millicuries
G.	Iodine 125	Any	220 millicuries
H.	Thorium 228	Any	1 millicurie
I.	Thorium 230	Any	1 millicurie
J.	Uranium 233	Any	1 millicurie
K.	Uranium 234	Any	1 millicurie
L.	Uranium 235	Any	0.7 millicurie
M.	Uranium 236	Any	1 millicurie
N.	Plutonium 238	Any	1 millicurie
O.	Plutonium 239	Any	1 millicurie
P.	Plutonium 240	Any	1 millicurie
Q.	Plutonium 242	Any	1 millicurie
R.	Californium 252	Any	1 millicurie
S.	Nickel 63	Foil or plated sources registered either with the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or with an Agreement State	400 millicuries

Authorized Use

A. through R. Research and development as defined in 10 CFR 30.4, and calibration and quality control standards for the licensee's instruments

S.   To be used for sample analysis in compatible gas chromatography devices that have been registered with the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or with an Agreement State.

Restricted Area Summary

The CDC requires the removal of all impacted areas from their license before they can be released for unrestricted use and ultimate dismantlement. Areas where radioactive materials were historically used or stored are summarized in Table 3 below and are identified on the building diagrams in Appendix A. The survey model was developed and implemented to detect the radionuclides used in each survey unit. Although direct scanning or static measurements are not effective in detecting Tritium, Philotechnics performed judgmental scan surveys and static measurements using a beta scintilation detector of the laboratory as a conservative measure.

Table 3: Restricted Area Summary

1600 Clifton Road, NE		
Area	**Room**	**Historical Radionuclide Usage**
Building 1 Main	1301	H-3
Building 1 Main	1309	H-3
Building 1 Main	1311	H-3
Building 1 Main	1312	H-3
Building 1 Main	1323	H-3
Building 1 Main	1328	H-3
Building 1 Main	1211	H-3
Building 1 Main	1223	H-3
Building 1 Main	1226	H-3
Building 1 Main	2224	H-3
Building 1 Main	2224A	H-3
Building 1 Main	2309	H-3
Building 1 Main	3301	H-3
Building 1 Main	3204	H-3

Radioactive Materials Spills

By completing a review of pertinent records and an interview with Mr. Paul Simpson, the Radiation Safety Officer, we were able to ascertain there have not been any significant radioactive materials spills affecting the specified areas. Significant spills are defined as those spills that were not readily cleaned up by the researcher and/or caused contamination to be found during follow-up or routine contamination surveys in excess of regulatory limits. Monthly contamination surveys were included in the historical review of the license and there were no indications of contamination levels over the criteria for release affecting the areas included in this decommissioning survey

Section 5.0 – Radiation Surveys

During the period of April 18 – April 20, 2011, Philotechnics completed a comprehensive wipe and meter survey in specified impacted areas, which included benches, floors, sinks and cabinetry. Survey maps depicting these areas are included as Appendix B.

The following instrumentation was used to quantify radiation levels:

- Ludlum 2350-1, with the following probe
  - ✓ BP19DD (beta probe)
    Serial # 189092 (Calibrated on 5/17/10)

- Ludlum 2350-1, with the following probe
  - ✓ BP19DD (beta probe)
    Serial # 203461 (Calibrated on 5/6/10)

- Packard Scintillation Counter, TriCarb 2200 Serial #86252
  (Operational Test 4/22/11)

The instrument calibrations were completed using NIST traceable sources and the Certificates of Calibration are included as Appendix C. The daily instrument check and set up sheets have been included as Appendix D.

Minimum Detectable Concentration (MDC) Calculations

Philotechnics analytical sheets are included as Appendix E, which show calculations for the static MDC for the scintillation counter, static MDC and scanning MDC for hand-held instruments. The MDC's were calculated using the most conservative background values. These calculations follow the guidance in NUREG-1575 and NUREG-1507 and the information is used to verify the effectiveness of the instrumentation used in units of dpm/100 cm^2.

Area Classifications

Based on the results of the historical site assessment, facility areas were classified as impacted or non-impacted areas. Non-impacted areas are areas with no potential residual radioactivity from licensed activities. These include all property outside the building and non-laboratory areas inside the building. Impacted areas are those areas that may have some level of potential residual radioactivity from licensed activities.

Impacted areas are typically divided into Class 1, 2, or 3 areas. Class 1 areas have the greatest potential for contamination and therefore receive the highest degree of survey effort for the final status survey, followed by Class 2 and then by Class 3. Table 4 lists the recommended maximum survey unit sizes based on floor area. It should be noted that these limits are recommended and are not absolute.

Class 1 Areas – Areas with the highest potential for contamination, and meet the following criteria: (1) impacted; (2) potential for delivering a dose above the release criterion; (3) potential for small areas of elevated activity; and (4) insufficient evidence to support classification as Class 2 or Class 3.

Class 2 Areas – Areas that meet the following criterion: (1) impacted; (2) low potential for delivering a dose above the release criterion; and (3) little or no potential for small areas of elevated activity.

Class 3 Areas – Areas that meet the following criterion: (1) impacted; (2) little or no potential for delivering a dose above the release criterion; and (3) little or no potential for small areas of elevated activity.

Non-impacted: Building exterior, outside grounds, indoor areas other than those identified as restricted areas by the licensee, and surfaces above two meters in height in the areas specified below.

Impacted Class 1 Areas: Building 1 Main (Rooms 1301, 1309, 1311, 1312, 1323, 1328, 1211, 1223, 1226, 2224, 2224A, 2309, 3301 and 3204).

Impacted Class 2 Areas: None

Impacted Class 3 Areas: None

Table 4: Recommended Maximum Survey Unit Size Limits

Survey Unit	Class 1	Class 2	Class 3
Structures	Up to 100 m^2	100 m^2 to 1,000 m^2	No limit
Land	Up to 2,000 m^2	2,000 m^2 to 10,000 m^2	No limit

Table 5 lists the survey units and their final classification. Based on the historical use of Tritium in the impacted areas, each area would easily meet the definition of Impacted Class 2. However, as a conservative measure, all impacted areas were classified as Impacted-Class1. Each previously impacted area in the building was made its own survey unit.

Table 5: Laboratory Classification

1600 Clifton Road, NE	Survey Unit	Classification
Building 1 Main Room 1301	1	Class 1
Building 1 Main Room 1309	2	Class 1
Building 1 Main Room 1311	3	Class 1
Building 1 Main Room 1312	4	Class 1
Building 1 Main Room 1323	5	Class 1
Building 1 Main Room 1328	6	Class 1
Building 1 Main Room 1211	7	Class 1
Building 1 Main Room 1223	8	Class 1
Building 1 Main Room 1226	9	Class 1
Building 1 Main Room 2224	10	Class 1
Building 1 Main Room 2224 A	11	Class 1
Building 1 Main Room 2309	12	Class 1
Building 1 Main Room 3301	13	Class 1
Building 1 Main Room 3204	14	Class 1

Survey Methodology

Determination of Class 1 survey unit sample locations is accomplished by first determining sample spacing and then systematically plotting the sample locations from a randomly generated start location. The random starting point of the grid provides an unbiased method for obtaining measurement locations to be used in the statistical tests. Class 1 survey units have the highest potential for small areas of elevated activity so the areas between measurement locations may be adjusted to ensure that these areas can be detected by scanning techniques

All of the rooms at the CDC were classified as Class 1 due to the potential for radioactive contamination although it was not expected to exceed the $DCGL_w$. We utilized a square grid system for the Class 1 areas. Judgmental sample locations were taken in all sinks in the Class 1 areas. The starting point was determined using a random number generator.

The fourteen laboratories being decommissioned were specifically authorized for tritium (H-3) use only. Philotechnics took a conservative approach in our survey methodology and included scan surveys and static measurements in case other beta emitting radionuclides were ever used in these areas.

Background Determination

Ten (10) 1-minute ambient, floor, benchtop and drywall backgrounds were taken with each survey meter. The average of these ten measurment were used to determine the natural background levels.. Appendix F provides a summary of background data points, which were collected in a non-impacted area of similar construction to the area being requested for release. The background averages were subtracted from the gross CPM data to convert the readings to net CPM.

Ten (10) 1-minute background samples were counted on the Packard Liquid Scintillation Counter. The results for each channel were then averaged and used in determining an average MDC for each channel.

Surface Scans

The following table compares MARSSIM recommendations and actual area coverage for the scan survey completed at CDC's facility.

Table 6: Scan Survey Coverage Comparison

Classification	Percentage of Surface Area Requiring Scan Coverage (MARSSIM)	CDC's Surface Area Scan Coverage
1	100%	60-80%
2	10 – 100% (Judgmental)	N/A
3	Judgmental	N/A

The scan survey percentage was chosen in order to provide a comprehensive survey of the impacted areas and provide confidence there was no contamination present. The probe was held at a distance of ¼" to ½" above the surface moving at a scan rate of 5 cm/sec. Although direct scanning or static measurements are not effective in detecting Tritium, Philotechnics performed judgmental scan surveys of the laboratory as a conservative measure. The scanned areas chosen

were those areas with the highest probability of containing residual activity. These included floor normal foot traffic routes and floor areas directing in front of work areas such as lab benches, fume hoods and sinks. Additional areas where scan surveys were completed included lab bench working surfaces, fume hood interior surfaces, sinks' base cabinet interiors and wall surfaces adjacent to work areas. In addition total activity measurements were collected in a random-systematic grid in accordance with the MARSSIM approach. Removable contamination measurements were collected at each total activity measurement location. See Table 7 for the static count average, square footage and sample spacing of each survey unit.

Table 7: Area, Spacing and Static Count Average Data

Survey Unit	Room	Area (sq. ft.)	Sample Spacing	Average Static Count in DPM/100cm²
1	1301	222	4 ft. 7 in.	533
2	1309	426	6 ft.	325
3	1311	279	5 ft. 1 in.	282
4	1312	393	7 ft.	128
5	1323	372	5 ft. 5 in.	29
6	1328	433	7 ft.	54
7	1211	854	7 ft. 3 in.	286
8	1223	207	4 ft.	32
9	1226	438	5 ft. 5 in.	842
10	2224	372	5 ft. 5 in.	60
11	2224A	197	4 ft. 4 in.	112
12	2309	320	5 ft. 2 in.	351
13	3301	362	6 ft.	866
14	3204	547	7 ft.	43

The floor of each room and all other surfaces and structures were scanned using a Ludlum 2350-1 (serial number's 189092 and 203461) with a BP19DD (100 cm² beta) probe. The floor MDC_{scan} was calculated to be 4,774 DPM/100cm² with meter 189092 and 4,434 DPM/100cm² with meter 203461. The ambient scan MDC using the 2350-1 was calculated to be 4,733 DPM/100 cm² with meter 189092 and 4,426 DPM/100cm2 with meter 203461. ***All scan surveys were below the established DCGL*** ᵥₖ.

Fixed or Static Measurements

Static measurements were completed at each location specified in the survey design. A systematic grid with a random starting point was used to determine the survey locations in the Class 2 areas. No additional areas were identified during the scanning survey that would warrant specific static measurements. The probe was held as close to the surface as practicable to determine a count rate in counts per minute. The data calculations from this survey are included as Appendix G. ***All static measurements were below the established DCGL$_w$.***

Removable Measurements

Removable contamination measurements (smears) were collected on building structural surfaces at each static measurement location. Each smear encompassed an area of approximately 100cm^2. No radioactive material was released to the sanitary sewer system at the CDC.

All of the smear samples taken at the CDC were counted on a Philotechnics' Packard Liquid Scintillation Counter (LSC) at their Oak Ridge, TN facility for one minute. Data sheets, included as Appendix H, detail the CPM results, the DPM conversions and indicates if the result is below the DCGL$_w$. ***All wipe survey results were below the removable DCGL values.***

The liquid scintillation counter was setup for dual label counting for ^{3}H and ^{14}C:

Channel A (^{3}H): 0.0 – 12.0 keV
Channel B (^{14}C): 12.0 – 156 keV
Channel C (Other) 156 – 2000 keV

Data Analysis

The following table summarizes MARSSIM guidance for conclusions based upon data provided by the Final Status Survey.

Table 8: Guidance for Survey Conclusions

Survey Result	Conclusion
All measurements less than DCGL$_w$	Survey unit meets release criterion
Average greater than DCGL$_w$	Survey unit does not meet release criterion
Any measurement greater than DCGL$_w$ and the average less then DCGL$_w$	Conduct sign test and elevated measurement comparison

Based on the results of the survey where all the measurements were below the DCGL, by definition, each survey unit meets the release criterion. At the time of this report, Georgia has a dose based release criteria of 25 millirem per year. As an ALARA measure, the DCGL$_w$'s were selected by using guidance specified in the NRC Regulatory Guide 1.86.

Table 9: Established DCGL$_w$'s for Survey

Nuclide	Fixed DCGL$_w$'s (DPM/100 cm^2)	Removable DCGL$_w$'s (DPM/100 cm^2)
H-3	5,000	1,000

Section 6.0 –Decontamination / Decommissioning Review

Decontamination

Decontamination is the physical or chemical process of reducing and preventing the spread or potential exposure from contamination. Decontamination options include the use of commercially available materials and/or equipment that will effectively remove radioactive materials from surface areas so the contamination can be collected and properly disposed.

Decontamination was not required in any of the impacted areas as part of the decommissioning survey. The survey results did not indicate the presence of any level of radioactive materials that would require decontamination based upon our established action levels. At the time of our review, the action levels were based upon the guidance specified in the NRC Regulatory Guide 1.86.

Decommissioning Review

Philotechnics has reviewed all of the applicable data pertaining to the history of radioactive materials use as well as the static and wipe surveys completed in the specified areas at the CDC's facility. It is our professional opinion the specified areas are free of any radioactive materials and/or radioactive contamination and would qualify for unrestricted use.

APPENDIX A
Centers for Disease Control and Prevention Site Diagram Identifying Decommissioned Areas

Center for Disease Control
Roybal Campus, 1 Main, 1ˢᵗ Floor
1600 Clifton Road, NE
Atlanta, GA 30333
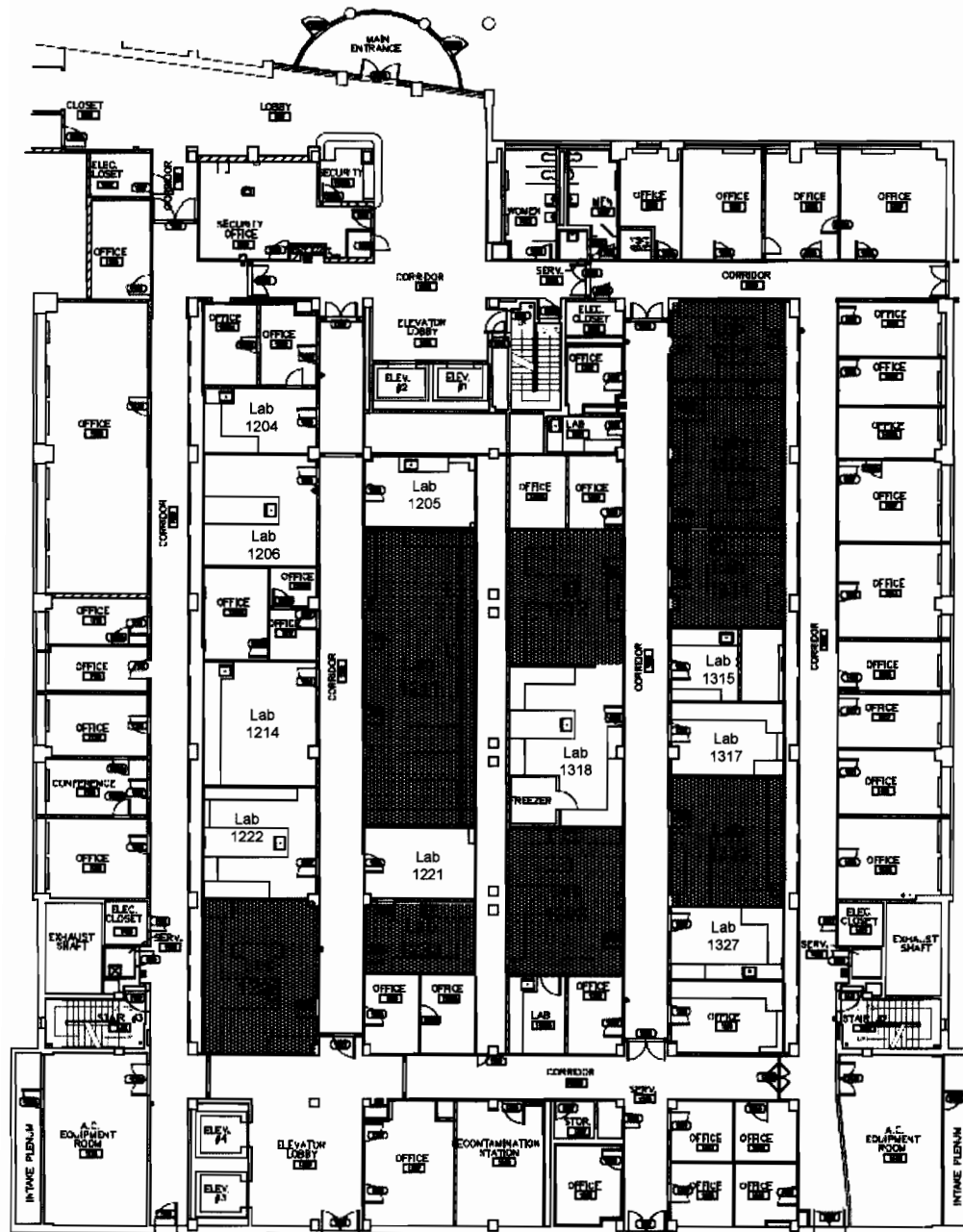
- Decommissioned Areas

Center for Disease Control
Roybal Campus, 1 Main, 2nd Floor
1600 Clifton Road, NE
Atlanta, GA 30333

Floor plan showing offices, laboratories, corridors, elevators, stairs, toilets, and service areas. Labeled rooms include: OFFICE (multiple), TOILET, WOMEN, MEN, VEST., SERV., CORRIDOR, ELEVATOR LOBBY, STAIR #1, ELEC. CLOSET, ELEV. #1, ELEV. #2, EXHAUST SHAFT, CONFERENCE ROOM, A/V EQUIP., CLOS., Lab 2310, Lab 2213A, Lab 2316, Lab 2315, Lab 2315A, Lab 2213, Lab 2318, Lab 2317A, Lab 2214, Lab 2221, Lab 2326, Lab 2224A, Lab 2325, Lab 2325A, Lab 2327, Lab 2328, Lab 2330, ELEC. CLOSET, EXHAUST SHAFT, STAIR #3, STAIR #2, INTAKE PLENUM, A.C. EQUIPMENT ROOM, ELEV. #4, ELEV. #5, ELEVATOR LOBBY, AUTOCLAVE ROOM, STORAGE, MEN, WALK IN FREEZER, LAB.

■ - Decommissioned Areas

Center for Disease Control
Roybal Campus, 1 Main, 3rd Floor
1600 Clifton Road, NE
Atlanta, GA 30333
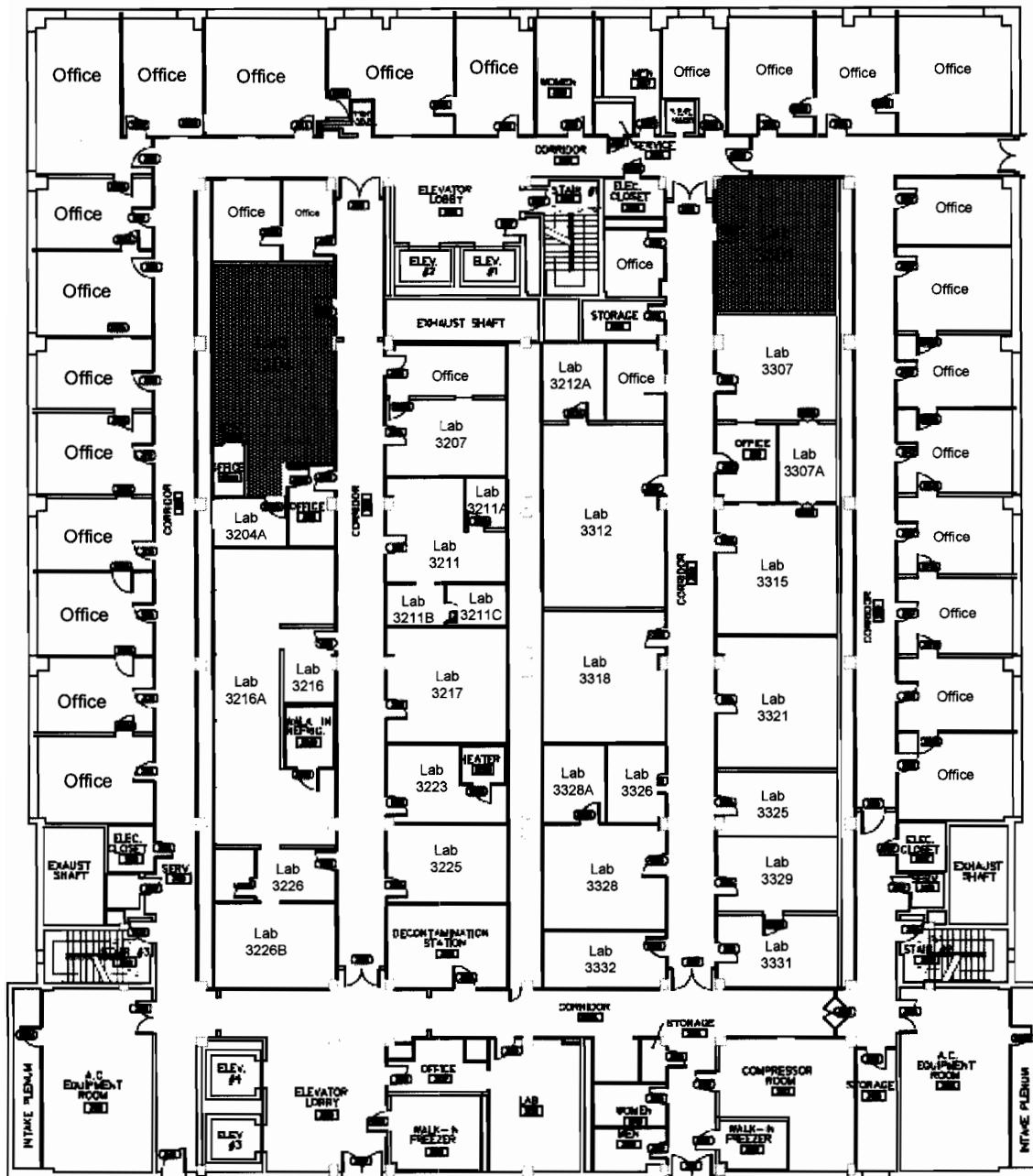
■ - Decommissioned Areas

APPENDIX B
Laboratory Survey Maps

Center for Disease Control
Radiation Contamination Survey Report

Location: Roybal Campus, 1 Main   Room: Lab 1301   Survey Unit: 1   Date: 4-19-11   Class: 1

Instruments: Ludlum 2350-1 (Serial #189092), BP19DD Detector, Calibrated on 5-17-10
Beckman Scintillation Counter, Operational Test 4-22-11

Surveyor: Dave Aguero, Justin Button
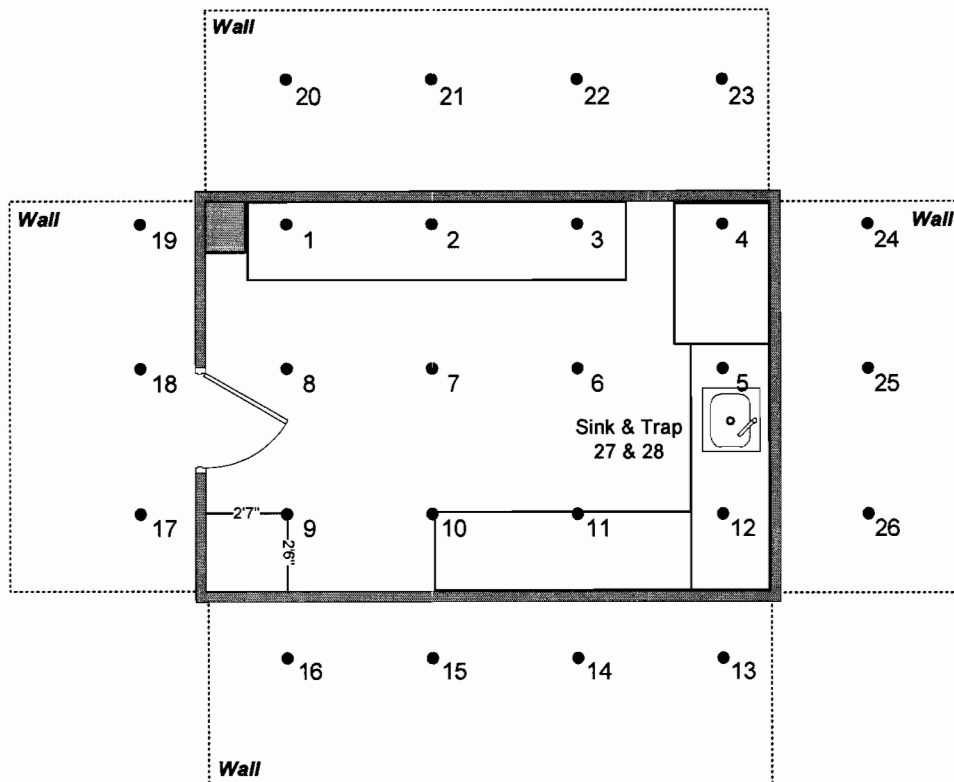
Typical Spacing = 1.4 m (4' 7")
Area ~ 20.6 m² (222 ft²)
◎ **- Random Starting Point**

Centers for Disease Control and Prevention
Radiation Contamination Survey Report

Location: Roybal Campus, 1 Main   Room: Lab 1309   Survey Unit: 2   Date: 4-19-11   Class: 1

Instruments: Ludlum 2350-1 (Serial #203461), BP19DD Detector, Calibrated on 5-6-10
        Beckman Scintillation Counter, Operational Test 4-22-11

Surveyor: Dave Aguero, Justin Button
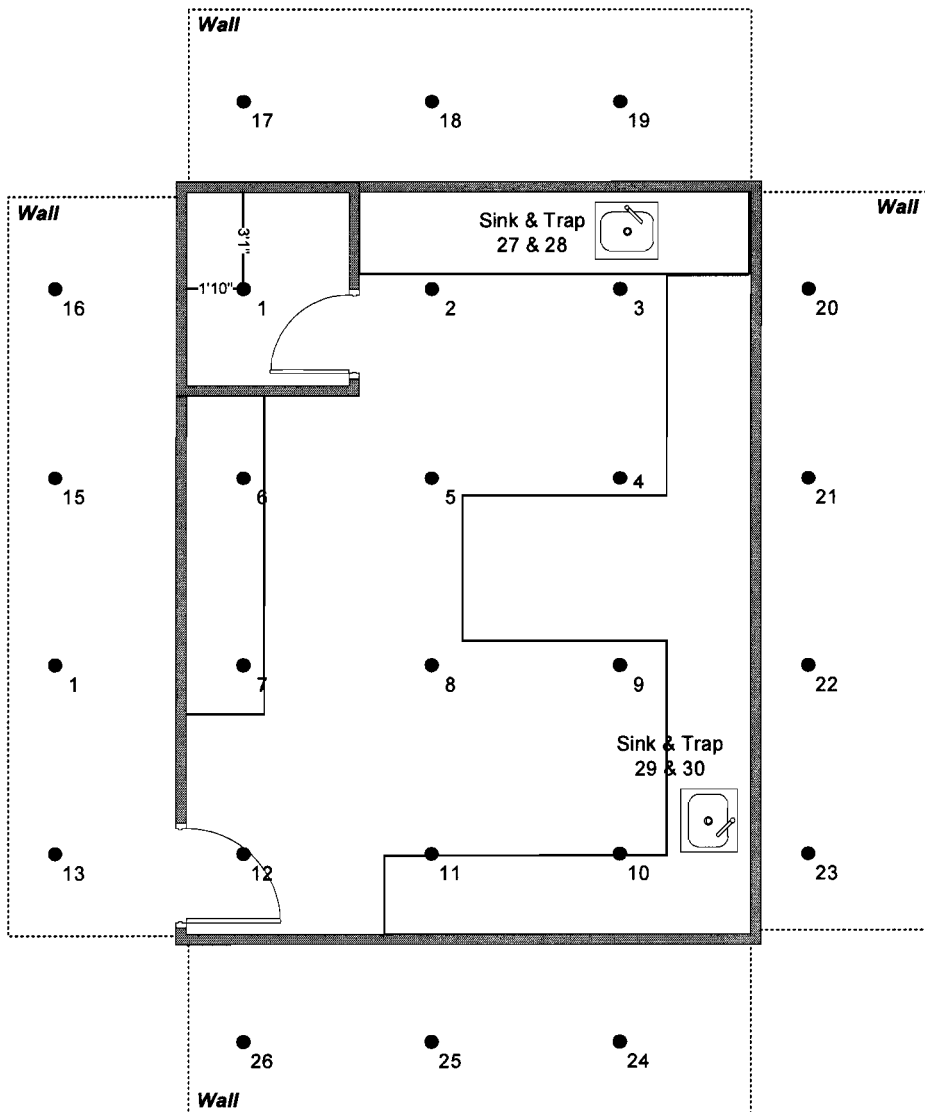
Typical Spacing = 1.22 m (6')
Area ~ 39.6 m² (426 ft²)
◉ - Random Starting Point

Centers for Disease Control and Prevention
Radiation Contamination Survey Report

Location: Roybal Campus, 1 Main   Room: Lab 1311   Survey Unit: 3   Date: 4-19-11   Class: 1

Instruments: Ludlum 2350-1 (Serial #189092), BP19DD Detector, Calibrated on 5-17-10
Beckman Scintillation Counter, Operational Test 4-22-11

Surveyor: Dave Aguero, Justin Button
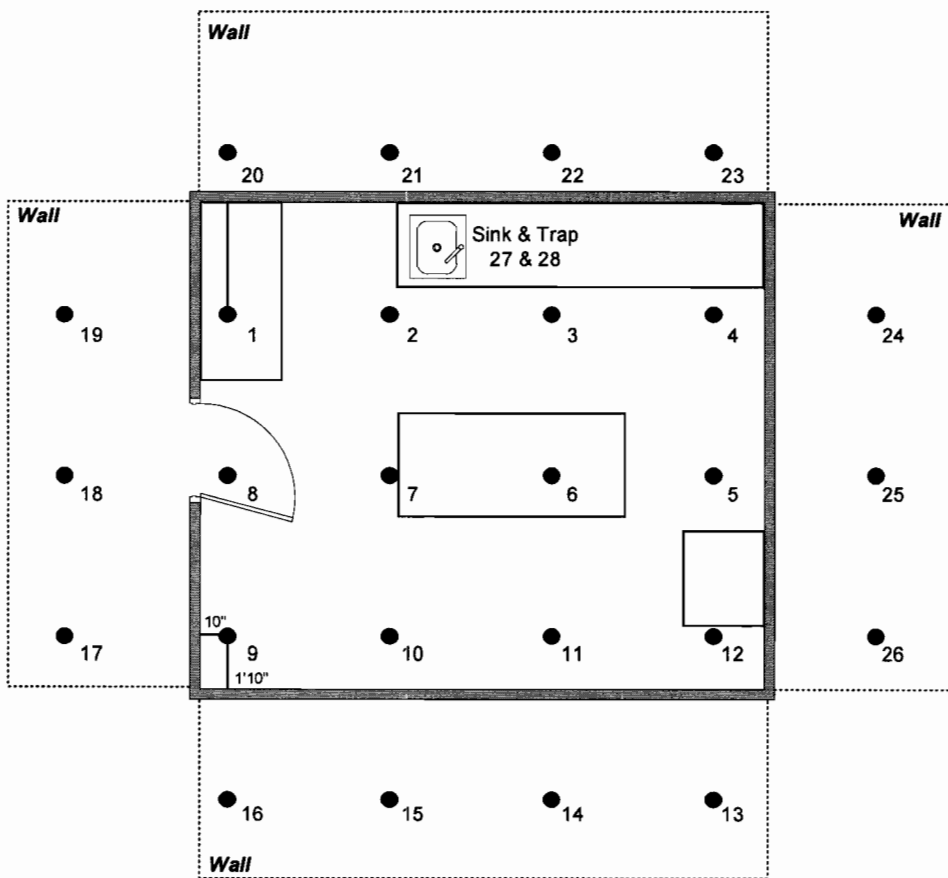
Typical Spacing = 1.55 m (5' 1")
Area ~ 25.9 m² (279 ft²)
◉ ***- Random Starting Point***

Centers for Disease Control and Prevention

Radiation Contamination Survey Report

Location: Roybal Campus, 1 Main   Room: Lab 1312   Survey Unit: 4   Date: 4-20-11   Class: 1

Instruments: Ludlum 2350-1 (Serial #203461), BP19DD Detector, Calibrated on 5-6-10
Beckman Scintillation Counter, Operational Test 4-22-11

Surveyor: Dave Aguero, Justin Button
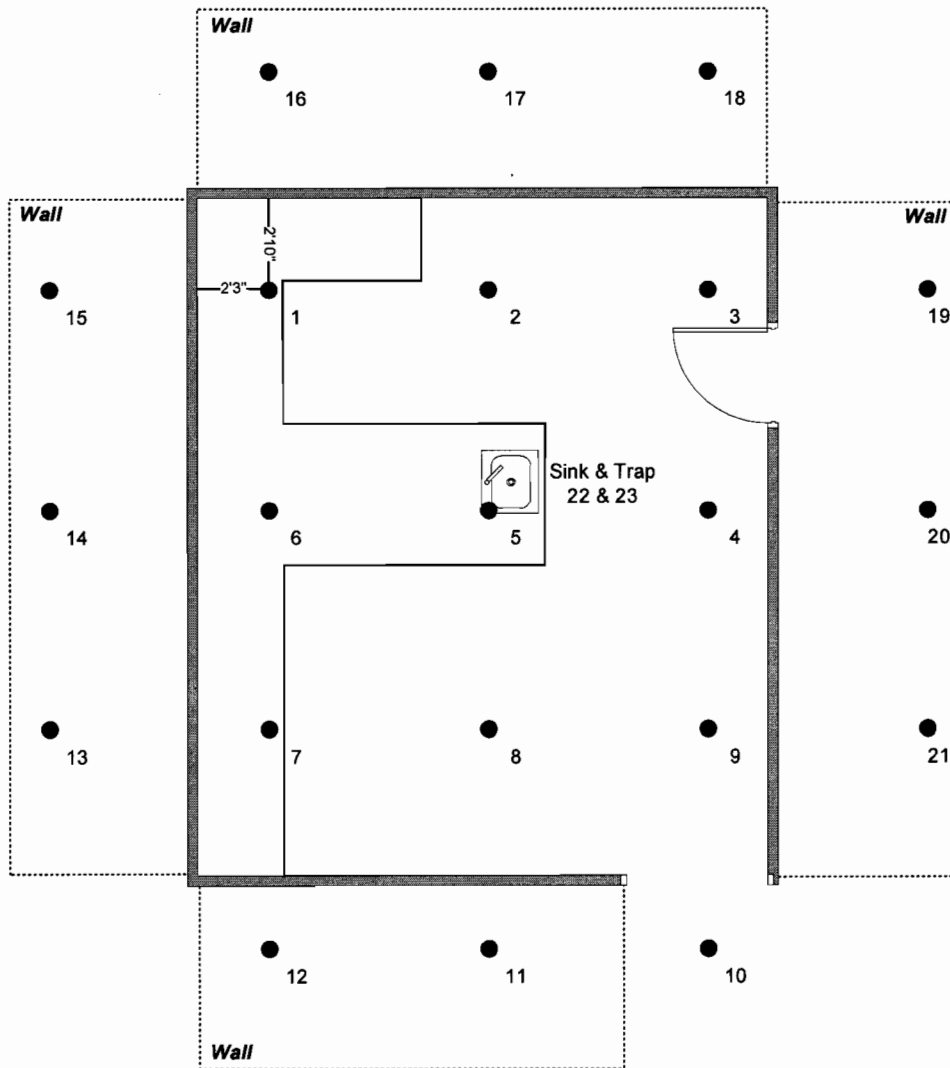
Typical Spacing = 2.13 m (7')
Area ~ 36.5 m² (393 ft²)
◉ - Random Starting Point

Centers for Disease Control and Prevention
Radiation Contamination Survey Report

Location: Roybal Campus, 1 Main   Room: Lab 1323   Survey Unit: 5   Date: 4-20-11   Class: 1

Instruments: Ludlum 2350-1 (Serial #189092), BP19DD Detector, Calibrated on 5-17-10
Beckman Scintillation Counter, Operational Test 4-22-11

Surveyor: Dave Aguero, Justin Button
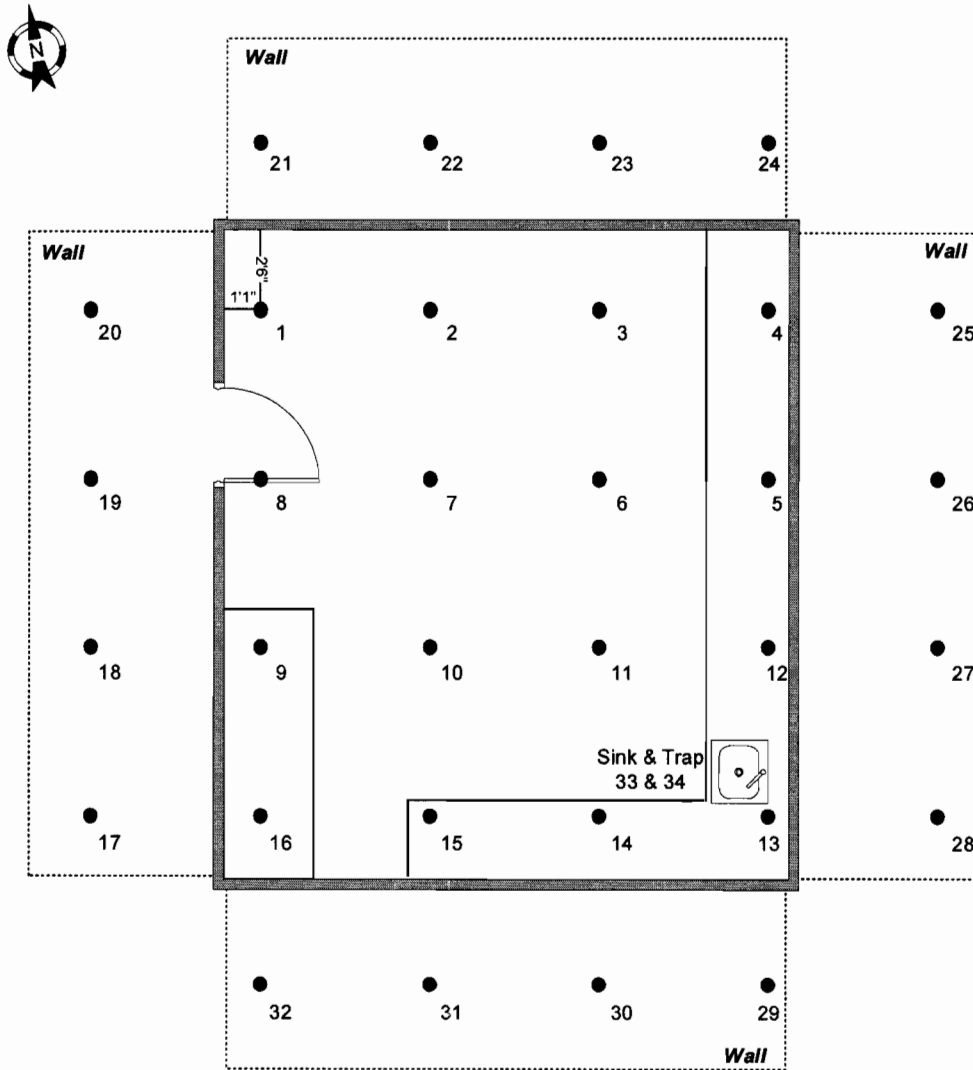
Typical Spacing = 1.65 m (5'5")
Area ~ 34.5 m² (372 ft²)
◎ - Random Starting Point

Centers for Disease Control and Prevention
Radiation Contamination Survey Report

Location: Roybal Campus, 1 Main   Room: Lab 1328   Survey Unit: 6   Date: 4-20-11   Class: 1

Instruments: Ludlum 2350-1 (Serial #203461), BP19DD Detector, Calibrated on 5-6-10
Beckman Scintillation Counter, Operational Test 4-22-11

Surveyor: Dave Aguero, Justin Button
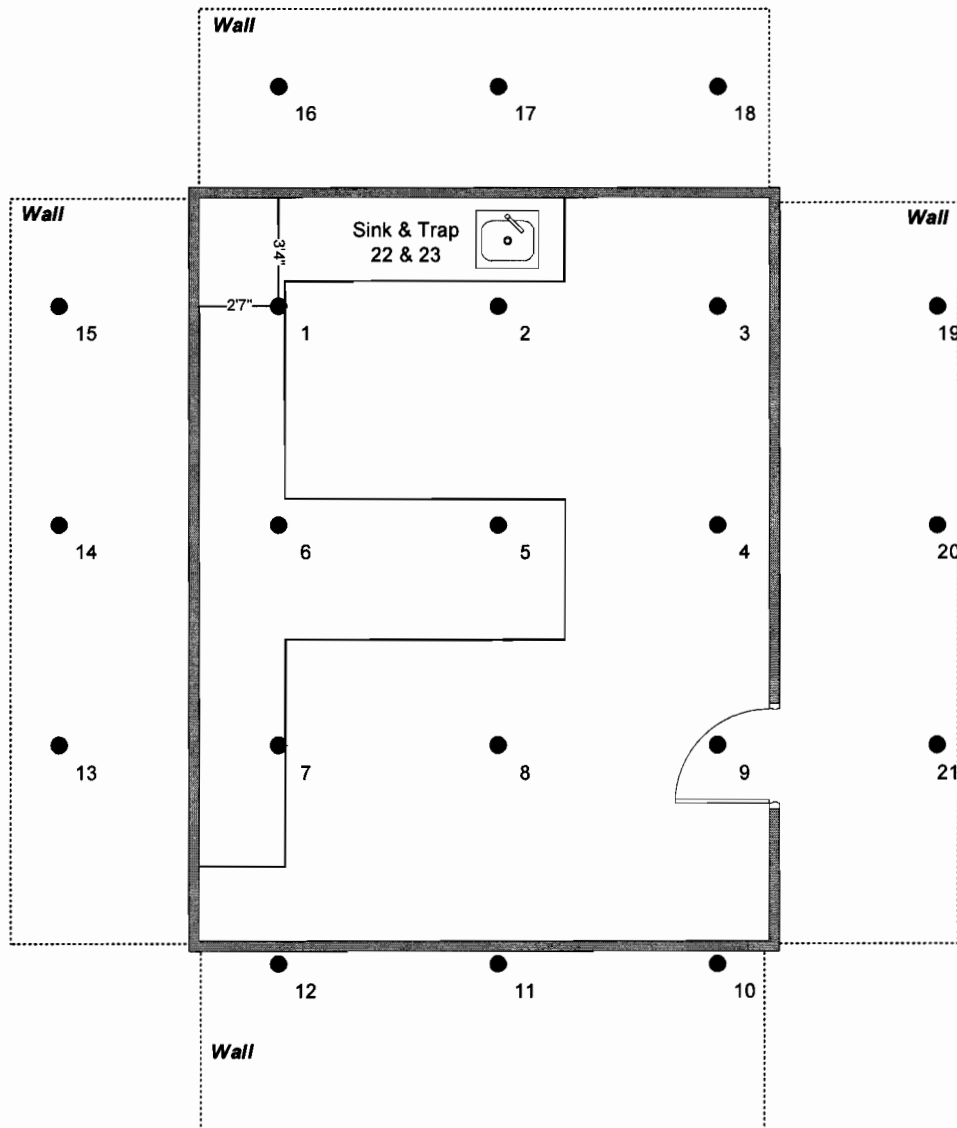
Typical Spacing = 2.13 m (7')
Area ~ 40.2 m² (433 ft²)
⊙ *- Random Starting Point*

Centers for Disease Control and Prevention
Radiation Contamination Survey Report

Location: Roybal Campus, 1 Main   Room: Lab 1211   Survey Unit: 7   Date: 4-20-11   Class: 1

Instruments: Ludlum 2350-1 (Serial #189092), BP19DD Detector, Calibrated on 5-17-10
Beckman Scintillation Counter, Operational Test 4-22-11

Surveyor: Dave Aguero, Justin Button
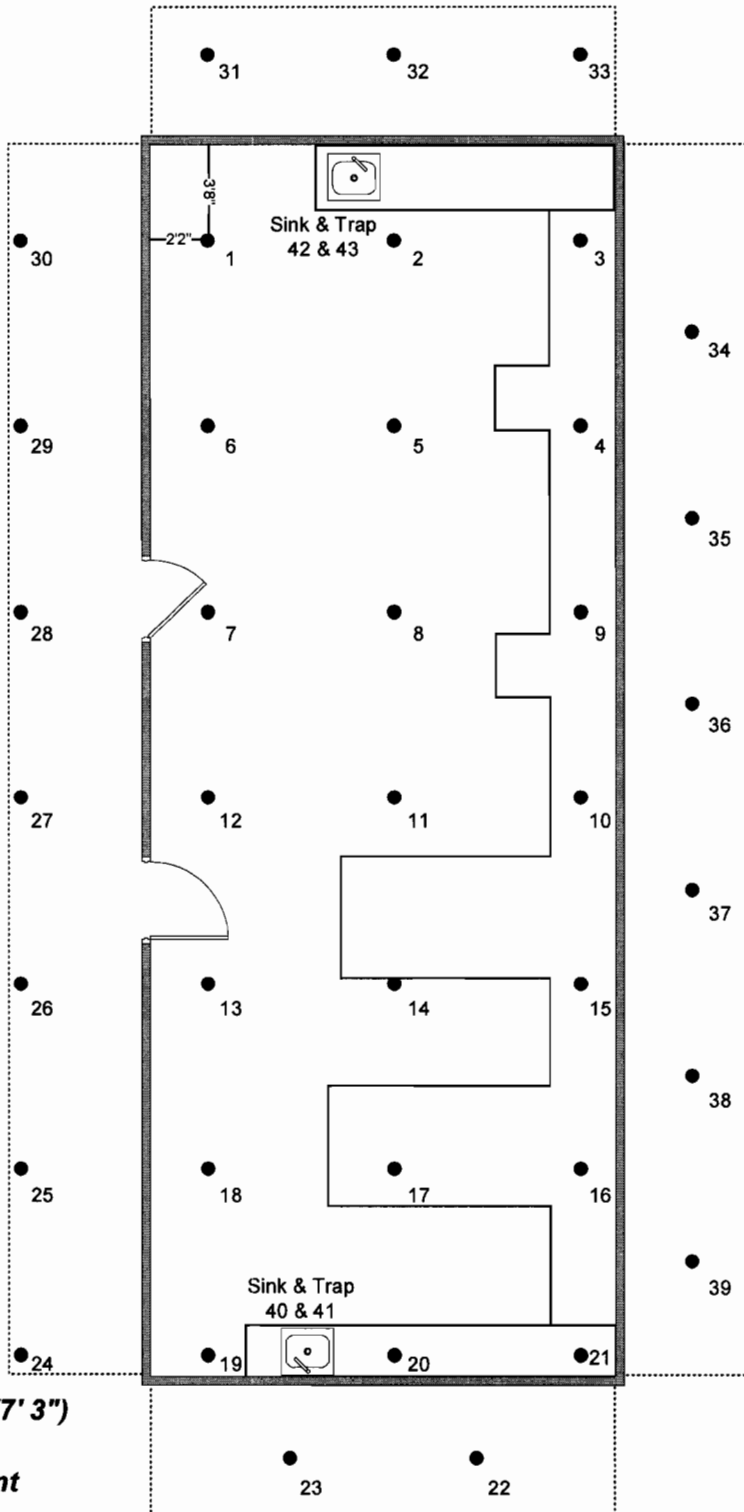
Typical Spacing = 2.21 m (7' 3")
Area ~ 79.3 m² (854 ft²)
◉ - Random Starting Point

Centers for Disease Control and Prevention
Radiation Contamination Survey Report

Location: Roybal Campus, 1 Main   Room: Lab 1223   Survey Unit: 8   Date: 4-20-11   Class: 1

Instruments: Ludlum 2350-1 (Serial #203461) BP19DD Detector, Calibrated on
Beckman Scintillation Counter, Operational Test 4-22-11

Surveyor: Dave Aguero, Justin Button
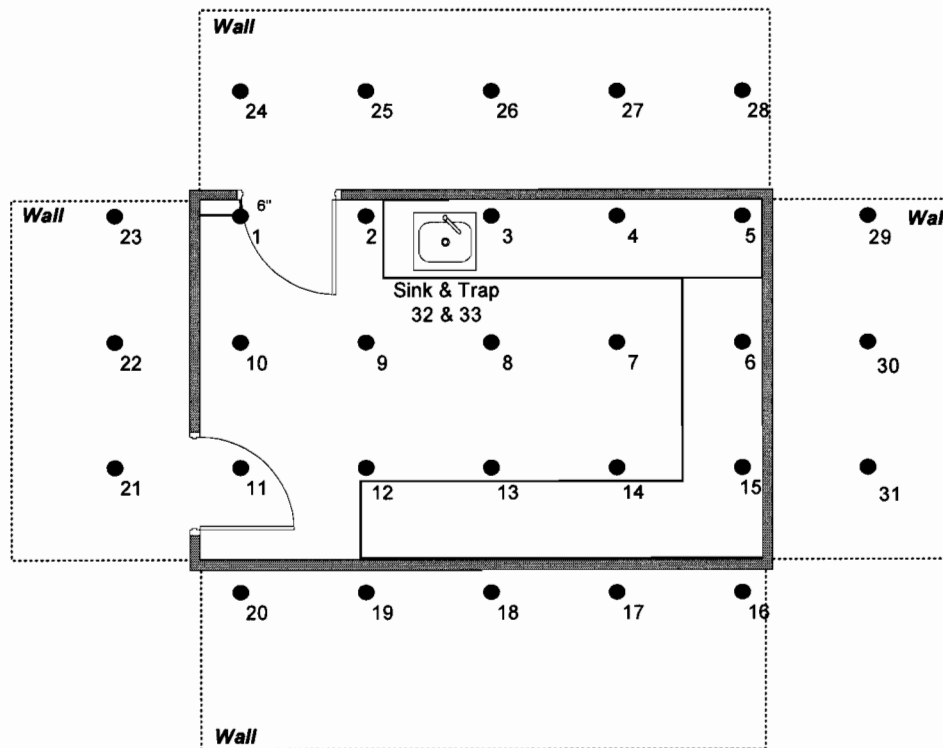
Typical Spacing = 1.22 m (4')
Area ~ 19.2 m² (207 ft²)
◉ **- Random Starting Point**

Centers for Disease Control and Prevention
Radiation Contamination Survey Report

Location: Roybal Campus, 1 Main   Room: Lab 1226   Survey Unit: 9   Date: 4-20-11   Class: 1

Instruments: Ludlum 2350-1 (Serial #189092), BP19DD Detector, Calibrated on 5-17-10
Beckman Scintillation Counter, Operational Test 4-22-11

Surveyor: Dave Aguero, Justin Button
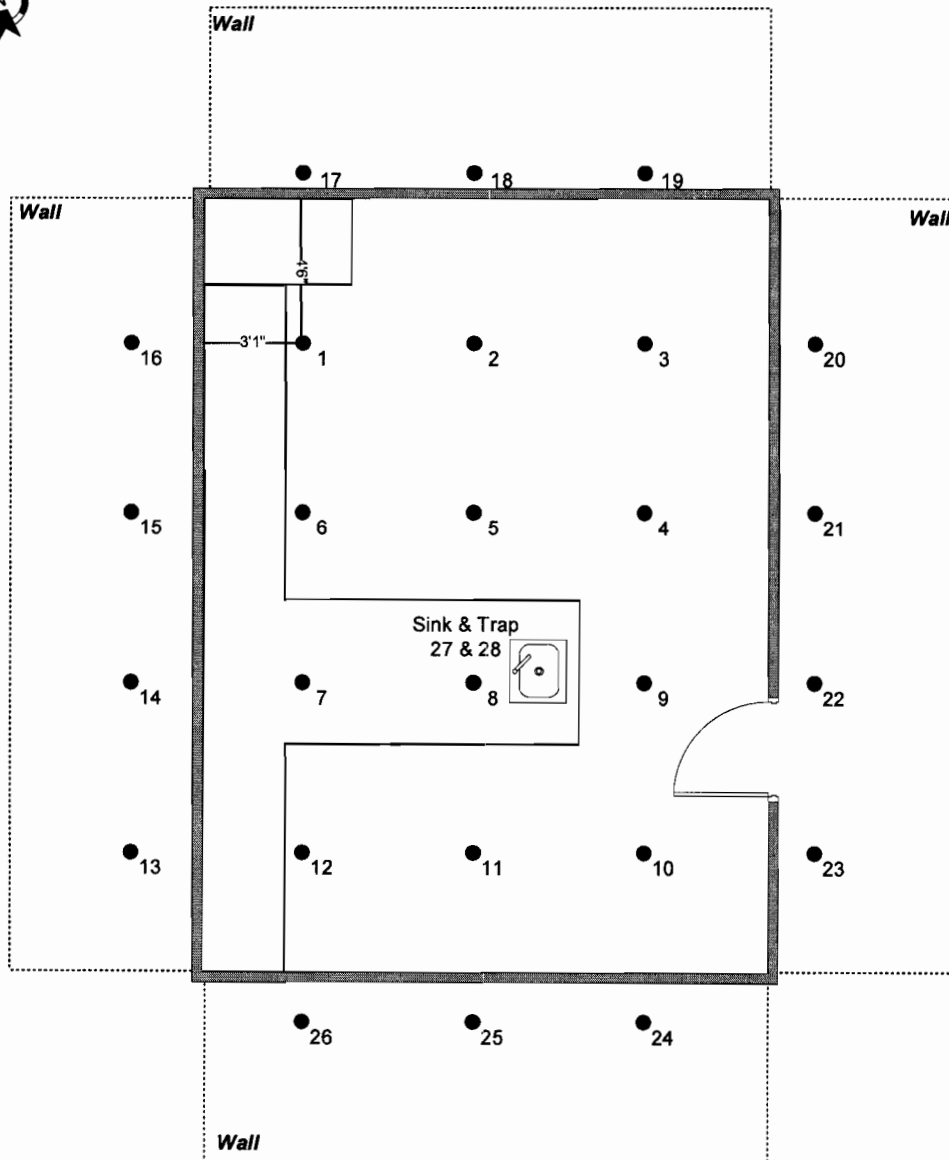
Typical Spacing = 1.65 m (5' 5")
Area ~ 40.7 m² (438 ft²)
◉ **- Random Starting Point**

Centers for Disease Control and Prevention
Radiation Contamination Survey Report

Location: Roybal Campus, 1 Main   Room: Lab 2224   Survey Unit: 10   Date: 4-19-11   Class: 1

Instruments: Ludlum 2350-1 (Serial #189092), BP19DD Detector, Calibrated on 5-17-10
Beckman Scintillation Counter, Operational Test 4-22-11

Surveyor: Dave Aguero, Justin Button
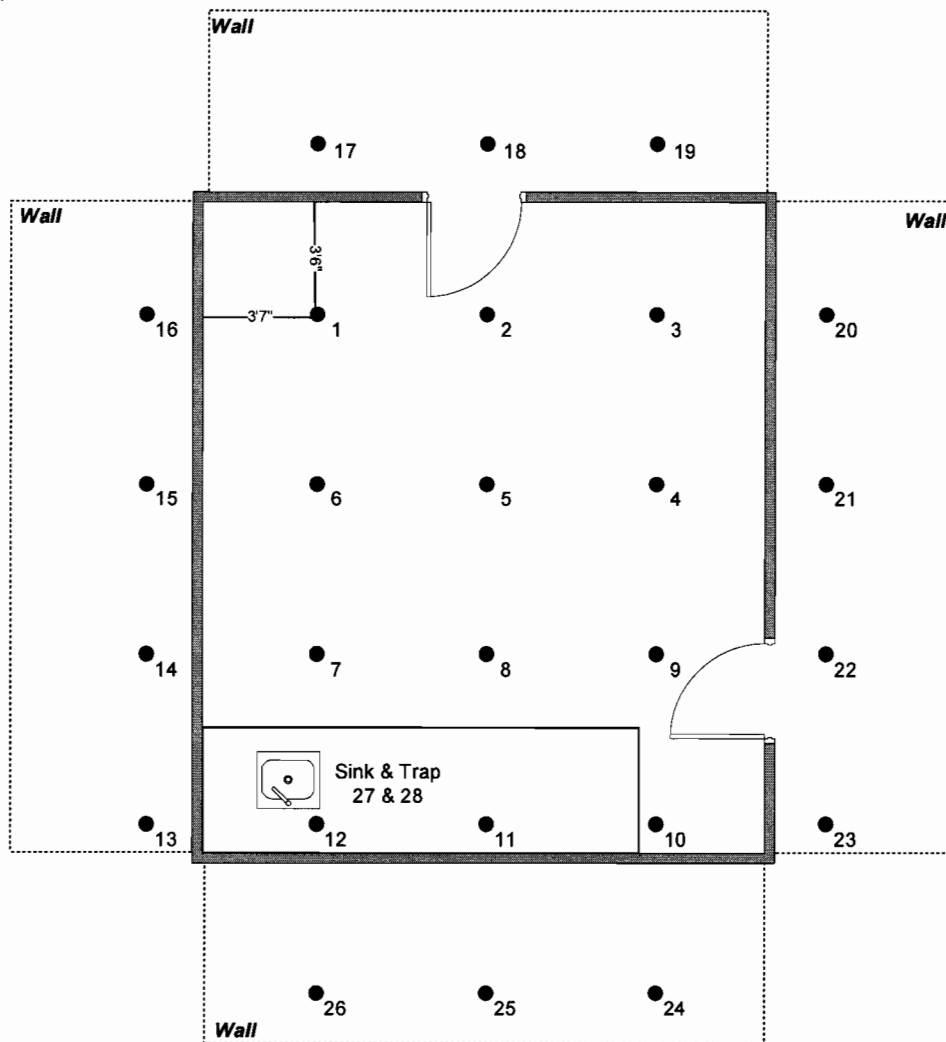
Typical Spacing = 1.65 m (5' 5")
Area ~ 34.5 m² (372 ft²)
◎ **- Random Starting Point**

Centers for Disease Control and Prevention
Radiation Contamination Survey Report

Location: Roybal Campus, 1 Main   Room: Lab 2224A   Survey Unit: 11   Date: 4-19-11   Class: 1

Instruments: Ludlum 2350-1 (Serial #203461), BP19DD Detector, Calibrated on 5-6-10
    Beckman Scintillation Counter, Operational Test 4-22-11

Surveyor: Dave Aguero, Justin Button
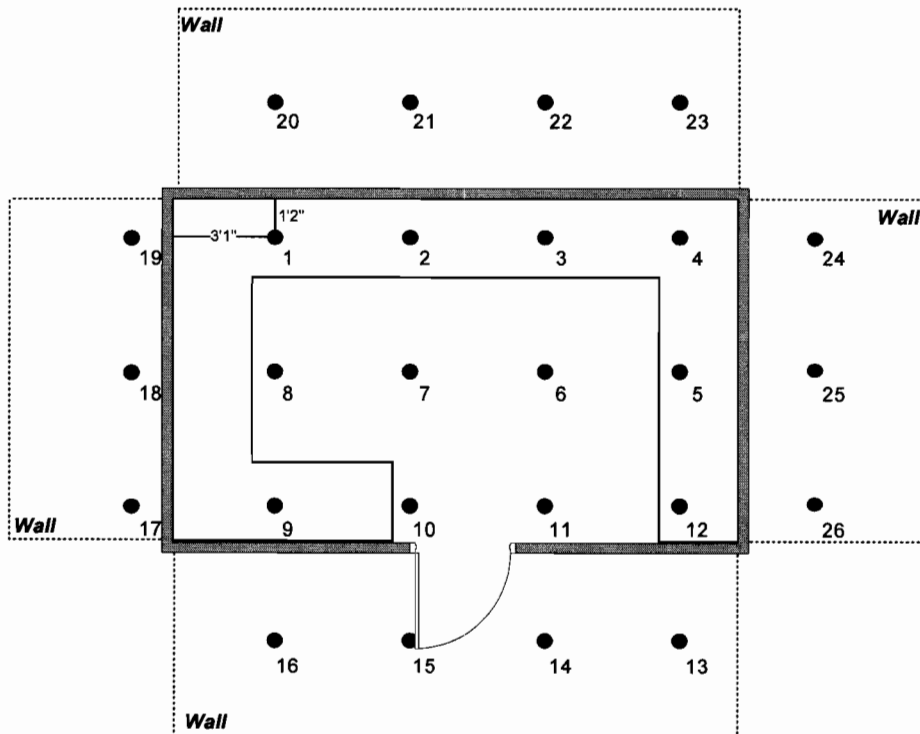
Typical Spacing = 1.32 m (4' 4")
Area ~ m² (197 ft²)
◉ *- Random Starting Point*

Centers for Disease Control and Prevention
Radiation Contamination Survey Report

Location: Roybal Campus, 1 Main   Room: Lab 2309   Survey Unit: 12   Date: 4-19-11   Class: 1

Instruments: Ludlum 2350-1 (Serial # 189092), BP19DD Detector, Calibrated on 5-17-10
Beckman Scintillation Counter, Operational Test 4-22-11

Surveyor: Dave Aguero, Justin Button
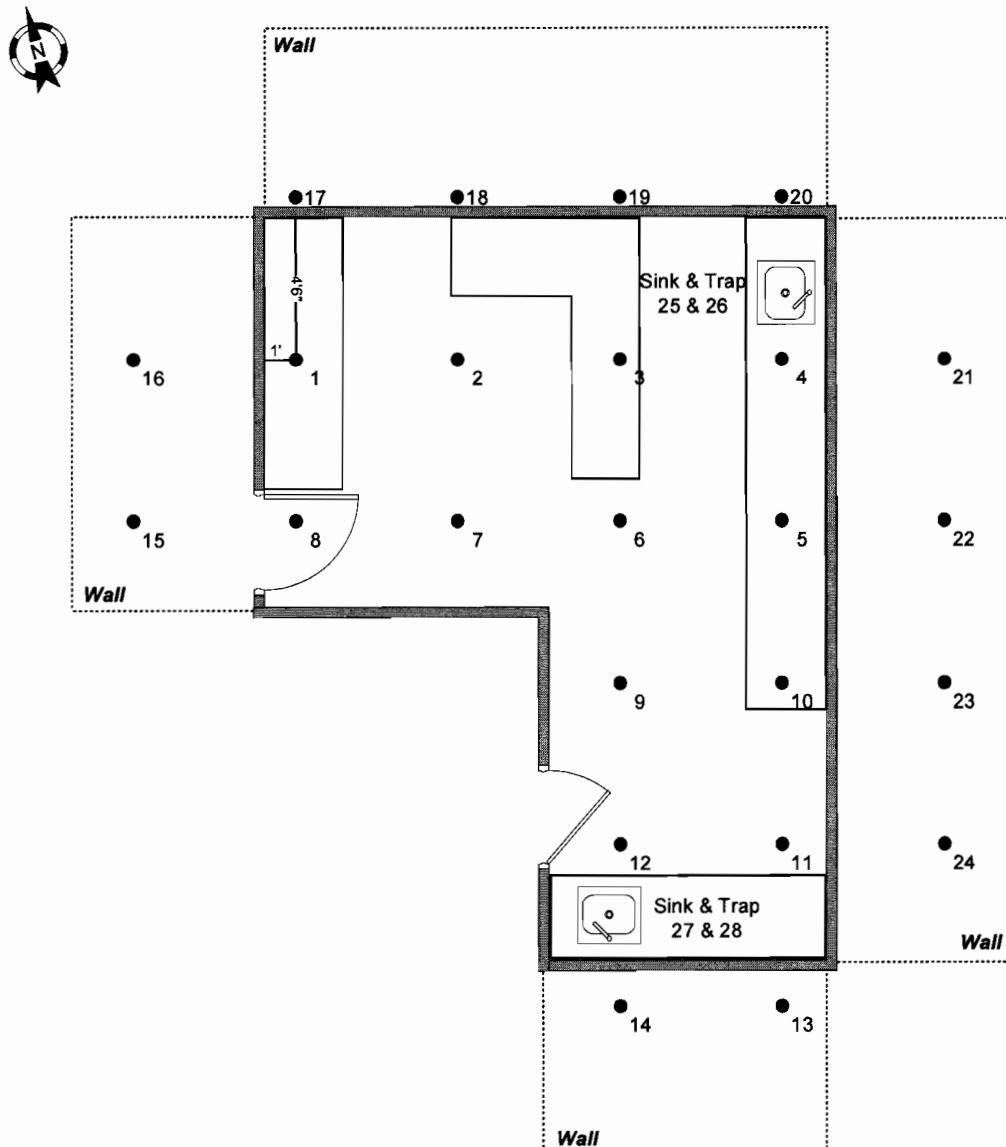
Typical Spacing = 1.58 m (5' 2")
Area ~ 29.7 m² (320 ft²)
◉ **- Random Starting Point**

Centers for Disease Control and Prevention
Radiation Contamination Survey Report

Location: Roybal Campus, 1 Main   Room: Lab 3301   Survey Unit: 13   Date: 4-19-11   Class: 1

Instruments: Ludlum 2350-1 (Serial # 189092), BP19DD Detector, Calibrated on 5-17-10
         Beckman Scintillation Counter, Operational Test 4-22-11

Surveyor: Dave Aguero, Justin Button
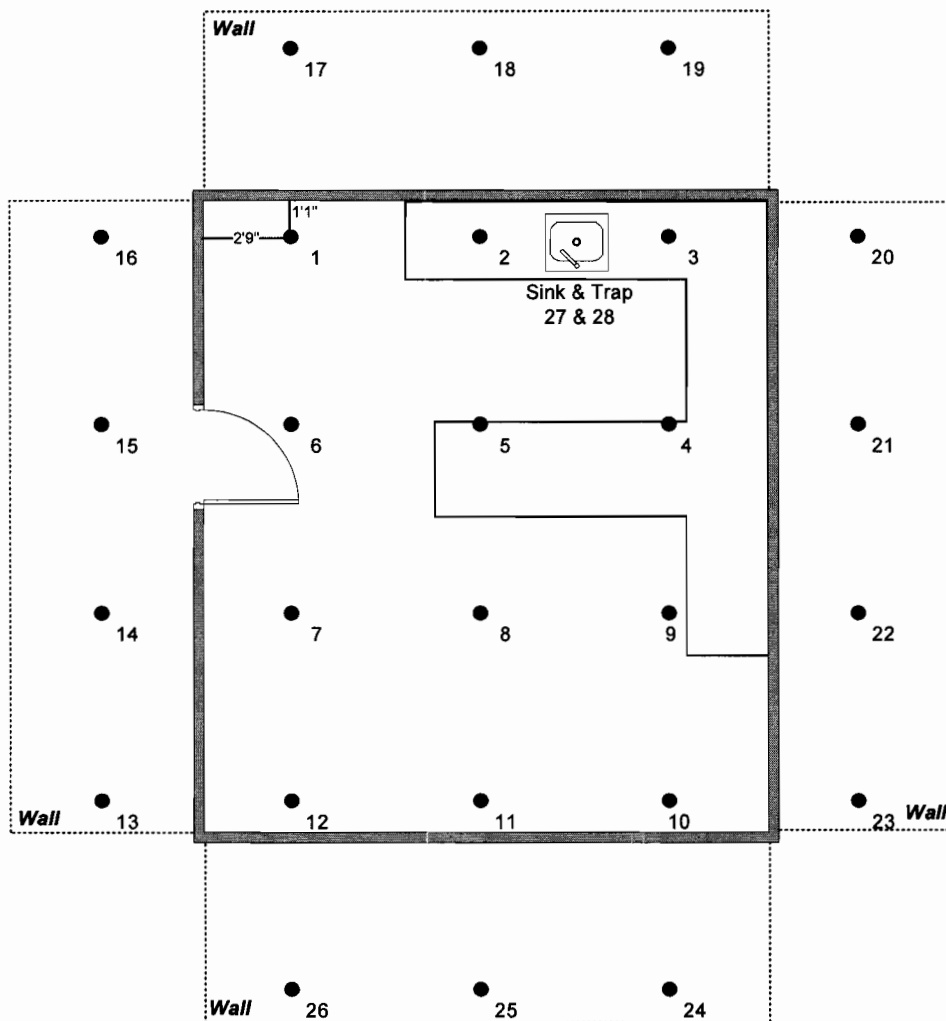
Typical Spacing = 1.83 m (6')
Area ~ 33.6 m² (362 ft²)
◎ **- Random Starting Point**

Centers for Disease Control and Prevention

Radiation Contamination Survey Report

Location: Roybal Campus, 1 Main   Room: Lab 3204   Survey Unit: 14   Date: 4-19-11   Class: 1

Instruments: Ludlum 2350-1 (Serial #189092), BP19DD Detector, Calibrated on 5-17-10
Beckman Scintillation Counter, Operational Test 4-22-11

Surveyor: Dave Aguero, Justin Button

Sink & Trap
30 & 31
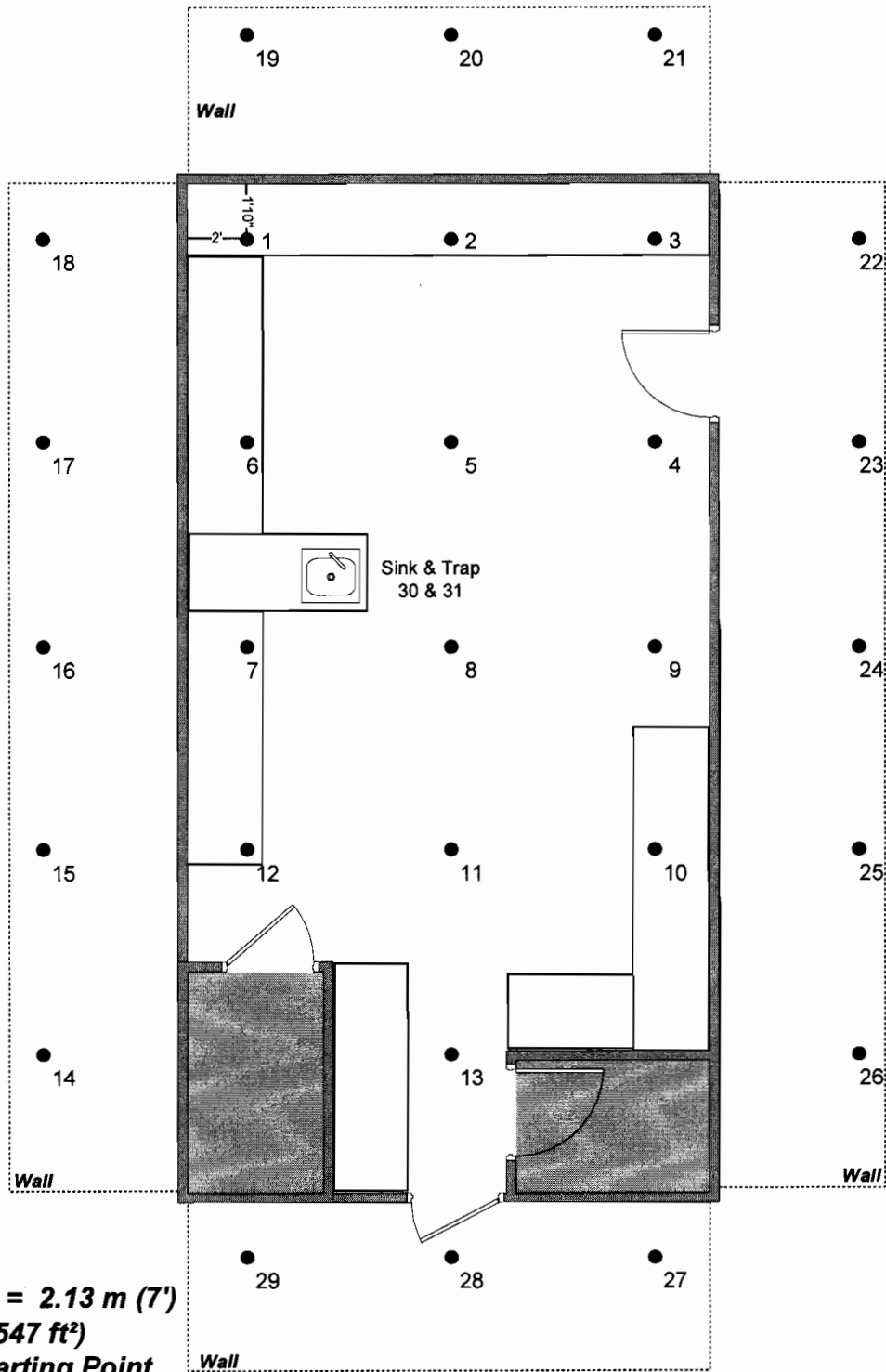
Typical Spacing = 2.13 m (7')
Area ~ 50.8 m² (547 ft²)
◉ - Random Starting Point

APPENDIX C
Certificates of Calibration &
Scintillation Check

Center for Disease Control and Prevention
Instrument Operational Check
4/22/2011

Counting Data:

Standard	CPM
H-3	132,143
C-14	121,343
Blank	30

Nuclide Information:

Analytical Sampling Date: 4/22/2011

Nuclide	Initial Activity (DPM)	Calib. Date	Current Activity (DPM)
H-3	293,900	2/5/2010	274,555
C-14	129,900	2/2/2010	129,881

Efficiency Calculations Unquenched:

Nuclide	CPM	Corrected DPM	Efficiency
H-3	132,143	274,555	48.13%
C-14	121,343	129,881	93.43%

CALIBRATION CERTIFICATE FOR   2350-1   SERIAL#   203461

Owner: PHILOTECHNICS

DATE:	05/06/10	**LOCATION:**	Griffin Inst
TECH:	Joanne Glenn	**DATE LAST CAL EXPIRES:**	05/15/10

Reason For Calibration:

- ● Due For Calibration
- ○ Other (See Remarks)
- ○ Repair (See Remarks)
- ○ Due and Repair (See Remarks)

NIST TRACEABLE EQUIPMENT USED DURING CALIBRATION

MODEL:	M-500	**SERIAL #:**	114512	**CAL. DUE:**	09/05/10
MODEL:		**SERIAL #:**		**CAL DUE:**	

☑ Audio Response   CABLE LENGTH   5'

CONDITION: Sat

NEW BATTERIES: ○ Yes   ● No   **BATTERY CHECK:**   5.6 V

HV (+/-10%)	AS FOUND HV	AS LEFT HV
500 V:	500	A.F.
1250 V:	1300	A.F.
2000 V:	2050	A.F.

AF Threshold: 350   **AL Threshold) :**   A.F.

RATE CPM	AS FOUND		% ERROR	AS LEFT	% ERROR
250	250		0.0%	A.F.	
2500	2499		0.0%	A.F.	
25K	25.003	K	0.0%	A.F.	
250K	250.084	K	0.0%	A.F.	

Is the As Found Data Within 2% of the Set Point?:

● Yes   ○ No

	AF	AL		AF	AL
Detector #:	00	A.F.	HV:	750	A.F.
Detector Serial #:	K102	A.F.	Window:	Off	A.F.
Model #:	IBP19DD	A.F.	Count Time (sec):	60	A.F.
U:	7	A.F.	Threshold:	350	A.F.
M:	0	A.F.	Correction Constant:	1	A.F.
TB:	1	A.F.	Dead Time (uSec):	0.0	A.F.

REMARKS:

Does Instrument Meet Final Acceptance Criteria?:	● Yes	○ No
Calibration Sticker Attached?:	● Yes	○ No
Date Instrument is Due For Next Calibration:	05/06/11	

INSTRUMENT MARRIED WITH   IBP19DD   # K102

Performed/Reviewed by: _Joanne Glenn_   **Date:** 5/6/2010   **Entered by:** CP   Initials

Calibrations performed to ANSI N323A-1997 standards.

GRIFFIN INSTRUMENTS

CALIBRATION CERTIFICATE FOR   IBP19DD   PROBE #   K102

Owner: **PHILOTECHNICS**

DATE:	05/06/10	LOCATION:	Griffin Inst
TECH:	Joanne Glenn	DATE LAST CAL EXPIRES:	05/15/10

REASON FOR CALIBRATION:

● Due For Calibration   Repair (See Remarks)   Other (See Remarks)   Due and Repair

CABLE LENGTH: 5'   INPUT SENSITIVITY: 35 mV

NIST TRACEABLE EQUIPMENT AND STANDARDS USED DURING CALIBRATION

MODEL: 2350-1   SERIAL #: 203461   CAL. DUE: 05/06/11

NIST TRACEABLE SOURCES USED

Source Number	Isotope	4 pi Activity	Assay Date	2 pi Activity
00TC470-0654	Tc99 SS	17,300 dpm	06/15/09	10,800 cpm
2697-00	Sr90	12,200 dpm	03/01/00	8,530 cpm
PX 726	C14	48,780 dpm	01/21/08	18,660 cpm

Efficiencies from last cal.:

Condition: ● Sat   Unsat   Pu: Th: Sr: 43.31%

    Tc ss: 21.38% C14: 10.62% Tc Ni:

As Found (AF) Efficiencies:

HV / Vernier:	Tc-99 Source Response Nickel (CPM):			Pu-239 Source Response (CPM):			Background (CPM):		Tc-99 Source Response Stainless Steel (CPM):		
	A ch.	B ch.	Net Eff.	A ch.	B ch.	Net Eff.	A ch.	B ch.	A ch.	B ch.	Net Eff.
750 / N/A								571		4409	22.18%

Net A to B Xtalk: <10%   B to A Xtalk: <1%

	Pu239	Tc99 Ni	Tc99 ss	Th-230	Sr90	C-14
AF CPM:			4409		4537	5310
AF 4 pi eff:			22.18%		41.53%	9.72%
AF 2 pi eff:			35.54%		59.39%	25.40%

Is as found efficiency within 20% of the efficiency from the last cal?   ● Yes   No (See Remarks)

Note: If the as found data is within 10% of the last calibration and the B-A Xtalk is <1% and the A-B Xtalk is <10%, then the technician may N/A the plateau section and go directly to remarks.

GRIFFIN INSTRUMENTS

PROBE #: **K102**

Date: 05/06/10

PLATEAU AND SET POINT DATA

HV / Vernier:	Tc-99 Source Response SS (CPM):			Pu-239 Source Response (CPM):			Background (CPM):		Net A to B Xtalk: <10%	B to A Xtalk: <1%
	A ch.	B ch.	Net Eff.	A ch.	B ch.	Net Eff.	A ch.	B ch.		
N/A										

Alpha / Beta Bkg (cpm)		571				
HV / Vernier	**Pu-239**	**Tc-99 Ni**	**Tc-99 SS**	**Th-230**	**C-14**	**Sr-90**
750 / N/A CPM:			4409		5310	4537
4 pi AL Efficiencies:			22.18%		9.72%	41.53%
2 pi AL Efficiencies:			*35.54%*		*25.40%*	*59.39%*

REMARKS:

Does Instrument Meet Final Acceptance Criteria?:   ● Yes   No

Calibration Sticker Attached?:   ● Yes   No

Date Instrument is Due For Next Calibration: **05/06/11**

INSTRUMENT MARRIED WITH   2350-1   # 203461

Performed/Reviewed by: *Jeannine Glenn*   Date: 5/6/2010   Entered by: *GP* Initials

2 pi efficiencies denoted in italics.   Calibrations performed to ANSI N323A-1997 standards.

CALIBRATION CERTIFICATE FOR   2350-1   SERIAL#   189092

Owner: PHILOTECHNICS

DATE:	05/17/10	**LOCATION:**	Griffin Inst
TECH:	Joanne Glenn	**DATE LAST CAL. EXPIRES:**	05/06/10

Reason For Calibration:
- (●) Due For Calibration
- ( ) Other (See Remarks)
- ( ) Repair (See Remarks)
- ( ) Due and Repair (See Remarks)

NIST TRACEABLE EQUIPMENT USED DURING CALIBRATION

MODEL:	M-500	**SERIAL #:**	114512	**CAL. DUE:**	09/05/10
MODEL:		**SERIAL #:**		**CAL DUE:**	

[✓] Audio Response   CABLE LENGTH   5'

CONDITION: Sat

NEW BATTERIES: (●) Yes   ( ) No   **BATTERY CHECK:**   6.1 Sat

HV (+/-10%)	AS FOUND HV	AS LEFT HV
500 V:	500	A.F.
1250 V:	1250	A.F.
2000 V:	2000	A.F.

AF Threshold: 350   **AL Threshold):**   A.F.

RATE CPM	AS FOUND		% ERROR	AS LEFT	% ERROR
250	249		0.4%	A.F.	
2500	2497		0.1%	A.F.	
25K	24.981	K	0.1%	A.F.	
250K	249.739	K	0.1%	A.F.	

Is the As Found Data Within 2% of the Set Point?:
(●) Yes   ( ) No

	AF	AL			AF	AL
Detector #:	00	A.F.	HV:		850	A.F.
Detector Serial #:	K114	A.F.	Window:		Off	A.F.
Model #:	IBP19DD	A.F.	Count Time (sec):		60	A.F.
U:	7	A.F.	Threshold:		350	A.F.
M:	0	A.F.	Correction Constant:		1	A.F.
TB:	1	A.F.	Dead Time (uSec):		0.0	A.F.

REMARKS:

Does Instrument Meet Final Acceptance Criteria?:   (●) Yes   ( ) No

Calibration Sticker Attached?:   (●) Yes   ( ) No

Date Instrument is Due For Next Calibration: **05/17/11**

INSTRUMENT MARRIED WITH   IBP19DD   # K114

Performed/Reviewed by: *Joanne Glenn*   Date: 5/17/2010   Entered by: _____ Initials

Calibrations performed to ANSI N323A-1997 standards.

GRIFFIN INSTRUMENTS

CALIBRATION CERTIFICATE FOR   IBP19DD   PROBE #   K114

Owner: PHILOTECHNICS .

DATE: 05/17/10	**LOCATION:** Griffin Inst
TECH: Joanne Glenn	**DATE LAST CAL EXPIRES:** 05/06/10

REASON FOR CALIBRATION:

● Due For Calibration   Repair (See Remarks)   Other (See Remarks)   Due and Repair

CABLE LENGTH: 5'   **INPUT SENSITIVITY:** 35 mV

NIST TRACEABLE EQUIPMENT AND STANDARDS USED DURING CALIBRATION

MODEL: 2350-1   **SERIAL #:** 189092   **CAL. DUE:** 05/17/11

NIST TRACEABLE SOURCES USED

Source Number	Isotope	4 pi Activity	Assay Date	2 pi Activity
00TC470-0654	Tc99 SS	17,300 dpm	06/15/09	10,800 cpm
2697-00	Sr90	12,200 dpm	03/01/00	8,530 cpm
PX 726	C14	48,780 dpm	01/21/08	18,660 cpm

Efficiencies from last cal.:

Condition: ● Sat   Unsat   **Pu:**   **Th:**   **Sr:** 42.44%

Tc ss: 20.12% **C14:** 9.14% **Tc Ni:**

As Found (AF) Efficiencies:

HV / Vernier:	Tc-99 Source Response Nickel (CPM):			Pu-239 Source Response (CPM):			Background (CPM):		Tc-99 Source Response Stainless Steel (CPM):		
	A ch.	B ch.	Net Eff.	A ch.	B ch.	Net Eff.	A ch.	B ch.	A ch.	B ch.	Net Eff.
850 / N/A								448		4069	20.93%

Net A to B Xtalk: <10%   B to A Xtalk: <1%

	Pu239	Tc99 NI	Tc99 ss	Th-230	Sr90	C-14
AF CPM:			4069		4361	4815
AF 4 pi eff:			20.93%		40.97%	8.95%
AF 2 pi eff:			33.53%		58.60%	23.40%

Is as found efficiency within 20% of the efficiency from the last cal?   ● Yes   No (See Remarks)

Note: If the as found data is within 10% of the last calibration and the B-A Xtalk is <1% and the A-B Xtalk is <10%, then the technician may N/A the plateau section and go directly to remarks.

GRIFFIN INSTRUMENTS

PLATEAU AND SET POINT DATA

HV / Vernier:	Tc-99 Source Response SS (CPM):			Pu-239 Source Response (CPM):			Background (CPM):		Net A to B Xtalk: <10%	B to A Xtalk: <1%
	A ch.	B ch.	Net Eff.	A ch.	B ch.	Net Eff.	A ch.	B ch.		
N/A										

Alpha / Beta Bkg (cpm)		448				
HV / Vernier	**Pu-239**	**Tc-99 Ni**	**Tc-99 SS**	**Th-230**	**C-14**	**Sr-90**
850 / N/A **CPM:**			4069		4815	4361
4 pi AL Efficiencies:			20.93%		8.95%	40.97%
2 pi AL Efficiencies:			*33.53%*		*23.40%*	*58.60%*

REMARKS:

Does Instrument Meet Final Acceptance Criteria?:   ●   Yes   No

Calibration Sticker Attached?:   ●   Yes   No

Date Instrument is Due For Next Calibration: **05/17/11**

INSTRUMENT MARRIED WITH   **2350-1**   **# 189092**

Performed/Reviewed by: _Jeanne Glenn_   Date: 5/17/2010   Entered by: ___ Initials

2 pi efficiencies denoted in italics.   **Calibrations performed to ANSI N323A-1997 standards.**

APPENDIX D
Daily Instrument Checks

Philotechnics Instrument Daily Source Check

Instrument Model	Instrument Serial Number	Calibration Due Date	Project Efficiency	
2350-1	189092	5/17/11	5.85%	
Detector Model	**Detector Serial Number**	**Detector Area**	**High Voltage**	
IBP19DD	K114	100 cm2	850	
Source Isotopes	**Source Serial Number**	**Source Activity**	**Source Reproducibility**	
Tc-99	5358-04	22,000 DPM	4118 to 6176	

Date (M/D/Y)	Time	Background Count Rate	Gross Count Rate	Net Count Rate	SAT/UNSAT	Comments	Initials
4/18/2011	1:08	508	6560	6052	SAT	N/A	JB
4/19/2011	9:36	475	5421	4946	SAT	N/A	JB
4/20/2011	9:37	466	6016	5550	SAT	N/A	JB

Reviewed By: _____   Date: ____4/20/11____

Philotechnics Instrument Daily Source Check

Instrument Model	Instrument Serial Number	Calibration Due Date	Project Efficiency		
2350-1	203461	5/6/11	6.35%		
Detector Model	**Detector Serial Number**	**Detector Area**	**High Voltage**		
IBP19DD	K109	100 cm2	750		
Source Isotopes	**Source Serial Number**	**Source Activity**	**Source Reproducibility**		
Tc-99	5358-04	22,000 DPM	4108 to 6162		

Date (M/D/Y)	Time	Background Count Rate	Gross Count Rate	Net Count Rate	SAT/UNSAT	Comments	Initials
4/18/2011	1:11	520	5045	4525	SAT	N/A	JB
4/19/2011	9:32	518	5885	5367	SAT	N/A	JB
4/20/2011	9:40	454	5470	5016	SAT	N/A	JB

Reviewed By: _Dave Spun_ Date: ____4/20/11____

APPENDIX E
MARSSIM Analytical Calculation Sheets

Philotechnics
Analytical Worksheet

Minimum Detectable Concentration (MDC) Static Count
Calculations for Liquid Scintillation Counter
(95% confidence level via NUREG 1507 method)

$$MDC\,(dpm/100cm^2) = \frac{3 + 3.29\sqrt{(R_b)(T_{s+b})(1 + T_{s+b}/T_b)}}{(Eff.)(T_{s+b})}$$ (Eq. 1)

Where:

Eff. = LSC total efficiency, Counter cpm/NIST Standard dpm
R_b = LSC background rate (cpm)
T_{s+b} = Sample count time (minutes)
T_b = Background count time (minutes)

Static Count MDC Calculations

Nuclide	Eff.	R_b	T_{s+b}	T_b	MDC (Static)
H-3	48.1%	28.6	1	1	57.9 dpm/100 cm^2
C-14	93.4%	13.4	1	1	21.4 dpm/100 cm^2

Minimum Detectable Concentration (MDC) Static Count
Calculations for Hand-Held Monitors
(95% confidence level via NUREG 1507 method)

$$MDC\,(dpm/100cm^2) = \frac{3 + 3.29\sqrt{(R_b)(T_{s+b})(1 + T_{s+b}/T_b)}}{(Eff.)(T_{s+b})(probeareacm^2/100cm^2)}$$ (Eq. 2)

Where:

Total Eff. : Total Efficiency (2pi efficiency * 0.25 per ISO 7503-1)
R_b = Average background rate (cpm)
T_{s+b} = Sample count time (minutes)
T_b = Background count time (minutes)
P = Probe area (cm2)

Static Count MDC Calculations

Meter: 189092 (Hand Held Beta Probe)

Nuclide	Total Eff.	R_b	T_{s+b}	T_b	P	MDC (Static)	
C-14	5.85%	449.5	1	1	100	1737.5 dpm/100 cm^2	Ambient
C-14	5.85%	457.3	1	1	100	1752.1 dpm/100 cm^2	Casework
C-14	5.85%	434.8	1	1	100	1709.7 dpm/100 cm^2	Drywall
C-14	5.85%	530.7	1	1	100	1883.5 dpm/100 cm²	Floor

Meter: 203461 (Hand Held Beta Probe)

Nuclide	Total Eff.	R_b	T_{s+b}	T_b	P	MDC (Static)	
C-14	6.35%	463.1	1	1	100	1624.0 dpm/100 cm²	Ambient
C-14	6.35%	464.9	1	1	100	1627.1 dpm/100 cm²	Casework
C-14	6.35%	463.0	1	1	100	1623.9 dpm/100 cm²	Drywall
C-14	6.35%	542.7	1	1	100	1754.2 dpm/100 cm²	Floor

Philotechnics
Analytical Worksheet

Scan Minimum Detectable Concentration (MDC)
Calculations for Hand-Held Monitors
(Scan MDA per NUREG-1575, NUREG-1507 methodology)

$$Scan\,MDC = \frac{MDCR}{\sqrt{p}\,(\varepsilon_i)(\varepsilon_s)\left(\dfrac{A}{100cm^2}\right)} \qquad \text{(Eq. 3)}$$

Where:

p = surveyor efficiency, per NUREG 1507 (0.5)

ε_i = total efficiency (2π geometry)

ε_s = surface efficiency, 0.5 for gammas and high energy betas >1 MeV Emax

(e.g. P-32, Cl-36, S/Y-90, etc.), 0.25 for low energy betas

(e.g. C-14, P-33, S-35, Tc-99, Ca-45, etc.)

A = probe active area (cm^2)

And,

$$MDCR = S_i\,(60\sec/\min)/i\sec \qquad \text{(Eq. 4)}$$

Where:

MDCR = Minimum detectable count rate (cpm)

S_i = source counts in time interval, i.

And, $\quad S_i = d'\sqrt{B_i}$

$$\text{(Eq. 5)}$$

Where:

d' = 1.38 for 95% true positive scan detection rate,
per, NUREG 1507, Table 6.1

B_i = Background counts in interval, i

And,

$$B_i = (P_b)(i)(1\min/60\sec) \qquad \text{(Eq. 6)}$$

Where:

P_b = probe background count rate (cpm)

i = observation interval

Philotechnics
Analytical Worksheet

Scan Minimum Detectable Concentration (MDC)
Calculations for Hand-Held Monitors
(Scan MDA per NUREG-1575, NUREG-1507 methodology)

Specific Scan MDC calculation results:

	Meter # 189092 (Hand Held Beta Probe)				Meter # 203461 (Hand Held Beta Probe)				
	Ambient	Casework	Drywall	Floor	Ambient	Casework	Drywall	Floor	
$P_b =$	449.5	457.3	434.8	530.7	463.1	464.9	463.0	542.7	cpm
$i =$	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	sec
$B_i =$	10.04	10.21	9.71	11.85	10.34	10.38	10.34	12.12	counts
$d' =$	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	
$S_i =$	4.37	4.41	4.30	4.75	4.44	4.45	4.44	4.80	counts
MDCR =	195.8	197.5	192.6	212.7	198.7	199.1	198.7	215.1	cpm

Scan MDC Calculations				
Meter: 189092(Hand Held Beta Probe)				
Nuclide	**Total Efficiency**	**Area**	**MDC (Scan)**	
C-14	5.85%	100	4732.9 dpm/100 cm^2	Ambient
C-14	5.85%	100	4773.8 dpm/100 cm^2	Floor
C-14	5.85%	100	4654.9 dpm/100 cm^2	Casework
C-14	5.85%	100	5142.6 dpm/100 cm^2	Drywall
Meter: 203461(Hand Held Beta Probe)				
Nuclide	**Total Efficiency**	**Area**	**MDC (Scan)**	
C-14	6.35%	100	4425.7 dpm/100 cm^2	Ambient
C-14	6.35%	100	4434.3 dpm/100 cm^2	Floor
C-14	6.35%	100	4425.2 dpm/100 cm^2	Casework
C-14	6.35%	100	4791.0 dpm/100 cm^2	Drywall

APPENDIX F
Background Documentation

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Philotechnics Analytical Worksheet

Background Documentation

Fail Levels

Ld, system detection limit is the net count having 95% probability of being detected when a survey sample point contains activity at Ld, which translates to a 5% probability of falsely interpreting sample activity as activity due to background (NUREG-1507 Table 3-8)

$$L_d(cpm) = 3 + 4.65\sqrt{B}$$

(Eq. 7)

Fail Level CPM = Bkg cpm + Ld cpm

Fail Level Calculations (Static) #189092

Probe	Surface	Bkg	Ld (cpm)	Fail Level (cpm)
BP19DD	Ambient	449.5	101.6	**551.1**
BP19DD	Casework	457.3	102.4	**559.7**
BP19DD	Drywall	434.8	100.0	**534.8**
BP19DD	Floors	530.7	110.1	**640.8**

Fail Level Calculations (Static) #203461

Probe	Surface	Bkg	Ld (cpm)	Fail Level (cpm)
BP19DD	Ambient	463.1	103.1	**566.2**
BP19DD	Casework	464.9	103.3	**568.2**
BP19DD	Drywall	463.0	103.1	**566.1**
BP19DD	Floors	542.7	111.3	**654.0**

Background Data

Ludlum 2350-1 with BP19DD probe #189092 (Hand Held Beta Probe)

Surface	Counts (cpm)				
Ambient	465	480	453	429	436
	451	462	448	438	433
Average:	**449.5 cpm**				
Casework	485	458	453	441	435
	489	462	437	444	469
Average:	**457.3 cpm**				
Drywall	431	448	399	420	433
	420	450	469	436	442
Average:	**434.8 cpm**				
Floors	487	545	530	553	529
	535	523	553	496	556
Average:	**530.7 cpm**				

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Ludium 2350-1 with BP10DD probe #203461 (Hand Held Beta Probe)					
Surface	**Counts (cpm)**				
Ambient	480	467	472	462	459
	451	458	446	471	465
Average:	**463.1 cpm**				
Surface	**Counts (cpm)**				
Casework	488	503	463	467	495
	433	425	479	448	448
Average:	**464.9 cpm**				
Surface	**Counts (cpm)**				
Drywall	459	507	452	461	437
	471	458	476	461	448
Average:	**463.0 cpm**				
Surface	**Counts (cpm)**				
Floors	552	537	543	527	539
	546	545	547	543	548
Average:	**542.7 cpm**				

		Scintillation Counter Counts (cpm)		
Sample	Time	Chan A (cpm)	Chan B (cpm)	Chan C (cpm)
1	1 min.	19	11	12
2	1 min.	28	15	8
3	1 min.	40	12	10
4	1 min.	25	12	8
5	1 min.	25	12	18
6	1 min.	35	16	10
7	1 min.	29	12	5
8	1 min.	31	13	13
9	1 min.	31	20	11
10	1 min.	23	11	13
	Average:	**28.6**	**13.4**	**10.8**

APPENDIX G
Static Measurement Data Sheets and DPM Calculations

Philotechnics Analytical Worksheet

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Static Measurements

Survey Unit 1		Instrument	
Bldg. 1; Room 1301		189092	
Surface		**Background (CPM)**	**MDC (DPM)**
Ambient	A	449.5	1737.5
Casework	C	457.3	1752.1
Drywall	D	434.8	1709.7
Floor	F	530.7	1883.5
Beta Meter Efficiency		5.85%	

Sample	Surface	Gross CPM	Net CPM	DPM /100CM^2	±	1.96 Sigma	Comment
1	C	508	51	867	±	58	<DCGL
2	C	495	38	644	±	50	<DCGL
3	C	488	31	525	±	45	<DCGL
4	C	541	84	1431	±	74	<DCGL
5	C	432	-25	-432	±	41	<DCGL
6	F	546	15	262	±	32	<DCGL
7	F	525	-6	-97	±	19	<DCGL
8	F	559	28	484	±	43	<DCGL
9	F	558	27	467	±	42	<DCGL
10	C	451	-6	-108	±	20	<DCGL
11	C	428	-29	-501	±	44	<DCGL
12	C	480	23	388	±	39	<DCGL
13	D	447	12	209	±	28	<DCGL
14	D	482	47	807	±	56	<DCGL
15	D	419	-16	-270	±	32	<DCGL
16	D	408	-27	-458	±	42	<DCGL
17	D	499	64	1097	±	65	<DCGL
18	D	440	5	89	±	18	<DCGL
19	D	459	24	414	±	40	<DCGL
20	D	519	84	1439	±	74	<DCGL
21	D	516	81	1388	±	73	<DCGL
22	D	528	93	1593	±	78	<DCGL
23	D	483	48	824	±	56	<DCGL
24	D	496	61	1046	±	63	<DCGL
25	D	495	60	1029	±	63	<DCGL
26	D	508	73	1251	±	69	<DCGL
27	A	449	-1	-9	±	6	<DCGL
28	Drain Trap	N/A	N/A	N/A	N/A	N/A	N/A

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Survey Unit 2 Bldg. 1; Room 1309		Instrument 203461	
Surface		**Background (CPM)**	**MDC (DPM)**
Ambient	A	463.1	1624.0
Casework	C	464.9	1627.1
Drywall	D	463.0	1623.9
Floor	F	542.7	1754.2
Beta Meter Efficiency		6.35%	

Sample	Surface	Gross CPM	Net CPM	DPM /100CM^2	±	1.96 Sigma	Comment
1	F	582	39	*619*	±	49	<DCGL
2	F	559	16	*257*	±	31	<DCGL
3	F	551	8	*131*	±	22	<DCGL
4	F	564	21	*335*	±	36	<DCGL
5	F	553	10	*162*	±	25	<DCGL
6	F	544	1	*20*	±	9	<DCGL
7	F	545	2	*36*	±	12	<DCGL
8	F	559	16	*257*	±	31	<DCGL
9	F	550	7	*115*	±	21	<DCGL
10	F	567	24	*383*	±	38	<DCGL
11	F	564	21	*335*	±	36	<DCGL
12	F	558	15	*241*	±	30	<DCGL
13	D	442	-21	*-331*	±	36	<DCGL
14	D	484	21	*331*	±	36	<DCGL
15	D	534	71	*1118*	±	66	<DCGL
16	D	558	95	*1496*	±	76	<DCGL
17	D	490	27	*425*	±	40	<DCGL
18	D	426	-37	*-583*	±	47	<DCGL
19	D	437	-26	*-409*	±	40	<DCGL
20	D	495	32	*504*	±	44	<DCGL
21	D	475	12	*189*	±	27	<DCGL
22	D	462	-1	*-16*	±	8	<DCGL
23	D	451	-12	*-189*	±	27	<DCGL
24	D	379	-84	*-1323*	±	71	<DCGL
25	D	420	-43	*-677*	±	51	<DCGL
26	D	511	48	*756*	±	54	<DCGL
27	A	456	-7	*-112*	±	21	<DCGL
28	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A
29	A	773	310	*4880*	±	137	<DCGL
30	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A

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Survey Unit 3 Bldg. 1; Room 1311		Instrument 189092					
Surface		Background (CPM)	MDC (DPM)				
Ambient	A	449.5	1737.5				
Casework	C	457.3	1752.1				
Drywall	D	434.8	1709.7				
Floor	F	530.7	1883.5				
Beta Meter Efficiency		5.85%					
Sample	Surface	Gross CPM	Net CPM	DPM /100CM^2	±	1.96 Sigma	Comment
1	C	526	69	1174	±	67	<DCGL
2	F	515	-16	-268	±	32	<DCGL
3	F	544	13	227	±	30	<DCGL
4	F	564	33	569	±	47	<DCGL
5	F	530	-1	-12	±	7	<DCGL
6	C	432	-25	-432	±	41	<DCGL
7	C	410	-47	-809	±	56	<DCGL
8	F	523	-8	-132	±	22	<DCGL
9	F	528	-3	-46	±	13	<DCGL
10	F	537	6	108	±	20	<DCGL
11	F	521	-10	-166	±	25	<DCGL
12	F	554	23	398	±	39	<DCGL
13	D	400	-35	-595	±	48	<DCGL
14	D	441	6	106	±	20	<DCGL
15	D	437	2	38	±	12	<DCGL
16	D	447	12	209	±	28	<DCGL
17	D	476	41	704	±	52	<DCGL
18	D	437	2	38	±	12	<DCGL
19	D	506	71	1217	±	68	<DCGL
20	D	462	27	465	±	42	<DCGL
21	D	437	2	38	±	12	<DCGL
22	D	422	-13	-219	±	29	<DCGL
23	D	424	-11	-185	±	27	<DCGL
24	D	462	27	465	±	42	<DCGL
25	D	444	9	157	±	25	<DCGL
26	D	438	3	55	±	14	<DCGL
27	A	714	265	4521	±	132	<DCGL
28	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A

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Survey Unit 4		Instrument	
Bldg. 1; Room 1312		203461	
Surface		Background (CPM)	MDC (DPM)
Ambient A		463.1	1624.0
Casework C		464.9	1627.1
Drywall D		463.0	1623.9
Floor F		542.7	1754.2
Beta Meter Efficiency		6.35%	

Sample	Surface	Gross CPM	Net CPM	DPM /100CM^2	±	1.96 Sigma	Comment
1	C	391	-74	*-1164*	±	67	<DCGL
2	F	523	-20	*-310*	±	35	<DCGL
3	F	517	-26	*-405*	±	39	<DCGL
4	F	472	-71	*-1113*	±	65	<DCGL
5	C	455	-10	*-156*	±	24	<DCGL
6	C	401	-64	*-1006*	±	62	<DCGL
7	C	444	-21	*-329*	±	36	<DCGL
8	F	549	6	*99*	±	20	<DCGL
9	F	570	27	*430*	±	41	<DCGL
10	F	546	3	*52*	±	14	<DCGL
11	F	499	-44	*-688*	±	51	<DCGL
12	F	523	-20	*-310*	±	35	<DCGL
13	D	425	-38	*-598*	±	48	<DCGL
14	D	426	-37	*-583*	±	47	<DCGL
15	D	463	0	*0*	±	0	<DCGL
16	D	410	-53	*-835*	±	57	<DCGL
17	D	433	-30	*-472*	±	43	<DCGL
18	D	434	-29	*-457*	±	42	<DCGL
19	D	453	-10	*-157*	±	25	<DCGL
20	D	537	74	*1165*	±	67	<DCGL
21	D	499	36	*567*	±	47	<DCGL
22	A	683	220	*3463*	±	115	<DCGL
23	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A

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Survey Unit 5 Bldg. 1; Room 1323		Instrument 189092	
Surface		**Background (CPM)**	**MDC (DPM)**
Ambient	A	449.5	1737.5
Casework	C	457.3	1752.1
Drywall	D	434.8	1709.7
Floor	F	530.7	1883.5
Beta Meter Efficiency		5.85%	

Sample	Surface	Gross CPM	Net CPM	DPM /100CM^2	±	1.96 Sigma	Comment
1	C	503	46	*781*	±	55	<DCGL
2	F	501	-30	*-508*	±	44	<DCGL
3	F	491	-40	*-679*	±	51	<DCGL
4	F	486	-45	*-764*	±	54	<DCGL
5	F	496	-35	*-593*	±	48	<DCGL
6	C	468	11	*183*	±	27	<DCGL
7	C	497	40	*679*	±	51	<DCGL
8	F	540	9	*159*	±	25	<DCGL
9	F	475	-56	*-952*	±	60	<DCGL
10	F	511	-20	*-337*	±	36	<DCGL
11	F	517	-14	*-234*	±	30	<DCGL
12	F	478	-53	*-901*	±	59	<DCGL
13	D	398	-37	*-629*	±	49	<DCGL
14	D	428	-7	*-116*	±	21	<DCGL
15	D	567	132	*2260*	±	93	<DCGL
16	D	409	-26	*-441*	±	41	<DCGL
17	D	381	-54	*-920*	±	59	<DCGL
18	D	430	-5	*-82*	±	18	<DCGL
19	D	422	-13	*-219*	±	29	<DCGL
20	D	490	55	*944*	±	60	<DCGL
21	D	414	-21	*-356*	±	37	<DCGL
22	D	411	-24	*-407*	±	40	<DCGL
23	D	438	3	*55*	±	14	<DCGL
24	D	444	9	*157*	±	25	<DCGL
25	D	462	27	*465*	±	42	<DCGL
26	D	438	3	*55*	±	14	<DCGL
27	D	455	20	*345*	±	36	<DCGL
28	D	461	26	*448*	±	41	<DCGL
29	D	453	18	*311*	±	35	<DCGL
30	D	429	-6	*-99*	±	20	<DCGL
31	D	466	31	*533*	±	45	<DCGL
32	D	432	-3	*-48*	±	14	<DCGL
33	D	432	-3	*-48*	±	14	<DCGL
34	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A

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Survey Unit 6 Bldg. 1; Room 1328		Instrument 203461					
Surface		**Background (CPM)**	**MDC (DPM)**				
Ambient A		463.1	1624.0				
Casework C		464.9	1627.1				
Drywall D		463.0	1623.9				
Floor F		542.7	1754.2				
Beta Meter Efficiency		6.35%					
Sample	**Surface**	**Gross CPM**	**Net CPM**	**DPM /100CM^2**	**±**	**1.96 Sigma**	**Comment**
1	C	459	-6	*-93*	±	19	<DCGL
2	F	569	26	*414*	±	40	<DCGL
3	F	572	29	*461*	±	42	<DCGL
4	F	504	-39	*-609*	±	48	<DCGL
5	C	441	-24	*-376*	±	38	<DCGL
6	C	423	-42	*-660*	±	50	<DCGL
7	C	495	30	*474*	±	43	<DCGL
8	F	557	14	*225*	±	29	<DCGL
9	F	545	2	*36*	±	12	<DCGL
10	D	541	78	*1228*	±	69	<DCGL
11	D	465	2	*31*	±	11	<DCGL
12	D	401	-62	*-976*	±	61	<DCGL
13	D	421	-42	*-661*	±	50	<DCGL
14	D	412	-51	*-803*	±	56	<DCGL
15	D	410	-53	*-835*	±	57	<DCGL
16	D	407	-56	*-882*	±	58	<DCGL
17	D	426	-37	*-583*	±	47	<DCGL
18	D	490	27	*425*	±	40	<DCGL
19	D	544	81	*1276*	±	70	<DCGL
20	D	420	-43	*-677*	±	51	<DCGL
21	D	462	-1	*-16*	±	8	<DCGL
22	A	703	240	*3778*	±	120	<DCGL
23	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A

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Survey Unit 7 Bldg. 1; Room 1211		Instrument 189092					
Surface		**Background (CPM)**	**MDC (DPM)**				
Ambient	A	449.5	1737.5				
Casework	C	457.3	1752.1				
Drywall	D	434.8	1709.7				
Floor	F	530.7	1883.5				
Beta Meter Efficiency		5.85%					
Sample	**Surface**	**Gross CPM**	**Net CPM**	**DPM /100CM^2**	**±**	**1.96 Sigma**	**Comment**
1	F	531	0	*5*	±	4	<DCGL
2	F	518	-13	*-217*	±	29	<DCGL
3	F	443	-88	*-1499*	±	76	<DCGL
4	C	422	-35	*-603*	±	48	<DCGL
5	F	473	-58	*-986*	±	62	<DCGL
6	F	571	40	*689*	±	51	<DCGL
7	F	543	12	*210*	±	28	<DCGL
8	F	539	8	*142*	±	23	<DCGL
9	C	448	-9	*-159*	±	25	<DCGL
10	C	443	-14	*-244*	±	31	<DCGL
11	F	515	-16	*-268*	±	32	<DCGL
12	F	532	1	*22*	±	9	<DCGL
13	F	525	-6	*-97*	±	19	<DCGL
14	F	482	-49	*-832*	±	57	<DCGL
15	C	396	-61	*-1048*	±	63	<DCGL
16	C	376	-81	*-1390*	±	73	<DCGL
17	C	443	-14	*-244*	±	31	<DCGL
18	F	526	-5	*-80*	±	18	<DCGL
19	F	510	-21	*-354*	±	37	<DCGL
20	C	414	-43	*-740*	±	53	<DCGL
21	C	457	0	*-5*	±	4	<DCGL
22	D	422	-13	*-219*	±	29	<DCGL
23	D	417	-18	*-304*	±	34	<DCGL
24	D	428	-7	*-116*	±	21	<DCGL
25	D	436	1	*21*	±	9	<DCGL
26	D	471	36	*619*	±	49	<DCGL
27	D	420	-15	*-253*	±	31	<DCGL
28	D	419	-16	*-270*	±	32	<DCGL
29	D	377	-58	*-988*	±	62	<DCGL
30	D	372	-63	*-1074*	±	64	<DCGL
31	D	422	-13	*-219*	±	29	<DCGL
32	D	431	-4	*-65*	±	16	<DCGL
33	D	385	-50	*-851*	±	57	<DCGL
34	D	370	-65	*-1108*	±	65	<DCGL
35	D	399	-36	*-612*	±	48	<DCGL
36	D	346	-89	*-1518*	±	76	<DCGL
37	D	441	6	*106*	±	20	<DCGL
38	D	418	-17	*-287*	±	33	<DCGL
39	D	375	-60	*-1022*	±	63	<DCGL
40	A	446	-4	*-60*	±	15	<DCGL
41	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A
42	A	694	245	*4179*	±	127	<DCGL
43	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A

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Appendix G

Survey Unit 8 Bldg. 1; Room 1223		Instrument 203461					
Surface		**Background (CPM)**	**MDC (DPM)**				
Ambient	A	463.1	1624.0				
Casework	C	464.9	1627.1				
Drywall	D	463.0	1623.9				
Floor	F	542.7	1754.2				
Beta Meter Efficiency		6.35%					
Sample	**Surface**	**Gross CPM**	**Net CPM**	**DPM /100CM^2**	**±**	**1.96 Sigma**	**Comment**
1	F	574	31	*493*	±	44	<DCGL
2	F	592	49	*776*	±	55	<DCGL
3	C	507	42	*663*	±	50	<DCGL
4	C	464	-1	*-14*	±	7	<DCGL
5	C	481	16	*254*	±	31	<DCGL
6	C	403	-62	*-975*	±	61	<DCGL
7	F	530	-13	*-200*	±	28	<DCGL
8	F	538	-5	*-74*	±	17	<DCGL
9	F	556	13	*209*	±	28	<DCGL
10	F	565	22	*351*	±	37	<DCGL
11	F	606	63	*997*	±	62	<DCGL
12	F	545	2	*36*	±	12	<DCGL
13	F	550	7	*115*	±	21	<DCGL
14	F	525	-18	*-279*	±	33	<DCGL
15	C	443	-22	*-345*	±	36	<DCGL
16	D	404	-59	*-929*	±	60	<DCGL
17	D	401	-62	*-976*	±	61	<DCGL
18	D	455	-8	*-126*	±	22	<DCGL
19	D	459	-4	*-63*	±	16	<DCGL
20	D	517	54	*850*	±	57	<DCGL
21	D	440	-23	*-362*	±	37	<DCGL
22	D	506	43	*677*	±	51	<DCGL
23	D	444	-19	*-299*	±	34	<DCGL
24	D	419	-44	*-693*	±	52	<DCGL
25	D	481	18	*283*	±	33	<DCGL
26	D	400	-63	*-992*	±	62	<DCGL
27	D	405	-58	*-913*	±	59	<DCGL
28	D	400	-63	*-992*	±	62	<DCGL
29	D	418	-45	*-709*	±	52	<DCGL
30	D	413	-50	*-787*	±	55	<DCGL
31	D	464	1	*16*	±	8	<DCGL
32	A	772	309	*4865*	±	137	<DCGL
33	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A

Ref. NUREG-1507

Static Measurements
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Survey Unit 9 Bldg. 1; Room 1226		Instrument 189092					
Surface		Background (CPM)	MDC (DPM)				
Ambient A		449.5	1737.5				
Casework C		457.3	1752.1				
Drywall D		434.8	1709.7				
Floor F		530.7	1883.5				
Beta Meter Efficiency		5.85%					
Sample	Surface	Gross CPM	Net CPM	DPM /100CM^2	±	1.96 Sigma	Comment
1	F	515	-16	*-268*	±	32	<DCGL
2	F	542	11	*193*	±	27	<DCGL
3	F	532	1	*22*	±	9	<DCGL
4	F	575	44	*757*	±	54	<DCGL
5	F	511	-20	*-337*	±	36	<DCGL
6	F	559	28	*484*	±	43	<DCGL
7	C	492	35	*593*	±	48	<DCGL
8	C	517	60	*1021*	±	63	<DCGL
9	F	617	86	*1475*	±	75	<DCGL
10	F	597	66	*1133*	±	66	<DCGL
11	F	588	57	*979*	±	61	<DCGL
12	F	547	16	*279*	±	33	<DCGL
13	C	444	-13	*-227*	±	30	<DCGL
14	C	467	10	*166*	±	25	<DCGL
15	C	451	-6	*-108*	±	20	<DCGL
16	C	406	-51	*-877*	±	58	<DCGL
17	C	398	-59	*-1014*	±	62	<DCGL
18	D	443	8	*140*	±	23	<DCGL
19	D	401	-34	*-578*	±	47	<DCGL
20	D	525	90	*1542*	±	77	<DCGL
21	D	535	100	*1713*	±	81	<DCGL
22	D	567	132	*2260*	±	93	<DCGL
23	D	543	108	*1850*	±	84	<DCGL
24	D	532	97	*1662*	±	80	<DCGL
25	D	563	128	*2191*	±	92	<DCGL
26	D	555	120	*2055*	±	89	<DCGL
27	A	729	280	*4778*	±	135	<DCGL
28	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A

Philotechnics Analytical Worksheet
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Survey Unit 10 Bldg. 1; Room 2224		Instrument 189092	
Surface		**Background (CPM)**	**MDC (DPM)**
Ambient	A	449.5	1737.5
Casework	C	457.3	1752.1
Drywall	D	434.8	1709.7
Floor	F	530.7	1883.5
Beta Meter Efficiency		5.85%	

Sample	Surface	Gross CPM	Net CPM	DPM /100CM^2	±	1.96 Sigma	Comment
1	F	513	-18	*-303*	±	34	<DCGL
2	F	513	-18	*-303*	±	34	<DCGL
3	F	520	-11	*-183*	±	27	<DCGL
4	F	507	-24	*-405*	±	39	<DCGL
5	F	515	-16	*-268*	±	32	<DCGL
6	F	512	-19	*-320*	±	35	<DCGL
7	F	530	-1	*-12*	±	7	<DCGL
8	F	489	-42	*-713*	±	52	<DCGL
9	F	532	1	*22*	±	9	<DCGL
10	F	497	-34	*-576*	±	47	<DCGL
11	C	403	-54	*-928*	±	60	<DCGL
12	C	427	-30	*-518*	±	45	<DCGL
13	C	420	-37	*-638*	±	49	<DCGL
14	D	430	-5	*-82*	±	18	<DCGL
15	D	425	-10	*-168*	±	25	<DCGL
16	D	470	35	*602*	±	48	<DCGL
17	D	474	39	*670*	±	51	<DCGL
18	D	444	9	*157*	±	25	<DCGL
19	D	441	6	*106*	±	20	<DCGL
20	D	520	85	*1456*	±	75	<DCGL
21	D	419	-16	*-270*	±	32	<DCGL
22	D	457	22	*379*	±	38	<DCGL
23	D	514	79	*1354*	±	72	<DCGL
24	D	411	-24	*-407*	±	40	<DCGL
25	D	382	-53	*-903*	±	59	<DCGL
26	D	415	-20	*-338*	±	36	<DCGL
27	A	695	246	*4197*	±	127	<DCGL
28	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A

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Survey Unit 11 Bldg. 1; Room 2224A		Instrument 203461					
Surface		**Background (CPM)**	**MDC (DPM)**				
Ambient	A	463.1	1624.0				
Casework	C	464.9	1627.1				
Drywall	D	463.0	1623.9				
Floor	F	542.7	1754.2				
Beta Meter Efficiency		6.35%					
Sample	**Surface**	**Gross CPM**	**Net CPM**	**DPM /100CM^2**	**±**	**1.96 Sigma**	**Comment**
1	C	465	0	*2*	±	2	<DCGL
2	C	451	-14	*-219*	±	29	<DCGL
3	C	478	13	*206*	±	28	<DCGL
4	C	511	46	*726*	±	53	<DCGL
5	C	513	48	*757*	±	54	<DCGL
6	F	541	-2	*-27*	±	10	<DCGL
7	F	546	3	*52*	±	14	<DCGL
8	F	532	-11	*-169*	±	25	<DCGL
9	F	552	9	*146*	±	24	<DCGL
10	F	544	1	*20*	±	9	<DCGL
11	F	528	-15	*-231*	±	30	<DCGL
12	C	535	70	*1104*	±	65	<DCGL
13	D	498	35	*551*	±	46	<DCGL
14	D	498	35	*551*	±	46	<DCGL
15	D	425	-38	*-598*	±	48	<DCGL
16	D	450	-13	*-205*	±	28	<DCGL
17	D	429	-34	*-535*	±	45	<DCGL
18	D	484	21	*331*	±	36	<DCGL
19	D	482	19	*299*	±	34	<DCGL
20	D	421	-42	*-661*	±	50	<DCGL
21	D	425	-38	*-598*	±	48	<DCGL
22	D	406	-57	*-898*	±	59	<DCGL
23	D	492	29	*457*	±	42	<DCGL
24	D	483	20	*315*	±	35	<DCGL
25	D	495	32	*504*	±	44	<DCGL
26	D	528	65	*1024*	±	63	<DCGL

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Survey Unit 12 Bldg. 1; Room 2309		Instrument 189092	
Surface		**Background (CPM)**	**MDC (DPM)**
Ambient	A	449.5	1737.5
Casework	C	457.3	1752.1
Drywall	D	434.8	1709.7
Floor	F	530.7	1883.5
Beta Meter Efficiency		5.85%	

Sample	Surface	Gross CPM	Net CPM	DPM /100CM^2	±	1.96 Sigma	Comment
1	C	437	-20	*-347*	±	37	<DCGL
2	C	538	81	*1379*	±	73	<DCGL
3	C	416	-41	*-706*	±	52	<DCGL
4	C	456	-1	*-22*	±	9	<DCGL
5	C	463	6	*97*	±	19	<DCGL
6	F	445	-86	*-1465*	±	75	<DCGL
7	F	582	51	*877*	±	58	<DCGL
8	F	522	-9	*-149*	±	24	<DCGL
9	F	526	-5	*-80*	±	18	<DCGL
10	C	488	31	*525*	±	45	<DCGL
11	F	529	-2	*-29*	±	11	<DCGL
12	F	496	-35	*-593*	±	48	<DCGL
13	C	422	-35	*-603*	±	48	<DCGL
14	C	382	-75	*-1287*	±	70	<DCGL
15	C	409	-48	*-826*	±	56	<DCGL
16	D	493	58	*995*	±	62	<DCGL
17	D	407	-28	*-475*	±	43	<DCGL
18	D	442	7	*123*	±	22	<DCGL
19	D	457	22	*379*	±	38	<DCGL
20	C	504	47	*798*	±	55	<DCGL
21	D	436	1	*21*	±	9	<DCGL
22	D	476	41	*704*	±	52	<DCGL
23	D	503	68	*1166*	±	67	<DCGL
24	D	450	15	*260*	±	32	<DCGL
25	A	690	241	*4111*	±	126	<DCGL
26	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A
27	A	700	251	*4282*	±	128	<DCGL
28	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A

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Survey Unit 13 Bldg. 1; Room 3301		Instrument 189092					
Surface		**Background (CPM)**	**MDC (DPM)**				
Ambient	A	449.5	1737.5				
Casework	C	457.3	1752.1				
Drywall	D	434.8	1709.7				
Floor	F	530.7	1883.5				
Beta Meter Efficiency		5.85%					
Sample	**Surface**	**Gross CPM**	**Net CPM**	**DPM /100CM^2**	**±**	**1.96 Sigma**	**Comment**
1	F	569	38	*655*	±	50	<DCGL
2	C	535	78	*1328*	±	71	<DCGL
3	C	491	34	*576*	±	47	<DCGL
4	C	500	43	*730*	±	53	<DCGL
5	F	566	35	*603*	±	48	<DCGL
6	F	597	66	*1133*	±	66	<DCGL
7	F	622	91	*1561*	±	77	<DCGL
8	F	581	50	*860*	±	57	<DCGL
9	C	511	54	*918*	±	59	<DCGL
10	F	579	48	*826*	±	56	<DCGL
11	F	585	54	*928*	±	60	<DCGL
12	F	589	58	*997*	±	62	<DCGL
13	D	512	77	*1320*	±	71	<DCGL
14	D	517	82	*1405*	±	73	<DCGL
15	D	470	35	*602*	±	48	<DCGL
16	D	471	36	*619*	±	49	<DCGL
17	D	509	74	*1268*	±	70	<DCGL
18	C	507	50	*850*	±	57	<DCGL
19	D	550	115	*1969*	±	87	<DCGL
20	D	514	79	*1354*	±	72	<DCGL
21	D	499	64	*1097*	±	65	<DCGL
22	D	485	50	*858*	±	57	<DCGL
23	D	511	76	*1303*	±	71	<DCGL
24	D	440	5	*89*	±	18	<DCGL
25	D	421	-14	*-236*	±	30	<DCGL
26	C	410	-47	*-809*	±	56	<DCGL
27	A	484	35	*590*	±	48	<DCGL
28	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A

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Survey Unit 14 Bldg. 1; Room 3204		Instrument 189092					
Surface		**Background (CPM)**	**MDC (DPM)**				
Ambient	A	449.5	1737.5				
Casework	C	457.3	1752.1				
Drywall	D	434.8	1709.7				
Floor	F	530.7	1883.5				
Beta Meter Efficiency		5.85%					
Sample	**Surface**	**Gross CPM**	**Net CPM**	**DPM /100CM^2**	**±**	**1.96 Sigma**	**Comment**
1	C	459	2	*29*	±	11	<DCGL
2	C	469	12	*200*	±	28	<DCGL
3	C	497	40	*679*	±	51	<DCGL
4	F	535	4	*74*	±	17	<DCGL
5	F	496	-35	*-593*	±	48	<DCGL
6	C	435	-22	*-381*	±	38	<DCGL
7	C	475	18	*303*	±	34	<DCGL
8	F	490	-41	*-696*	±	52	<DCGL
9	F	563	32	*552*	±	46	<DCGL
10	C	476	19	*320*	±	35	<DCGL
11	F	550	19	*330*	±	36	<DCGL
12	F	564	33	*569*	±	47	<DCGL
13	F	525	-6	*-97*	±	19	<DCGL
14	D	445	10	*174*	±	26	<DCGL
15	C	433	-24	*-415*	±	40	<DCGL
16	D	447	12	*209*	±	28	<DCGL
17	C	383	-74	*-1270*	±	70	<DCGL
18	D	433	-2	*-31*	±	11	<DCGL
19	D	446	11	*191*	±	27	<DCGL
20	C	430	-27	*-467*	±	42	<DCGL
21	D	429	-6	*-99*	±	20	<DCGL
22	D	450	15	*260*	±	32	<DCGL
23	D	494	59	*1012*	±	62	<DCGL
24	D	401	-34	*-578*	±	47	<DCGL
25	D	472	37	*636*	±	49	<DCGL
26	D	437	2	*38*	±	12	<DCGL
27	D	513	78	*1337*	±	72	<DCGL
28	D	418	-17	*-287*	±	33	<DCGL
29	D	403	-32	*-544*	±	46	<DCGL
30	A	440	-10	*-162*	±	25	<DCGL
31	DRAIN TRAP	N/A	N/A	N/A	N/A	N/A	N/A

APPENDIX H
Wipe Survey Data Sheets and DPM Calculations

Philotechnics Analytical Worksheet
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Scintillation Counter
Laboratory Areas

Background Values			MDC Values	
CPM			Net DPM / 100 cm^2	
Chan A	Chan B	Chan C	H-3	C-14
28.6	13.4	10.8	57.9	21.4

Survey Unit 1 - Building 1 Room 1301

	Gross CPM / 100 cm^2			Quench & Efficiency		Net DPM / 100 cm^2		
Sample	Chan A	Chan B	Chan C	H-3 Eff.	C-14 Eff.	H-3	C-14	Comment
1	21	20	9	48.2%	90.5%	43.6	22.1	<DCGL
2	29	20	5	45.9%	94.3%	63.2	21.2	<DCGL
3	28	22	8	44.9%	92.1%	62.4	23.9	<DCGL
4	29	16	11	44.2%	98.8%	65.6	16.2	<DCGL
5	26	19	11	46.0%	93.6%	56.5	20.3	<DCGL
6	23	14	7	43.8%	96.6%	52.5	14.5	<DCGL
7	25	10	21	41.9%	96.2%	59.7	10.4	<DCGL
8	33	14	10	42.9%	97.9%	77.0	14.3	<DCGL
9	28	14	8	44.3%	94.6%	63.2	14.8	<DCGL
10	36	13	12	46.2%	96.3%	77.9	13.5	<DCGL
11	19	12	12	44.3%	96.0%	42.9	12.5	<DCGL
12	31	10	6	43.6%	97.1%	71.1	10.3	<DCGL
13	20	7	8	42.6%	98.6%	46.9	7.1	<DCGL
14	30	7	12	44.7%	89.7%	67.1	7.8	<DCGL
15	34	15	10	44.1%	98.7%	77.1	15.2	<DCGL
16	16	10	9	46.8%	98.0%	34.2	10.2	<DCGL
17	19	15	5	48.5%	93.2%	39.2	16.1	<DCGL
18	15	17	13	50.5%	89.0%	29.7	19.1	<DCGL
19	16	19	12	52.3%	88.8%	30.6	21.4	<DCGL
20	26	9	12	46.4%	90.9%	56.0	9.9	<DCGL
21	4	17	10	47.1%	82.5%	8.5	20.6	<DCGL
22	13	6	11	43.9%	88.2%	29.6	6.8	<DCGL
23	18	14	19	49.3%	92.9%	36.5	15.1	<DCGL
24	11	12	8	49.5%	88.9%	22.2	13.5	<DCGL
25	20	18	11	48.9%	91.3%	40.9	19.7	<DCGL
26	14	14	9	44.9%	88.2%	31.2	15.9	<DCGL
27	15	20	10	46.9%	85.8%	32.0	23.3	<DCGL
28	9	13	13	50.0%	85.8%	18.0	15.2	<DCGL

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Background Values			MDC Values	
CPM			Net DPM / 100 cm^2	
Chan A	Chan B	Chan C	H-3	C-14
28.6	13.4	10.8	57.9	21.4

Survey Unit 2 - Building 1 Room 1309

	Gross CPM / 100 cm^2			Quench & Efficiency		Net DPM / 100 cm^2		
Sample	Chan A	Chan B	Chan C	H-3 Eff.	C-14 Eff.	H-3	C-14	Comment
1	84	11	11	43.7%	95.7%	192.4	11.5	<DCGL
2	51	15	13	45.7%	96.8%	111.6	15.5	<DCGL
3	26	14	11	47.5%	99.5%	54.7	14.1	<DCGL
4	26	17	16	47.5%	96.2%	54.7	17.7	<DCGL
5	21	19	6	50.5%	90.9%	41.6	20.9	<DCGL
6	28	21	12	48.8%	93.5%	57.3	22.5	<DCGL
7	29	15	6	46.9%	98.7%	61.8	15.2	<DCGL
8	17	15	11	49.7%	91.4%	34.2	16.4	<DCGL
9	16	13	8	49.2%	92.4%	32.5	14.1	<DCGL
10	24	13	19	46.3%	97.0%	51.8	13.4	<DCGL
11	29	13	10	46.5%	97.0%	62.3	13.4	<DCGL
12	26	14	12	47.1%	99.9%	55.3	14.0	<DCGL
13	26	8	15	46.7%	90.9%	55.7	8.8	<DCGL
14	27	10	16	46.4%	99.0%	58.2	10.1	<DCGL
15	33	12	10	47.2%	93.0%	69.9	12.9	<DCGL
16	19	11	11	48.8%	97.1%	39.0	11.3	<DCGL
17	32	13	10	46.9%	99.2%	68.3	13.1	<DCGL
18	26	9	5	46.1%	90.9%	56.4	9.9	<DCGL
19	16	16	12	52.2%	89.5%	30.7	17.9	<DCGL
20	25	21	14	50.8%	91.4%	49.2	23.0	<DCGL
21	15	18	11	53.4%	88.1%	28.1	20.4	<DCGL
22	23	10	11	47.6%	94.3%	48.3	10.6	<DCGL
23	26	13	13	47.9%	93.5%	54.3	13.9	<DCGL
24	17	16	11	51.6%	90.1%	33.0	17.8	<DCGL
25	45	10	9	46.0%	91.7%	97.8	10.9	<DCGL
26	35	11	9	46.7%	96.7%	75.0	11.4	<DCGL
27	44	11	10	44.9%	96.5%	98.0	11.4	<DCGL
28	29	21	5	48.0%	94.4%	60.5	22.2	<DCGL
29	25	13	15	47.1%	93.5%	53.1	13.9	<DCGL
30	26	12	10	39.5%	96.0%	65.9	12.5	<DCGL

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Background Values			MDC Values	
CPM			Net DPM / 100 cm^2	
Chan A	Chan B	Chan C	H-3	C-14
28.6	13.4	10.8	57.9	21.4

Survey Unit 3 - Building 1 Room 1311

Sample	Gross CPM / 100 cm^2			Quench & Efficiency		Net DPM / 100 cm^2		Comment
	Chan A	Chan B	Chan C	H-3 Eff.	C-14 Eff.	H-3	C-14	
1	14	15	14	47.3%	88.3%	29.6	17.0	<DCGL
2	19	14	5	41.1%	91.3%	46.3	15.3	<DCGL
3	18	20	12	44.4%	87.0%	40.5	23.0	<DCGL
4	22	16	10	43.5%	92.2%	50.6	17.4	<DCGL
5	19	14	10	43.5%	92.0%	43.7	15.2	<DCGL
6	24	11	9	43.3%	92.1%	55.4	11.9	<DCGL
7	19	15	5	43.8%	91.0%	43.4	16.5	<DCGL
8	18	20	14	45.9%	87.3%	39.2	22.9	<DCGL
9	25	7	6	36.2%	99.0%	69.0	7.1	<DCGL
10	27	15	9	38.9%	95.8%	69.3	15.7	<DCGL
11	33	9	15	35.9%	91.1%	92.0	9.9	<DCGL
12	18	15	12	39.2%	89.4%	45.9	16.8	<DCGL
13	18	22	11	51.5%	88.1%	35.0	25.0	<DCGL
14	18	18	7	50.7%	90.0%	35.5	20.0	<DCGL
15	19	13	14	45.4%	94.5%	41.9	13.8	<DCGL
16	23	9	14	43.9%	97.8%	52.4	9.2	<DCGL
17	15	16	10	45.9%	87.8%	32.7	18.2	<DCGL
18	29	7	18	40.4%	90.1%	71.7	7.8	<DCGL
19	22	15	10	46.9%	95.4%	46.9	15.7	<DCGL
20	26	11	11	45.7%	96.2%	56.9	11.4	<DCGL
21	23	9	9	47.2%	94.3%	48.8	9.5	<DCGL
22	26	11	20	46.3%	95.7%	56.2	11.5	<DCGL
23	29	6	14	41.4%	94.3%	70.1	6.4	<DCGL
24	22	19	5	48.2%	91.7%	45.7	20.7	<DCGL
25	24	9	15	45.0%	97.4%	53.4	9.2	<DCGL
26	16	13	11	46.1%	91.8%	34.7	14.2	<DCGL
27	14	14	15	46.6%	88.9%	30.1	15.7	<DCGL
28	16	12	12	35.4%	90.4%	45.2	13.3	<DCGL

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Background Values			MDC Values	
CPM			Net DPM / 100 cm^2	
Chan A	Chan B	Chan C	H-3	C-14
28.6	13.4	10.8	57.9	21.4

Survey Unit 4 - Building 1 Room 1312

Sample	Gross CPM / 100 cm^2			Quench & Efficiency		Net DPM / 100 cm^2		
	Chan A	Chan B	Chan C	H-3 Eff.	C-14 Eff.	H-3	C-14	Comment
1	24	18	18	47.8%	93.9%	50.2	19.2	<DCGL
2	18	9	9	53.4%	97.8%	33.7	9.2	<DCGL
3	43	12	13	42.7%	96.0%	100.7	12.5	<DCGL
4	37	7	10	43.2%	95.9%	85.7	7.3	<DCGL
5	38	9	12	44.3%	91.2%	85.9	9.9	<DCGL
6	27	16	13	46.2%	98.1%	58.5	16.3	<DCGL
7	27	8	16	43.9%	89.7%	61.6	8.9	<DCGL
8	29	23	5	48.0%	93.0%	60.4	24.7	<DCGL
9	26	15	9	46.7%	98.9%	55.6	15.2	<DCGL
10	44	9	10	46.3%	94.8%	95.1	9.5	<DCGL
11	36	12	12	46.2%	94.0%	77.9	12.8	<DCGL
12	34	18	8	47.7%	99.6%	71.3	18.1	<DCGL
13	32	18	8	46.8%	99.3%	68.4	18.1	<DCGL
14	25	19	15	49.9%	92.8%	50.1	20.5	<DCGL
15	30	6	9	46.1%	96.3%	65.1	6.2	<DCGL
16	34	13	11	47.1%	98.8%	72.2	13.2	<DCGL
17	43	9	8	46.0%	94.3%	93.5	9.5	<DCGL
18	30	8	13	45.7%	93.6%	65.7	8.6	<DCGL
19	31	12	4	47.0%	97.8%	65.9	12.3	<DCGL
20	37	20	10	48.3%	98.7%	76.6	20.3	<DCGL
21	41	8	6	45.6%	94.5%	89.9	8.5	<DCGL
22	36	15	13	46.4%	98.7%	77.7	15.2	<DCGL
23	45	10	17	45.3%	96.7%	99.2	10.3	<DCGL

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Background Values			MDC Values	
CPM			Net DPM / 100 cm^2	
Chan A	Chan B	Chan C	H-3	C-14
28.6	13.4	10.8	57.9	21.4

Survey Unit 5 - Building 1 Room 1323

Sample	Gross CPM / 100 cm^2			Quench & Efficiency		Net DPM / 100 cm^2		Comment
	Chan A	Chan B	Chan C	H-3 Eff.	C-14 Eff.	H-3	C-14	
1	28	10	15	40.9%	96.2%	68.5	10.4	<DCGL
2	12	13	14	47.6%	88.4%	25.2	14.7	<DCGL
3	23	14	9	43.3%	95.2%	53.1	14.7	<DCGL
4	22	15	7	35.1%	92.0%	62.7	16.3	<DCGL
5	19	12	12	37.2%	93.0%	51.1	12.9	<DCGL
6	18	19	7	44.6%	87.6%	40.3	21.7	<DCGL
7	23	8	9	39.7%	94.1%	58.0	8.5	<DCGL
8	15	21	7	49.1%	85.7%	30.6	24.5	<DCGL
9	41	12	17	43.7%	99.2%	93.7	12.1	<DCGL
10	35	18	12	42.9%	99.4%	81.6	18.1	<DCGL
11	31	9	8	42.4%	91.8%	73.2	9.8	<DCGL
12	31	16	12	36.7%	97.0%	84.5	16.5	<DCGL
13	17	19	12	48.5%	88.4%	35.0	21.5	<DCGL
14	16	17	16	43.4%	87.2%	36.9	19.5	<DCGL
15	25	10	16	43.2%	95.2%	57.9	10.5	<DCGL
16	21	17	8	43.8%	90.9%	48.0	18.7	<DCGL
17	33	8	15	45.2%	98.8%	73.0	8.1	<DCGL
18	27	19	9	48.1%	94.5%	56.1	20.1	<DCGL
19	34	14	14	45.5%	99.3%	74.7	14.1	<DCGL
20	40	8	13	44.3%	96.4%	90.4	8.3	<DCGL
21	33	9	14	46.1%	94.7%	71.6	9.5	<DCGL
22	33	5	14	44.0%	90.9%	75.0	5.5	<DCGL
23	24	10	12	44.8%	95.2%	53.6	10.5	<DCGL
24	27	11	12	41.6%	93.2%	64.9	11.8	<DCGL
25	30	3	12	43.4%	85.7%	69.2	3.5	<DCGL
26	25	11	8	42.4%	91.7%	59.0	12.0	<DCGL
27	27	6	12	45.2%	93.8%	59.8	6.4	<DCGL
28	27	17	11	47.5%	96.6%	56.8	17.6	<DCGL
29	17	17	9	51.4%	89.5%	33.1	19.0	<DCGL
30	23	8	11	42.8%	96.4%	53.8	8.3	<DCGL
31	34	11	10	45.6%	94.0%	74.6	11.7	<DCGL
32	20	16	5	44.9%	91.4%	44.5	17.5	<DCGL
33	26	13	13	41.1%	98.5%	63.2	13.2	<DCGL
34	18	13	11	45.2%	92.9%	39.8	14.0	<DCGL

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Background Values			MDC Values	
CPM			Net DPM / 100 cm^2	
Chan A	Chan B	Chan C	H-3	C-14
28.6	13.4	10.8	57.9	21.4

Survey Unit 6 - Building 1 Room 1328

Sample	Gross CPM / 100 cm^2			Quench & Efficiency		Net DPM / 100 cm^2		Comment
	Chan A	Chan B	Chan C	H-3 Eff.	C-14 Eff.	H-3	C-14	
1	13	16	9	52.3%	87.9%	24.9	18.2	<DCGL
2	19	13	10	48.6%	94.9%	39.1	13.7	<DCGL
3	22	10	3	47.0%	92.6%	46.8	10.8	<DCGL
4	16	15	4	50.8%	90.4%	31.5	16.6	<DCGL
5	30	20	15	47.2%	95.9%	63.6	20.9	<DCGL
6	18	24	12	52.8%	87.5%	34.1	27.4	<DCGL
7	43	13	8	45.6%	99.2%	94.2	13.1	<DCGL
8	38	17	9	46.0%	98.3%	82.6	17.3	<DCGL
9	45	22	10	46.9%	96.8%	96.0	22.7	<DCGL
10	40	9	13	45.5%	92.3%	88.0	9.8	<DCGL
11	35	14	11	46.5%	99.0%	75.3	14.1	<DCGL
12	40	6	12	47.8%	98.8%	83.7	6.1	<DCGL
13	12	14	10	53.3%	88.2%	22.5	15.9	<DCGL
14	17	14	14	50.7%	91.6%	33.5	15.3	<DCGL
15	39	18	11	46.8%	96.9%	83.3	18.6	<DCGL
16	33	18	13	48.0%	98.7%	68.7	18.2	<DCGL
17	39	20	15	48.1%	99.9%	81.0	20.0	<DCGL
18	26	12	6	47.4%	93.3%	54.8	12.9	<DCGL
19	35	14	9	47.5%	97.7%	73.7	14.3	<DCGL
20	29	17	4	48.4%	97.2%	59.9	17.5	<DCGL
21	35	11	10	46.7%	93.4%	74.9	11.8	<DCGL
22	39	13	5	46.5%	95.0%	83.9	13.7	<DCGL
23	33	10	16	45.6%	94.3%	72.3	10.6	<DCGL

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Background Values			MDC Values	
CPM			Net DPM / 100 cm²	
Chan A	Chan B	Chan C	H-3	C-14
28.6	13.4	10.8	57.9	21.4

Survey Unit 7 - Building 1 Room 1211

Sample	Gross CPM / 100 cm²			Quench & Efficiency		Net DPM / 100 cm²		Comment
	Chan A	Chan B	Chan C	H-3 Eff.	C-14 Eff.	H-3	C-14	
1	28	19	9	42.0%	92.8%	66.6	20.5	<DCGL
2	10	16	7	51.6%	85.2%	19.4	18.8	<DCGL
3	10	13	13	52.2%	87.6%	19.2	14.8	<DCGL
4	12	14	8	48.1%	87.6%	25.0	16.0	<DCGL
5	29	9	13	41.8%	118.6%	69.4	7.6	<DCGL
6	15	10	7	44.4%	94.4%	33.8	10.6	<DCGL
7	15	12	10	43.5%	90.6%	34.5	13.2	<DCGL
8	15	11	9	45.3%	93.1%	33.1	11.8	<DCGL
9	17	13	9	48.1%	93.7%	35.3	13.9	<DCGL
10	11	21	12	56.1%	84.6%	19.6	24.8	<DCGL
11	15	16	12	46.6%	88.1%	32.2	18.2	<DCGL
12	10	16	5	48.7%	84.6%	20.5	18.9	<DCGL
13	16	20	10	45.3%	86.1%	35.3	23.2	<DCGL
14	19	9	15	40.2%	99.8%	47.3	9.0	<DCGL
15	19	16	12	41.6%	89.6%	45.6	17.9	<DCGL
16	8	19	11	55.1%	82.6%	14.5	23.0	<DCGL
17	18	13	8	46.4%	94.0%	38.8	13.8	<DCGL
18	13	21	14	51.1%	85.0%	25.5	24.7	<DCGL
19	17	15	10	41.3%	89.0%	41.1	16.9	<DCGL
20	11	16	7	52.2%	86.4%	21.1	18.5	<DCGL
21	14	10	15	41.4%	91.8%	33.8	10.9	<DCGL
22	16	13	12	49.2%	92.5%	32.5	14.1	<DCGL
23	13	5	10	44.7%	111.4%	29.1	4.5	<DCGL
24	17	14	11	49.5%	92.2%	34.3	15.2	<DCGL
25	14	9	11	47.5%	96.4%	29.5	9.3	<DCGL
26	14	11	8	48.3%	93.2%	29.0	11.8	<DCGL
27	20	12	8	47.3%	97.7%	42.3	12.3	<DCGL
28	25	14	15	47.7%	98.6%	52.4	14.2	<DCGL
29	16	10	12	48.8%	96.0%	32.8	10.4	<DCGL
30	12	14	15	52.3%	88.5%	22.9	15.8	<DCGL
31	11	14	10	53.9%	87.6%	20.4	16.0	<DCGL
32	14	11	12	44.9%	91.7%	31.2	12.0	<DCGL
33	20	14	15	47.6%	95.1%	42.0	14.7	<DCGL
34	18	17	8	48.5%	90.5%	37.1	18.8	<DCGL
35	21	16	11	44.9%	92.2%	46.8	17.4	<DCGL
36	24	19	10	47.5%	92.9%	50.5	20.5	<DCGL
37	18	18	10	48.1%	89.6%	37.4	20.1	<DCGL
38	10	15	8	57.1%	86.4%	17.5	17.4	<DCGL
39	13	13	10	47.1%	89.2%	27.6	14.6	<DCGL
40	14	18	9	47.1%	86.2%	29.7	20.9	<DCGL
41	16	13	8	42.2%	90.2%	37.9	14.4	<DCGL
42	18	13	11	45.3%	93.4%	39.7	13.9	<DCGL
43	17	12	9	46.4%	94.4%	36.6	12.7	<DCGL

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Background Values			MDC Values	
CPM			Net DPM / 100 cm^2	
Chan A	Chan B	Chan C	H-3	C-14
28.6	13.4	10.8	57.9	21.4

Survey Unit 8 - Building 1 Room 1223

	Gross CPM / 100 cm^2			Quench & Efficiency		Net DPM / 100 cm^2		
Sample	Chan A	Chan B	Chan C	H-3 Eff.	C-14 Eff.	H-3	C-14	Comment
1	37	9	8	46.3%	99.1%	79.9	9.1	<DCGL
2	28	9	7	47.0%	98.9%	59.6	9.1	<DCGL
3	29	11	11	47.9%	96.4%	60.6	11.4	<DCGL
4	42	14	8	47.5%	94.7%	88.5	14.8	<DCGL
5	44	19	11	47.9%	97.6%	91.9	19.5	<DCGL
6	24	4	9	45.5%	90.5%	52.7	4.4	<DCGL
7	44	13	10	46.3%	99.2%	95.0	13.1	<DCGL
8	25	9	13	47.3%	96.3%	52.8	9.4	<DCGL
9	28	10	13	45.7%	99.0%	61.2	10.1	<DCGL
10	32	15	10	46.8%	95.4%	68.4	15.7	<DCGL
11	30	24	9	43.8%	97.3%	61.4	24.7	<DCGL
12	38	16	12	61.8%	98.5%	81.5	16.2	<DCGL
13	23	7	9	28.2%	98.2%	48.9	7.1	<DCGL
14	32	9	10	65.4%	93.4%	69.1	9.6	<DCGL
15	26	20	16	37.6%	98.3%	52.4	20.3	<DCGL
16	27	19	13	51.5%	99.2%	53.4	19.2	<DCGL
17	32	2	12	59.9%	80.0%	68.7	2.5	<DCGL
18	30	16	7	43.6%	98.0%	60.8	16.3	<DCGL
19	24	9	10	39.4%	94.3%	50.0	9.5	<DCGL
20	48	8	10	96.0%	97.6%	102.9	8.2	<DCGL
21	40	16	9	38.9%	97.9%	83.0	16.3	<DCGL
22	43	10	6	51.8%	91.5%	91.9	10.9	<DCGL
23	34	12	13	37.0%	99.1%	71.0	12.1	<DCGL
24	44	12	11	62.0%	98.0%	52.2	12.2	<DCGL
25	29	9	6	55.5%	96.8%	60.9	9.3	<DCGL
26	26	8	7	42.7%	97.6%	55.2	8.2	<DCGL
27	30	16	7	54.4%	97.8%	60.5	16.4	<DCGL
28	34	8	8	56.2%	94.6%	71.4	8.5	<DCGL
29	30	15	11	42.0%	99.7%	61.5	15.1	<DCGL
30	24	14	7	39.0%	96.4%	48.5	14.5	<DCGL
31	29	11	13	59.8%	97.0%	61.2	11.3	<DCGL
32	23	10	14	37.6%	92.3%	48.1	10.8	<DCGL
33	31	11	13	42.5%	99.5%	73.0	11.1	<DCGL

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Background Values			MDC Values	
CPM			Net DPM / 100 cm^2	
Chan A	Chan B	Chan C	H-3	C-14
28.6	13.4	10.8	57.9	21.4

Survey Unit 9 - Building 1 Room 1226

	Gross CPM / 100 cm^2			Quench & Efficiency		Net DPM / 100 cm^2		
Sample	Chan A	Chan B	Chan C	H-3 Eff.	C-14 Eff.	H-3	C-14	Comment
1	28	17	9	44.7%	94.9%	62.7	17.9	<DCGL
2	20	13	9	44.1%	93.7%	45.3	13.9	<DCGL
3	25	19	11	44.7%	91.4%	55.9	20.8	<DCGL
4	40	12	9	43.4%	94.1%	92.2	12.8	<DCGL
5	21	15	6	43.5%	92.3%	48.3	16.3	<DCGL
6	32	15	8	45.7%	99.3%	70.0	15.1	<DCGL
7	28	12	3	41.0%	93.0%	68.3	12.9	<DCGL
8	24	9	6	42.0%	93.5%	57.2	9.6	<DCGL
9	36	14	11	43.7%	96.8%	82.4	14.5	<DCGL
10	30	20	13	43.4%	93.3%	69.2	21.4	<DCGL
11	30	16	9	43.2%	97.4%	69.4	16.4	<DCGL
12	31	17	13	42.2%	96.8%	73.5	17.6	<DCGL
13	34	9	13	46.6%	96.4%	73.0	9.3	<DCGL
14	35	10	7	47.0%	95.4%	74.4	10.5	<DCGL
15	38	11	5	46.5%	96.8%	81.7	11.4	<DCGL
16	37	19	14	48.9%	97.8%	75.7	19.4	<DCGL
17	17	8	5	47.9%	98.8%	35.5	8.1	<DCGL
18	21	22	10	50.8%	88.1%	41.3	25.0	<DCGL
19	32	15	9	48.5%	98.7%	66.0	15.2	<DCGL
20	31	10	16	47.5%	91.5%	65.2	10.9	<DCGL
21	27	12	8	47.3%	93.5%	57.1	12.8	<DCGL
22	32	19	14	47.5%	95.2%	67.3	20.0	<DCGL
23	22	17	13	50.2%	91.3%	43.8	18.6	<DCGL
24	31	17	8	48.4%	96.6%	64.1	17.6	<DCGL
25	23	22	8	51.3%	89.0%	44.8	24.7	<DCGL
26	34	10	9	46.1%	94.7%	73.7	10.6	<DCGL
27	33	8	9	41.1%	94.1%	80.3	8.5	<DCGL
28	18	19	11	48.5%	88.0%	37.2	21.6	<DCGL

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Background Values			MDC Values	
CPM			Net DPM / 100 cm^2	
Chan A	Chan B	Chan C	H-3	C-14
28.6	13.4	10.8	57.9	21.4

Survey Unit 10 - Building 1 Room 2224

	Gross CPM / 100 cm^2			Quench & Efficiency		Net DPM / 100 cm^2		
Sample	Chan A	Chan B	Chan C	H-3 Eff.	C-14 Eff.	H-3	C-14	Comment
1	38	12	15	46.4%	98.4%	81.9	12.2	<DCGL
2	32	13	14	47.0%	95.6%	68.1	13.6	<DCGL
3	41	18	6	47.5%	98.4%	86.3	18.3	<DCGL
4	38	14	7	47.3%	94.8%	80.3	14.8	<DCGL
5	26	12	15	47.0%	95.2%	55.3	12.6	<DCGL
6	24	7	13	46.5%	92.6%	51.6	7.6	<DCGL
7	28	12	6	47.0%	96.7%	59.6	12.4	<DCGL
8	47	11	10	45.9%	93.2%	102.3	11.8	<DCGL
9	33	9	11	45.5%	90.3%	72.6	10.0	<DCGL
10	38	12	18	45.3%	92.7%	83.8	13.0	<DCGL
11	34	13	8	47.0%	93.3%	72.3	13.9	<DCGL
12	52	13	9	46.3%	93.9%	112.2	13.8	<DCGL
13	27	11	12	47.5%	96.8%	56.9	11.4	<DCGL
14	28	15	11	48.7%	98.5%	57.5	15.2	<DCGL
15	37	17	9	47.8%	96.8%	77.4	17.6	<DCGL
16	28	16	11	48.8%	97.3%	57.4	16.5	<DCGL
17	21	15	10	49.4%	93.8%	42.5	16.0	<DCGL
18	38	16	11	48.2%	97.8%	78.8	16.4	<DCGL
19	30	8	11	47.1%	95.4%	63.7	8.4	<DCGL
20	30	17	12	49.1%	97.1%	61.1	17.5	<DCGL
21	25	9	12	48.2%	97.1%	51.9	9.3	<DCGL
22	36	24	13	50.3%	94.1%	71.6	25.5	<DCGL
23	33	13	13	47.8%	98.5%	69.0	13.2	<DCGL
24	46	13	10	47.1%	95.0%	97.7	13.7	<DCGL
25	33	18	12	49.3%	97.7%	67.0	18.4	<DCGL
26	28	12	5	48.3%	95.3%	58.0	12.6	<DCGL
27	45	15	16	42.3%	99.3%	106.5	15.1	<DCGL
28	27	9	10	38.0%	98.9%	71.0	9.1	<DCGL

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Background Values			MDC Values	
CPM			Net DPM / 100 cm^2	
Chan A	Chan B	Chan C	H-3	C-14
28.6	13.4	10.8	57.9	21.4

Survey Unit 11 - Building 1 Room 2224A

	Gross CPM / 100 cm^2			Quench & Efficiency		Net DPM / 100 cm^2		
Sample	Chan A	Chan B	Chan C	H-3 Eff.	C-14 Eff.	H-3	C-14	Comment
1	42	18	5	45.7%	95.9%	92.0	18.8	<DCGL
2	39	15	6	47.4%	94.3%	82.3	15.9	<DCGL
3	39	14	17	46.9%	96.0%	83.2	14.6	<DCGL
4	37	12	14	46.0%	98.2%	80.4	12.2	<DCGL
5	33	27	14	50.9%	91.6%	64.8	29.5	<DCGL
6	31	12	13	47.8%	98.4%	64.9	12.2	<DCGL
7	35	18	8	48.7%	99.2%	71.9	18.1	<DCGL
8	35	12	7	46.9%	95.2%	74.7	12.6	<DCGL
9	28	15	17	48.4%	98.8%	57.9	15.2	<DCGL
10	42	14	9	47.5%	97.2%	88.4	14.4	<DCGL
11	52	13	9	44.8%	97.2%	116.0	13.4	<DCGL
12	37	13	9	47.0%	95.4%	78.7	13.6	<DCGL
13	40	16	3	48.4%	98.8%	82.6	16.2	<DCGL
14	26	12	13	48.7%	93.5%	53.4	12.8	<DCGL
15	40	15	6	48.0%	94.3%	83.4	15.9	<DCGL
16	32	18	7	49.5%	97.0%	64.7	18.6	<DCGL
17	38	20	10	48.9%	98.6%	77.7	20.3	<DCGL
18	28	17	18	48.8%	96.3%	57.4	17.7	<DCGL
19	33	8	12	46.9%	99.4%	70.3	8.1	<DCGL
20	34	17	10	49.2%	99.2%	69.1	17.1	<DCGL
21	39	11	9	45.8%	93.5%	85.1	11.8	<DCGL
22	25	22	12	50.1%	91.2%	49.9	24.1	<DCGL
23	23	17	16	51.0%	92.6%	45.1	18.4	<DCGL
24	29	18	10	50.3%	95.0%	57.7	19.0	<DCGL
25	30	16	9	49.3%	98.1%	60.9	16.3	<DCGL
26	23	13	11	49.6%	96.8%	46.4	13.4	<DCGL

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Background Values			MDC Values	
CPM			Net DPM / 100 cm²	
Chan A	Chan B	Chan C	H-3	C-14
28.6	13.4	10.8	57.9	21.4

Survey Unit 12 - Building 1 Room 2309

Sample	Gross CPM / 100 cm²			Quench & Efficiency		Net DPM / 100 cm²		Comment
	Chan A	Chan B	Chan C	H-3 Eff.	C-14 Eff.	H-3	C-14	
1	9	18	10	69.8%	84.8%	12.9	21.2	<DCGL
2	8	14	20	59.0%	85.6%	13.6	16.4	<DCGL
3	17	7	14	48.4%	90.9%	35.1	7.7	<DCGL
4	9	16	6	61.7%	85.3%	14.6	18.8	<DCGL
5	15	10	13	49.2%	94.8%	30.5	10.6	<DCGL
6	20	11	11	46.3%	99.1%	43.2	11.1	<DCGL
7	15	10	11	49.5%	94.6%	30.3	10.6	<DCGL
8	20	17	8	51.4%	91.0%	38.9	18.7	<DCGL
9	11	14	12	55.4%	87.3%	19.9	16.0	<DCGL
10	8	13	8	58.9%	85.9%	13.6	15.1	<DCGL
11	6	12	8	63.2%	85.1%	9.5	14.1	<DCGL
12	19	11	12	48.8%	97.0%	38.9	11.3	<DCGL
13	18	11	17	50.3%	95.2%	35.8	11.6	<DCGL
14	12	12	17	50.6%	89.9%	23.7	13.4	<DCGL
15	21	13	10	49.9%	95.3%	42.1	13.6	<DCGL
16	6	12	5	65.0%	84.7%	9.2	14.2	<DCGL
17	12	17	12	56.9%	86.6%	21.1	19.6	<DCGL
18	11	9	11	51.6%	91.3%	21.3	9.9	<DCGL
19	15	10	11	49.8%	94.4%	30.2	10.6	<DCGL
20	15	12	15	50.9%	91.8%	29.5	13.1	<DCGL
21	16	10	21	50.2%	95.0%	31.9	10.5	<DCGL
22	17	15	15	51.7%	90.6%	32.9	16.6	<DCGL
23	13	14	8	54.2%	88.5%	24.0	15.8	<DCGL
24	15	6	11	48.7%	89.3%	30.8	6.7	<DCGL
25	14	15	19	52.4%	89.0%	26.7	16.9	<DCGL
26	7	18	11	64.2%	83.2%	10.9	21.6	<DCGL
27	10	13	12	53.5%	87.3%	18.7	14.9	<DCGL
28	10	13	10	54.8%	87.4%	18.2	14.9	<DCGL

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Background Values			MDC Values	
CPM			Net DPM / 100 cm^2	
Chan A	Chan B	Chan C	H-3	C-14
28.6	13.4	10.8	57.9	21.4

Survey Unit 13 - Building 1 Room 3301

	Gross CPM / 100 cm^2			Quench & Efficiency		Net DPM / 100 cm^2		
Sample	Chan A	Chan B	Chan C	H-3 Eff.	C-14 Eff.	H-3	C-14	Comment
1	17	11	9	47.9%	96.1%	35.5	11.5	<DCGL
2	10	20	11	63.7%	84.9%	15.7	23.6	<DCGL
3	18	13	13	49.5%	93.6%	36.3	13.9	<DCGL
4	12	17	10	54.1%	87.1%	22.2	19.5	<DCGL
5	14	14	11	50.9%	89.9%	27.5	15.6	<DCGL
6	13	22	15	59.1%	85.7%	22.0	25.7	<DCGL
7	9	13	9	55.8%	86.7%	16.1	15.0	<DCGL
8	19	17	10	50.7%	90.9%	37.5	18.7	<DCGL
9	13	14	12	51.6%	89.2%	25.2	15.7	<DCGL
10	10	11	9	51.8%	89.0%	19.3	12.4	<DCGL
11	15	11	7	49.0%	93.7%	30.6	11.7	<DCGL
12	12	16	12	53.8%	87.4%	22.3	18.3	<DCGL
13	7	9	14	56.0%	87.2%	12.5	10.3	<DCGL
14	12	9	13	51.1%	92.3%	23.5	9.8	<DCGL
15	24	15	12	50.3%	94.9%	47.7	15.8	<DCGL
16	21	17	10	52.4%	91.3%	40.1	18.6	<DCGL
17	14	14	12	53.4%	89.1%	26.2	15.7	<DCGL
18	10	10	11	51.5%	89.7%	19.4	11.2	<DCGL
19	12	13	8	54.3%	88.4%	22.1	14.7	<DCGL
20	12	22	17	62.8%	85.1%	19.1	25.8	<DCGL
21	18	9	10	49.6%	98.9%	36.3	9.1	<DCGL
22	14	14	15	53.4%	89.1%	26.2	15.7	<DCGL
23	12	14	8	55.2%	87.8%	21.8	15.9	<DCGL
24	17	10	15	50.3%	95.7%	33.8	10.5	<DCGL
25	15	13	9	52.6%	90.4%	28.5	14.4	<DCGL
26	7	15	12	65.4%	84.6%	10.7	17.7	<DCGL
27	5	13	6	72.5%	83.9%	6.9	15.5	<DCGL
28	6	12	10	26.5%	78.9%	22.6	15.2	<DCGL

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Background Values			MDC Values	
CPM			Net DPM / 100 cm^2	
Chan A	Chan B	Chan C	H-3	C-14
28.6	13.4	10.8	57.9	21.4

Survey Unit 14 - Building 1 Room 3204

Sample	Gross CPM / 100 cm^2			Quench & Efficiency		Net DPM / 100 cm^2		Comment
	Chan A	Chan B	Chan C	H-3 Eff.	C-14 Eff.	H-3	C-14	
1	20	12	6	48.7%	96.6%	41.1	12.4	<DCGL
2	23	10	12	47.3%	92.9%	48.6	10.8	<DCGL
3	12	8	7	49.8%	94.3%	24.1	8.5	<DCGL
4	13	18	8	56.8%	86.7%	22.9	20.8	<DCGL
5	12	13	15	52.9%	88.8%	22.7	14.6	<DCGL
6	10	15	12	56.6%	86.5%	17.7	17.4	<DCGL
7	11	10	17	51.4%	90.5%	21.4	11.1	<DCGL
8	12	20	13	59.3%	85.8%	20.2	23.3	<DCGL
9	22	9	14	46.9%	93.6%	46.9	9.6	<DCGL
10	22	18	12	49.7%	92.2%	44.3	19.5	<DCGL
11	20	12	7	48.5%	96.8%	41.3	12.4	<DCGL
12	15	18	11	53.8%	88.0%	27.9	20.5	<DCGL
13	17	11	1	49.2%	95.2%	34.5	11.6	<DCGL
14	8	14	13	61.4%	85.4%	13.0	16.4	<DCGL
15	13	8	8	50.3%	95.0%	25.8	8.4	<DCGL
16	17	16	15	53.6%	89.5%	31.7	17.9	<DCGL
17	14	16	9	51.3%	88.8%	27.3	18.0	<DCGL
18	18	17	8	53.2%	89.5%	33.8	19.0	<DCGL
19	15	16	7	53.6%	88.7%	28.0	18.0	<DCGL
20	14	13	6	53.3%	89.7%	26.3	14.5	<DCGL
21	10	11	9	54.7%	88.2%	18.3	12.5	<DCGL
22	15	12	9	51.7%	91.5%	29.0	13.1	<DCGL
23	21	12	9	50.2%	96.2%	41.9	12.5	<DCGL
24	13	14	6	54.4%	88.4%	23.9	15.8	<DCGL
25	13	16	14	54.8%	87.6%	23.7	18.3	<DCGL
26	13	10	11	52.1%	91.7%	25.0	10.9	<DCGL
27	19	5	9	48.0%	95.1%	39.6	5.3	<DCGL
28	15	10	11	50.6%	93.9%	29.6	10.7	<DCGL
29	9	10	19	54.9%	88.1%	16.4	11.4	<DCGL
30	14	21	14	56.8%	86.4%	24.6	24.3	<DCGL
31	8	13	8	54.8%	85.9%	14.6	15.1	<DCGL

This is to acknowledge the receipt of your letter/application dated

_____ 7/28/2011 _____, and to inform you that the initial processing which includes an administrative review has been performed.

☑ Amend.   10-06772-01
There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

☐ Please provide to this office within 30 days of your receipt of this card

_____

A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned **Mail Control Number** _575739_.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.

NRC FORM 532 (RI)
(6-96)

Sincerely,
Licensing Assistance Team Leader