DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
Rockville MD 20857

April 13,2009

Br 2



Licensing Assistance Team
Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission, Region I
475 Allendale Road
King of Prussia, PA 19406-1415

RE: Final Radiological Status Survey Report for 12720 Twinbrook Parkway, Building 2, Rockville, MD
Food and Drug Administration
License No. 19-07538-01
Docket No. 030-04544

Dear Sir or Madam:

Enclosed is the Final Status Survey Report for the Food and Drug Administration's Center for Devices and Radiological Health (FDA/CDRH) laboratory facility located at 12720 Twinbrook Parkway, Building 2 in Rockville, Maryland and other supporting documents related to the final status survey process.

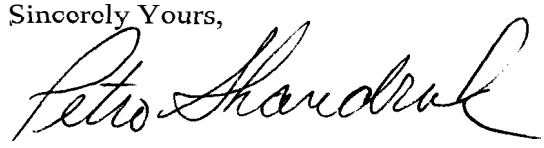
Upon satisfactory review of the information provided, FDA/CDRH requests an amendment to its license under the provisions specified in Title 10, Code of Federal Regulations, Part 20.1402 to release 12720 Twinbrook Parkway, Building 2 for unrestricted use.

Clym Environmental had been contracted by the U.S. Food and Drug Administration (FDA) to perform these surveys. The point of contact at the firm is Mr. Charles Watts who can be reached by phone at (301) 694-6000 or by email at cwatts@clymenvironmental.com .

We look forward to hearing from you regarding the Final Status Survey Report. If you have any questions, please contact me at either phone (240) 276-3285 or email at petro.shandnlk(i-ii,fda.hhs.gov.

143643

Sincerely Yours,



Petro Shandruk, RSO
Chief, Radiation Programs Branch
DMQRP, OCER (HFZ-240)
Center for Devices and
Radiological Health, FDA
1350 Piccard Drive
Rockville, MD 20850

Enc: License amendment
Final Radiological Status Survey Report
(2 copies of each)

cc: Lillian J. Gill
Senior Associate Director, CDRH

NRC FORM 313 (10-2005) 10 CFR 30, 32, 33, 34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

# APPLICATION FOR MATERIAL LICENSE

**APPROVED BY OMB: NO. 3150-0120** EXPIRES: 10/31/2008

Estimated burden per response to comply with this mandatory collection request: 1.4 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS **FILE** APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS **FILE** APPLICATIONS AS FOLLOWS:

**IF** YOU ARE LOCATED IN:

**ALABAMA,** CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, **KENTUCKY,** MAINE, MARYLAND, MASSACHUSETTS, MISSISSIPPI, NEW **HAMPSHIRE, NEW** JERSEY, NEW **YORK,** NORTH CAROLINA, PENNSYLVANIA, PUERTO **RICO,** RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

**IF YOU ARE LOCATED IN:**

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALASKA, **ARIZONA, ARKANSAS, CALIFORNIA, COLORADO,** HAWAII, **IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEVADA, NEW MEXICO,** NORTH **DAKOTA, OKLAHOMA,** OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, **TEXAS,** UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TX 76011-4005

03004544

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO **U.S. NUCLEAR** REGULATORY COMMISSION JURISDICTIONS.

1 THIS IS AN APPLICATION FOR (Check appropriate *item*)

- ☐ A. NEW LICENSE
- ☑ B. AMENDMENT TO LICENSE NUMBER 19-07538-01
- ☐ C. RENEWAL OF LICENSE NUMBER

2 NAME AND MAILING ADDRESS OF APPLICANT (Include ZIP code)

Department of Health and Human Services
Food and Drug Administration
Center for Devices and Radiological Health (HFZ-240)
1350 Piccard Drive
Rockville, MD 20850

3 ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

12720 Twinbrook Parkway, Bldg. 1, Rockville, MD 20857
10903 New Hampshire Ave., Silver Spring, MD

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

PETRO SHANDRUK

TELEPHONE NUMBER

(240) 276-3285

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL
a. Element and mass number; b. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7 INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE

8 TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM

11 WASTE MANAGEMENT

12 LICENSE FEES (*See 10* CFR 170 and *Section* 170.31)
FEE CATEGORY Exempt Federal | AMOUNT ENCLOSED $ 0.00

13. CERTIFICATION (*Must* be completed *by applicant*) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39, AND 40, AND THAT ALL INFORMATION CONTANED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

| CERTIFYING OFFICER – TYPED/PRINTED NAME AND TITLE | SIGNATURE | DATE |
|---|---|---|
| Petro Shandruk, Radiation Safety Officer, CDRH | Petro Shandruk | 4/13/05 |

## FOR NRC USE ONLY

| TYPE OF FEE | FEE LOG | FEE CATEGORY | AMOUNT RECEIVED | CHECK NUMBER | COMMENTS |
|---|---|---|---|---|---|
| | | | $ | | |
| APPROVED BY | | | | DATE | |

NRC FORM 313 (10-2005) PRINTED ON RECYCLED PAPER

143643

U. S. FOOD AND DRUG ADMINISTRATION
CENTER FOR DEVICES AND RADIOLOGICAL HEALTH

REQUEST FOR AMENMENT OF LICENSE 19-07538-01

DELETION OF: -FACILITY LOCATION

This request employs the number format used on the NRC MATERIALS LICENSE, Form 374. The additions will be preceded in the request by the italicized word *Add*.

Licensee:

1. Department of Health and Human Services
   Food and Drug Administration
   Center for Devices and Radiological Health

2. DMQRP/OCER (HFZ-240)
   1350 Piccard Drive
   Rockville, MD 20850-4307

Item to be amended in this renewal:

Page

Conditions 10……..1

CONDITIONS

10. ***Delete*** 12720 Twinbrook Parkway, Building 2, Rockville, MD

For additional information, please contact:

Petro Shandruk
Radiation Safety Officer
U.S. Food and Drug Administration
Center for Devices and Radiological Health
HFZ-240
1350 Piccard Drive
Rockville, MD 20850

Telephone: 240-276-3285
FAX: 240-276-3282
Email: petro.shandruk@fda.hhs.gov

Amendment No. 38

# MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10 Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

| Licensee | |
|---|---|
| 1. Department of Health & Human Services<br>Food and Drug Administration<br>Center for Devices and Radiological Health | In accordance with the letter dated May 29,2007.<br>3. License number 19-07538-01 is amended in its entirety to read as follows: |
| 2. DMQRP/OCER (HFZ-240)<br>1350 Piccard Drive<br>Rockville, Maryland 20850-4307 | 4. Expiration date June 30, 2015<br>5. Docket No. 03004544<br>Reference No. |

| 6. Byproduct, source, and/or special nuclear material | 7. Chemical and/or physical form | 8. Maximum amount that licensee may possess at any one time under this license |
|---|---|---|
| A. Hydrogen 3 | A. Any | A. 100 millicuries |
| B. Carbon 14 | B. Any | B. 85 millicuries |
| C. Phosphorus 32 | C. Any | C. 100 millicuries |
| D. Sulfur 35 | D. Any | D. 300 millicuries |
| E. Any byproduct material with atomic numbers 3 through 83 | E. Sealed Sources | E. 1 millicurie per source and 5 millicuries total |
| F. Plutonium 239 | F. Plated Sources | F. 4 microcuries |
| G. Americium 241 | G. Sealed Sources (Texas Nuclear Corporation, custom source) | G. 14 millicuries per source and 28 millicuries total |
| H. Americium 24.1 | H. Sealed sources (Photon source, New England Nuclear Model NES-128S) | H. 8 microcuries |

9. Authorized use:

A. through D. Research and development as defined in 10 CFR 30.4.
E. through G. Calibration, standardizing and testing of the licensee's instruments.
H. For storage incident to disposal.

CONDITIONS

**MATERIALS LICENSE**
**SUPPLEMENTARY SHEET**

License Number
19-07538-01

Docket or Reference Number
030-04544

Amendment No. 38

10. Licensed material may be used at the licensee's facilities located at 12720 Twinbrook Parkway, Buildings 1 and 2; Rockville, Maryland; and 10903 New Hampshire Avenue, Silver Spring, Maryland.

11. A. Licensed material in items 6.A. through 6.D. shall be used by, or under the supervision of Peter Goering, Abiy B. Desta, or Michael D. O'Hara, Ph.D., or

    B. Licensed material in items 6.A., 6.B., and 6.D. shall be used by, or under the supervision of Thotnas H. Umbreit, Ph.D.

    C. Licensed material in items 6.E. through 6.H. shall be used by, or under the supervision of, Mary *3.* Walker or Peter Goering.

    D. The Radiation Safety Officer for this license is Petro Shandruk.

12. Licensed material shall not be used in or on human beings.

13. The licensee shall not use licensed material in field applications where activity is released except as provided otherwise by specific condition of this license.

14. A. Sealed sources shall be tested for leakage and/or contamination at intervals not to exceed the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or under equivalent regulations of an Agreement State.

    B. Notwithstanding Paragraph A of this Condition, sealed sources designed to primarily emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed 3 months.

    C. Each sealed source fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to any use or transfer as a sealed source.

    **D.** In the absence of a certificate from a transferor indicating that a leak test has been made within the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or under equivalent regulations of an Agreement State, prior to the transfer a sealed source received from another person shall not be put into use until tested and the test results received.

    E. Sealed sources need not be tested if they contain only hydrogen-3; or they contain only a radioactive gas; or the half-life of the isotope is 30 days or less; or they contain not more than 100 microcuries of beta- and/or gamma-emitting material or not more than 10 microcuries of alpha-emitting material.

    F. Sealed sources need not be tested if they are in storage and are not being used; however, when they are removed from storage for use or transferred to another person and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.

**MATERIALS LICENSE**
**SUPPLEMENTARY SHEET**

License Number
19-07538-01

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030-04544

Amendment No. 38

G. The leak test shall be capable of detecting the presence of 0.005 microcurie (185 becquerels) of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie (185 becquerels) or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 30.50(c)(2), and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations.

H. Tests for leakage and/or contamination, including leak test sample collection and analysis, shall be performed by the licensee or by other persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.

I. Records of leak test results shall be kept in units of microcuries and shall be maintained for 5 years.

15. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.

16. The licensee shall not acquire licensed material in a sealed source or device unless the source or device has been registered with the U.S. Nuclear Regulatory Commission pursuant to 10 CFR 32.210 or equivalent regulations of an Agreement State.

17. The licensee shall conduct a physical inventory every six months, or at other intervals approved by the U.S. Nuclear Regulatory Commission, to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for 5 years from the date of each inventory and shall include the radionuclides, quantities, manufacturer's name and model numbers, and the date of the inventory.

18. Maintenance, repair, cleaning, replacement, and disposal of foils contained in detector cells shall be performed only by the device manufacturer or other persons specifically authorized by the Commission or an Agreement State to perform such services.

19. A. Detector cells containing a titanium tritide foil or a scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents the foil temperatures from exceeding that specified in the certificate of registration referred to in 10 CFR 32.210.

B. When in use, detector cells containing a titanium tritide foil or a scandium tritide foil shall be vented to the outside.

**MATERIALS LICENSE**
**SUPPLEMENTARY SHEET**

License Number
19-07538-01

Docket or Reference Number
030-04544

Amendment No. 38

20. The licensee is authorized to hold byproduct material with a physical half-life of less than or equal to 120 days for decay-in-storage before disposal without regard to its radioactivity if the licensee:

    A. Monitors byproduct material at the surface before disposal and determines that its radioactivity cannot be distinguished from the background radiation level with an appropriate radiation detect on survey meter set on its most sensitive scale and with no interposed shielding; and

    B. Removes or obliterates all radiation labels, except for radiation labels on materials that are within containers and that will be managed as biomedical waste after they have been released from the licensee; and

    C. Maintains records of the disposal of licensed materials for 3 years. The record must include the date of disposal, the survey instrument used, the background radiation level, the radiation level measured at the surface of each waste container, and the name of the individual who performed the disposal.

21. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

22. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.

    A. Application dated January 27, 1998 (ML070160180)
    B. Letter dated April 2, 1998 (ML070120466)
    C. Letter dated January 6,2000 (ML003678663)
    D. Letter dated April 16, 2003 (ML031260073)
    E. Letter dated August 5,2004 (ML042190374)
    F. Letter dated January 25,2005 (ML050380492)
    G. Application dated April 16,2007 (ML071130143)

For the U.S. Nuclear Regulatory Commission

Date August 17, 2007

By

Thomas K. Thompson
Commercial and R&D Branch
Division of Nuclear Materials Safety
Region I
King of Prussia, Pennsylvania 19406

Friday, August 17, 2007 8:45:34 AM

# FINAL RADIOLOGICAL STATUS SURVEY REPORT

**FOOD AND DRUG ADMINISTRATION**
**CENTER FOR DEVICES AND RADIOLOGICAL HEALTH**
**Building T2**
**12720 Twinbrook Parkway Rockville, MD**

**FINAL REPORT**

**March 2009**

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| | |
|---|---|
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| Attachment 2 | Resrad-Build Report |
| Attachment 3 | Reference Matrices and Associated Measurements |
| Attachment 4 | Reference Maps of Individual Laboratories/Areas |
| Attachment 5 | Data Measurements |
| Attachment 6 | Daily Operational Checks of Portable Survey Instruments |

## Abbreviations

| | |
|---|---|
| ALARA | As Low As Reasonably Achievable |
| CDRH | Center for Devices and Radiological Health |
| CLYM | Clym Environmental Services, LLC |
| CPM | Counts per minute |
| DCGL | Derived Concentration Guideline Level |
| DPM | Disintegrations per minute |
| FDA | Food and Drug Administration |
| FSS | Final Status Survey |
| GCPM | Gross counts per minute |
| LBGR | Lower bound of the gray region |
| MARSSIM | Multi-Agency Radiation Survey and Site Investigation Manual |
| MDC | Minimum detectable concentration |
| NIDCR | Minimum Detectable Count Rate |
| NCPM | Net counts per minute |
| NRC | Nuclear Regulatory Commission |
| QA | Quality Assurance |

## References


1. NUREG-1507, "Minimum Detectable Concentrations With Typical Radiation Survey lnstruments for Various Contaminants and Field Conditions", NRC-Washington, DC, June 1998

2. NUREG-1575, "Multi-Agency Radiological Survey and Site Investigation Manual, Revision 1", August 2000

3. NUREG-1757, Vol. 1, "Consolidated NMSS Decommissioning Guidance. Decommissioning Process for Materials Licenses", Final Report, NRC-Washington, DC, September 2002

4. NUREG-1757, Vol. 2, "Consolidated NMSS Decommissioning Guidance, Decommissioning Process for Materials Licenses", Final Report, NRC-Washington, DC, September 2003

5. NUREG-CR-5512, Vol. 2, SAND2001-0822P, "Residual Radioactive Contamination From Decommissioning, Users Manual DandD, Version 2.1", NRC-Washington, DC, April 2001

6. DandD, Version 2.1 computer code

7. Resrad-Build, Version 3.4 computer code

8. Title 10, Code of Federal Regulations

## 1. Background

The Food and Drug Administration is part of the Executive Branch of the United States Government within the Department of Health and Human Services. The Food and Drug Administration (FDA) is a Nuclear Regulatory Commission (NRC) radioactive materials licensee. The possession, use and storage of these radioactive materials at this facility are authorized by the U.S. Nuclear Regulatory Commission (NRC) via a broadscope Radioactive Materials license, number 19-07538-01 (with 31 attachments). This license provides a limited scope of use directly associated with research activities. The FDA operated research laboratories at a facility located in Rockville, MD. This facility address is 12720 Twinbrook Parkway. The FDA occupant has been the Center for Devices and Radiological Health (CDRH). CDRH is one of six product-oriented centers that carry out the mission of the Food and Drug Administration. CDRH has and continues to conduct research employing various radiolabeled compounds and radioactive sealed sources.

There are five, one story buildings located at the facility. The principal places of use/storage were buildings 1 and 2 (T1 and T2). Buildings 3 thru 5 have been released from radiological control as referenced in license Amendment 28. The FDA has relocated research operations to another facility in the Washington, DC metropolitan area.

Building T1 consists of 19,229 square feet of mixed laboratory and office space. Building T2 consists of 5,121 square feet of laboratory space. The facility located at 12720 Twinbrook Parkway is presently owned and managed by Avalonbay Communities, Inc. located at 2400 Research Blvd., Suite 120 in Rockville. MD 20850. The facility is managed by Cassidy Pinkard Colliers Property Management, with offices located at 9801 Washingtonian Blvd., Suite 550, Gaithersburg, MD 20878. The building owner has designated the facility for major renovation after the FDAICDRH vacates the premises.

There were research protocols that involved the use of radioactive materials in sealed form. Unsealed form material was occasionally stored in Building T2 when not in use. These materials were procured, used and stored at 12720 Twinbrook Parkway, Building T2 under the FDAICDRH broad scope radioactive materials license.

The FDAICDRH, as an NRC licensee, is required to demonstrate that the facility located at 12720 Twinbrook Parkway located in Rockville. MD is acceptable for release in accordance with the requirements and conditions specified by the NRC. The FDAICDRH wants to remove Building T2 from their license as an authorized place of use in order to facilitate other remedial operations. The FDAICDRH has retained the services of Clym Environmental Services, LLC (CLYM) to assist in the decommissioning process. All decommissioning related activities (scoping

surveys, characterization surveys, remediation and waste disposal) were conducted under the authority of the current FDA/CDRH radioactive materials license.

## 2. Radiological Surveys

The Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) assigns a greater level of effort on surveys conducted in areas that have, or had, the highest potential for contamination. Areas are classified based on the radiological characteristics. Those areas that have no reasonable potential or extremely low probability of residual contamination are classified as non-impacted. Areas with some potential for residual contamination are classified as impacted.

There are nine laboratories/areas in Building T2, identified as 200, 201, 204, 205, 206, 208, 209, 210 and 212. There is a safe located in area 204 in Building T2. This safe was constructed from battleship grade steel and was used to store radioactive materials. The FDAICDRH Radiation Safety Officer stated that he could not recall a sealed source ever having leaked. The contents of the safe included a 100gram bottle of uranyl acetate, along with several sources and lead pigs. It was soon realized the interior surfaces of the safe as well as the lead pigs were contaminated and that several small sources were leaking. The interior surfaces of the safe and lead pigs were evaluated for total and removable surface contamination. The contaminants identified as a result of this survey were $^{137}Cs$, $^{133}Ba$ and $^{241}Am$.

The next step was to determine the Derived Concentration Guideline Levels (DCGL's) and select the Final Status Survey method in order to demonstrate compliance with the provisions specified in 10 CFR Part 20 for releasing the facility for unrestricted use.

Screening values for surface contamination were obtained using the values provided in NUREG-1757, Volume 1, Table B.1 in Appendix B. DandD Version 2.1 was used to obtain screening values for $^{238}U+C$ and $^{241}Am$, not provided in Table B.1. Copies of the DandD Building Occupancy Scenario reports are provided as Attachment 1. The Resrad-Build computer code, version 3.4, was used to obtain a screening value for $^{133}Ba$. A copy of the Resrad-Build report is provided as Attachment 2. A listing of the adopted screening values for building/surface contamination at Building T2 has been provided in Table 1.

The Final Status survey would designate each survey unit for surface scans and static measurement. The scoping survey was designed to meet the requirements of the Final Status survey. All laboratory and administrative space in Building 2 were designated as impacted.

The lower wall area was defined as the surface area from the floor to a height of eight feet. Surface scans were designated to cover 100% of accessible floor and 50% of accessible lower wall areas. Surface scans were designated to cover 10% of upper wall and ceiling areas. Scoping surveys were designed to evaluate levels of 1) total surface activity using surface scans as well as static measurements, and 2) removable surface contamination using smear samples. Smear sample locations were determined using the surveyor's professional judgment. These surveys would focus on surfaces deemed "high risk areas" e.g. floors, sinks and lower walls. Any area found to have residual surface contamination was designated for further evaluation as outlined below;

Surface Scans – any surface area found to be greater than twice the reference background for the surface matrices in beta mode, or 2 cpm above the reference background for the matrices being evaluated in the alpha mode.

Smears – any activity detected above the minimum detectable level.

Any area found to be at the investigative level for surface scans would be designated for evaluation in both alpha and beta mode. Further evaluations would be made using static measurements and smears to quantify the level of the contamination and better define the area. Any area where residual activity is identified at the investigative level would be sufficient cause to designate the area as a usage area. thereby increasing the coverage area for surface scans.

**Table 1**

| Radionuclide | Symbol | Acceptable Screening Levels ($dpm/100cm^2$) |
|---|---|---|
| 137-Cesium | $^{137}Cs$ | 2.4E+04 |
| 133-Barium | $^{133}Ba$ | 5.5E+04 |
| 241-Americium | $^{241}Am$ | 26 |
| 238Uranium+C | $^{238}U$ | *250* |

Survey instruments were selected based on the detection sensitivities to the radiations of concern. The detection sensitivity of large area gas proportional detectors was evaluated to ensure detection levels are within acceptable parameters (10%-50% of the DCGL). These detectors were equipped with 0.4mm thick windows. This meant the detector could be operated in an alpha or beta mode. The DCGL's for $^{238}U$ and $^{241}Am$ are low compared to the other contaminants. In order to meet the acceptable detection parameter of 10% to 50% of the DCGL, alpha must be evaluated indcpcndently. The strategy for evaluating residual surface contamination with $^{133}Ba$ as a possible contaminant was to scale the $^{133}Ba$ to the total activity and calculate a gross activity DCGL determined

using the ratio of contaminants identified in Table 2 and applying it using formula 4-4 as found in NUREG-1575 (December 1997).

**Table *2***

| Radionuclide | Ratio |
|---|---|
| 137-Cesium | 96% |
| 133-Barium | 4% |

The $DCGL_{weighted}$ (DCGL,) was found to be 24,558 dpm/100cm$^2$. One half the DCGL, would be 12,278 dpm/100cm$^2$. One half the $DCGL_w$ was next determined to be 6,860 cpm/100cm$^2$ by converting from a unit of radioactivity to counts per minute using a value of 0.096 for $E_{weighted, total}$. The total efficiency (E) was weighted according to the relative ratios. The surface efficiency (E,) of 0.5 is applied for greater than 0.4 MeV beta emitting radionuclides.

$$E_{weighted, total} = (0.2 \times 0.5 \times 96\%) + (0 \times 4\%)$$

The active probe surface area of 582 cm$^2$ was also used in converting the $DCGL_w$ from a unit of radioactivity to cpm.

The gross alpha $DCGL_{weighted}$ (DCGL,) was found to be 89 dpm/100cm$^2$. One half the DCGL, would be 44 dpm/100cm$^2$. One half the gross alpha DCGL, was next determined to be 12 cpm/100cm$^2$ by converting from a unit of radioactivity to counts per minute using a value of 0.045 for $E_{weighted, total}$. The total efficiency (E) was weighted according to the relative ratios. The surface efficiency (E,) of 0.25 is applied for alpha emitting radionuclides.

$$E_{weighted, total} = (0.18 \times 0.25 \times 79\%) + (0.18 \times 0.25 \times 21\%)$$

The active probe surface area of 582 cm$^2$ was also used in converting the DCGL,, from a unit of radioactivity to cpm.

## 2.1 Field Measurements, Methods and Instrumentation

Surface scans and static measurements for beta emitting radionuclides were made using scaler/rate meters equipped with large area gas proportional detectors (Ludlum model 43-37 and 43-68). Variations in background readings of up to 400cpm in beta mode were found throughout the building. The contributing factors were determined to be 1) variations in the composition of surface matrices as well as 2) the presence of radon.

The Scan MDC for a 43-37 detector on a concrete floor surface was determined to be 614 dpm/100cm$^2$ using an averaged background of 934 cpm. The Scan MDC is well below the $DCGL_w$ of 24,558 dpm/100cm$^2$. The following variables were used in determination of the Scan MDC for

the "ideal" surveyor; 1) a background count rate of 934 cpm, 2) $E_{weighted, total}$ of 0.096 and 3) the active area of the probe is 582 $cm^2$. A minimum detectable count rate (MDCR) of 1,292 cpm was determined for the ideal surveyor during the first scanning stage using an index of sensitivity *(d')* of 1.51 and a 2 second observation interval (NUREG 1575, 6.7.2.1 (6-8, 6-9)).

Surface scans and static measurements for alpha emitting radionuclides were conducted using a 43-37 large area gas proportional detector. The averaged ambient background for this detector in the alpha mode was found to be 1cpm. One half of the gross alpha $DCGL_w$ (89 dpm/100$cm^2$) is 44 dpm/100$cm^2$ or 11 cpm/100 $cm^2$ using a total weighted efficiency of 0.045. The probability of detecting two or more counts when passing over 44dpm/100$cm^2$ was determined to be 3% (NUREG-1575, 6.7.2.2 (6-14)) using a probe dimension of 15 'cm and a scan rate of 4cm/s. The time interval a surveyor should hold over a suspect area was determined to be 4 seconds (NUREG 1575, 6.7.2.2 (6-13)).

Reference areas for were located in Building T1 for each type of matrices identified in Building T2 laboratories/areas. These reference areas are identified as follows; room number 102, 106, 108, 128, 151A, 159 and the janitorial closet located next to the restrooms. A listing of the reference matrices and associated measurement for each portable survey instrument used has been provided as Attachment 3.

The detector was employed on the scanned surface at no greater than the prescribed speed as indicated below;

43-68, alpha/beta mode ½ a probe width per second (2inches/sec)

43-68, alpha mode ¼ a probe width per second (1inch/sec)

43-37, alpha/beta mode ½ a probe width per second (3inches/sec)

43-37, alpha mode ¼ a probe width per second (1.5inches/sec)

The minimum observational interval or hold time over a suspect area is as specified for the first stage scan: Beta - 2 seconds, Alpha - 4 seconds.

Surface scans were systematically conducted on accessible surfaces in each survey area as to ensure the 100% coverage in usage areas and 50% in non-usage areas. Special attention was made to joints, cracks, seams, etc. in any accessible survey area.

## 2.2 Laboratory Analysis of Smear Samples

The evaluation of removable surface activity was conducted using a dry paper wipe, covering an area of 100 $cm^2$ while applying moderate pressure. A total of ninety smear samples were collected and analyzed, ten

from each of the nine laboratories/areas. Smear samples were analyzed by Clym Environmental Services, LLC (license nr. MD-21-035-01) for gross alpha and beta. Samples were analyzed using liquid scintillation counting techniques. A region of interest was established 0 to 1000 MeV. The typical minimum detectable activity for gross beta using a four minute count time was 28 dpm. This was calculated using a background of 28 cpm and an efficiency for tritium of 46%. Any sample found to have detectable activity in excess of the minimum detectable was designated for quantitative analysis

### 2.3 Activity Detected At or Above Investigative Levels

The evaluation of total and removable surface contamination identified no area of surface contamination at or above action levels.

## 3. Final Status Survey Plan

The Derived Concentration Guideline Levels and Final Status Survey method to demonstrate compliance with the provisions specified in Title 10 CFR part 20 for releasing the facility for unrestricted use were determined. All nine laboratories /areas in Building T2 were combined to form one Class **3** survey unit, identified as Survey Unit 1. The floor surface area in Survey Unit 1 was determined to be 402 $m^2$.

The Final Status Survey designated the survey unit for surface scans and static measurements. Surface scans were completed in each laboratory/area during scoping surveys to the required specifications as detailed in Section 2. The static measurements would be made using a predetermined count time of one minute in beta mode arid twenty minutes in alpha mode.

### 3.1 Determining the Number of Data Points for Statistical Tests

This section details the determination process in the selection and implementation of statistical tests.

#### 3.1.1 Contaminants Not Present in Background

The Sign Test was selected to compare beta emitting nuclides or those contaminants not present in background $^{137}Cs$ and $^{133}Ba$. The objective of the Final Status Surveys is to demonstrate that the residual radioactivity levels meet the release criterion. Scenario A has been selected to demonstrate this objective for residual contamination on building/structure surfaces. In demonstrating that this objective is met the null hypothesis tested, $H_o$; is the median concentration of residual radioactivity in the survey unit is greater than the $DCGL_w$.

The Type I error *(a)* was specified as 0.05 and a Type II decision error ($\beta$) was set at 0.05.

#### 3.1.1.1 Calculate the Relative Shift

The lower bound of the gray region was determined to be 2,870. The standard deviation of the contaminants in the survey unit was found to be 36. If the relative shift was determined to be >3 the lower bound of the gray region was adjusted. The relative shift for the survey unit was determined to be 2.79.

#### 3.1.1.2 Determination of Sign p

The value of the relative shift calculated in section 3.1.1.1 was used to obtain the corresponding value of Sign p using Table 5.4 as found in NUREG-1575 (December 1997).

#### 3.1.1.3 Determination of Decision Error Percentiles

The determination of percentiles, $Z_{1-\alpha}$ and $Z_{1-\beta}$ was conducted by selecting the designated values using Table 5.2 as found in NUREG-1575 (December 1997).

#### 3.1.1.4 Determine the Number of Data points for the Sign Test

The number of data points for each survey unit was determined by selecting the designated values using Table 5.5 as found in NUREG-1575 (December 1997). The number of data points for Survey Unit 1 was found to be 15.

### 3.1.2 Contaminants Present in Background

#### 3.1.2.1 Scenario A

The Wilcoxon Rank Sum (WRS) Test was selected to compare those contaminants present in background, $^{238}U$ and $^{241}Am$. In demonstrating the objective that the Final Status Survey has met the null hypothesis, $H_o$ tested is the median concentration of residual radioactivity in the survey unit exceeds that in the reference area by more than the DCGL. The Type I error *(a)* was specified as 0.05 and a Type II decision error (β) was set at 0.05.

##### 3.1.2.1.1 Calculate the Relative Shift

The lower bound of the gray region was established at 1. The standard deviation was found to be 1.7. If the relative shift was determined to be >4 the lower bound of the gray region was adjusted. The relative shift Survey Unit 1 was determined to be 2.38.

##### 3.1.2.1.2 Determination of $P_r$

The value of the relative shift calculated in section 3.1.2.1.1 was used to obtain the corresponding value of $P_r$ using Table 5.1 as found in NUREG-1575 (December 1997).

#### 3.1.2.1.3 Determination of Decision Error Percentiles

The determination of percentiles, $Z_{1-\alpha}$ and $Z_{1-\beta}$ was conducted by selecting the designated values using Table 5.2 as found in NUREG-1575 (December 1997).

#### 3.1.2.1.4 Determine the Number of Data points for the WRS Test

The number of data points for the survey unit was determined by selecting the designated values using Table 5.3 as found in NUREG-1575 (December 1997). The number of data points in Survey Unit 1 was found to be 11.

## 4. Final Status Survey

A one meter square grid system was constructed in each area of the survcy unit, to include the floors and lower wall areas.

The designation for each surface in a survey unit was identified using an alpha-numeric system. The survey unit was identified as Survey Unit 1 and subsidiary laboratories/areas identified by a unique identifying number. The Final Status sample points in each laboratory/area were physically identified using the alpha-numeric designation for the grid in which the sample point or location rcsidcs. Diagram maps of each laboratory/area in Survey Unit 1 have been provided as Attachment 4.

The reference areas for establishing background for the different matrices wcrc identified in Building T1. Sample measurements were then made at various locations within each of the reference areas on each type of matrices (e.g. benchtop, floor, casework, etc.). Variations in "background" were encountered for each type of matrices throughout the facility.

Kandom sample points were selected by first assigning each point in the survey unit a sequential numerical value. A random number generator was utilized to select the sample points for each survey unit.

A floor diagram and designated sample points were provided to the surveyor. The results of static measurements made in each survey unit have been provided as Attachment 5.

### 4.1 Summary of Statistical Tests

The measurements made at discrete locations as a result of FSS were evaluated.

#### 4.1.1 Contaminants Not Present in Background

The Sign Test was selected to compare contaminants not present in background $^{137}Cs$ and $^{133}Ra$. The objective of the Final Status

Surveys is to demonstrate that the residual radioactivity levels meet the release criterion.

H,: The median concentration of residual radioactivity in the survey unit is greater than the DCGL,.

All measurements were found to bc less than the DCGL,. The average of the measurements made in each survey unit was determined. The measurement average in the survey unit, -54 dpm/100cm$^2$ was less than the DCGL$_w$. The Sign test did not need to be performed as the survey unit met the release criterion.

#### 4.1.2 Contaminants Present in Background

The Wilcoxon Rank Sum (WRS) Test was selected to compare alpha emitting nuclides or those contaminants present in background, $^{238}$U and $^{241}$Am. In demonstrating the objective of the Final Status Survey is met the null hypothesis, $H_o$ tested is the median concentration of residual radioactivity in the survey unit exceeds that in the reference area by more than the DCGL,. The largest measurement recorded in the survey unit was found to be 28 dpm/100cm$^2$. The smallest measurement recorded in the reference area was -23 dpm/100cm$^2$. The difference between the two measurements was found to be 52 dpm/100cni$^2$. The difference is less than the DCGL„ 89 dpm/100cm$^2$. The WRS test did not need to be performed as the survey unit met the release criterion.

## 5. Quality Assurance

The performance of decommissioning activities has been managed within a framework of policies and procedures, which assure the validity and quality of data. Procedures were established for activities requiring the application of standard and approved methods to ensure regulatory requirements were met. These procedures document the technical competence of the survey approach thus ensuring the use of effective processes. Procedures utilized by Clym are documented using program-specific applications.

### 5.1 Daily Operational Checks for Portable Survey Instruments

The purpose of these procedures was to ensure portable scaler/rate meters equipped with gas proportional detectors were in proper working condition prior to placement into service.

When an instrument failed an operational check, both the instrument and detector were removed from service until the discrepancy could be resolved.

Both source arid background measurements must fall within the acceptable range established for the site and were performed as follows:

Prior to beginning the performance of data measurements and/or scanning for the day,

After the lunch or noon break,

Any time the detector is suspected of being contaminated and

Any time instrument operation is in question.

Daily checks included 1) a determination of operational readiness, 2) ambient background determination and verification that each reading is within ±20% of the average in beta mode and 200% of the average in alpha mode and 3) check source reproducibility determination.

The check source reproducibility determination involved obtaining the data necessary to calculate the average source count and verify that each section of the detector face was reading within ±10% of the average in beta and alpha mode. Additionally, the 20 and 30 values for the background and check source counts were calculated. The acceptable value for 30 was established at ±10% of the mean.

A copy of these daily checks has been provided as Attachment 6.

**6. Disposition of Materials arid Waste**

All radioactive materials, including the safe have been transferred to another licensed FDA/CDRH facility.

*7.* **Findings**

The objective of the Final Status Survey to dcrnonstrate that the survey met the release criteria was achieved.

**8. Conclusion**

The Final Status Surveys conducted by the FDA/CDRH demonstrate compliance with the provisions specified in Title 10 CFR Part 20 for releasing the Building T2 located at 12720 Twinbrook Parkway in Rockville, MD for unrestricted use.

**ATTACHMENT 1**

# DandD Building Occupancy Scenario

**DandD** Version: 2.1.0
Run **Date/Time:** 11/20/2008 2:30:48 PM
Site Name: 12720 Twinbrook Pkwy
Description: DCGL Determination
**FileName:**C:\Documents and Settings\Finley Watts\My Documents\12720\12720 DCGL.mcd

## Options:

Implicit progeny doses NOT included with explicit parent doses
Nuclide concentrations are distributed among all progeny
**Number** of **simulations:** 400
Seed for Random Generation: 8718721
Averages used for behavioral type parameters

External Pathway is ON
**Inhalation** Pathway is ON
Secondary Ingestion Pathway is ON

## Initial Activities:

| Nuclide | Area of Contamination ($m^2$) | Distribution |
|---|---|---|
| 238U+C | UNLIMITED | CONSTANT(dpm/100 cm**2) |
| Justification for concentration. DCGL Determination | | Value 2 50E+02 |

## Site Specific Parameters:

General Parameters:

None

**Correlation** Coefficients:

None

# Summary Results:

90.00% **of the** 400 **calculated TEDE values are <** 2.32E+01 **mrem/year .**
**The 95 % Confidence Interval for the** 0.9 **quantile value of TEDE is** 2.19E+01 **to** 2.46E+01 **mrem/year**

# DandD Building Occupancy Scenario

DandD Version: 2.1.0
Run **Date/Time:** 11/20/2008 2:39:56 PM
Site Name: 12720 Twinbrook Pkwy
Description: DCGL Determination
**FileName:**C:\Documents and Settings\Finley Watts\My Documents\12720\12720 DCGL.mcd

## Options:

**Implicit** progeny doses NOT included with explicit parent doses
Nuclide **concentrations** are distributed among all progeny
Number of simulations: 6400
Seed for Random Generation: 8718721
Averages used for behavioral type parameters

External Pathway is ON
Inhalation Pathway is ON
Secondary Ingestion Pathway is ON

## Initial Activities:

| Nuclide | Area of Contamination ($m^2$) | Distribution |
|---|---|---|
| **241Am** | UNLIMITED | CONSTANT(dpm/100 cm *2) |
| Justification for concentration: DCGL Determination | | Value 2.60E+01 |

## Site Specific Parameters:

### General Parameters:

None

### Correlation Coefficients:

None

# Summary Results:

90.00% **of the** 6400 **calculated TEDE values are <** 2.45E+01 **mrem/year .**
**The 95 % Confidence Interval for the** 0.9 **quantile value of TEDE is** 2.42E+01 **to** 2.49E+01 **mrem/year**

**ATTACHMENT *2***

Title : DCGL Determination 133Ba
Input File : C:\RESRAD_Family\BUILD\site1.bld

## RESRAD-BUILD Table of Contents

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For time = 0.00E+00 yr
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Title : DCGL Determination 133Ba
Input File : C:\RESRAD_Family\BUILD\site1.bld

## RESRAD-BUILD Input Parameters

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.650000E+02 days
Fraction Inside : 5.000000E-01

### Receptor Information

| Receptor | Room | x [m] | y [m] | z [m] | FracTime | Inhalation [m3/day] | Ingestion(Dust) [m2/hr] |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 1.000 | 1.000 | 1.000 | 1.000 | 1.80E+01 | 1.00E-04 |

### Receptor-Source Shielding Relationship

| Receptor | Source | Density [g/cm3] | Thickness [cm] | Material |
|---|---|---|---|---|
| 1 | 1 | 2.40E+00 | 0.00E+00 | Concrete |

## Building Information

Building Air Exchange Rate: 8.00E-01 1/hr

Height [m]
Area [m2]

Air Exchanges [m3/hr]

```
                    ******************************

                                                    <=Q03: 6.00E+01
H3:   2.500                    Room  3                 Q30 :  6.00E+01
                    *   LAMBDA: 1.00E+00
Area  36.000
                    * /\   N23: 0.00E+00
                    **||*************************      Q32 :  3.00E+01
                      ||
                    **||*************************      Q23 :  3.00E+01

                                                    .<=Q02: 6.00E+01
H2:   2.500                    Room  2                 Q20 :  6.00E+01
                    *   LAMBDA: 1.00E+00
Area  36.000
                    * /\   N12: 0.00E+00
                                                       QLR :  0.00E+00
                      ||
                    **||*************************      Q12 :  0.00E+00

                                                    <=Q01: 9.60E+01
H1:   2.500                    Room  1                 Q10 :  9.60E+01
                    *   LAMBDA: 1.07E+00
Area  36.000

                    ******************************
```

Deposition velocity: 1.00E-02 [m/s]  Resuspension Rate: 5.00E-07 [1/s]

Title': DCGL Determination 133Ba
Input File : C:\RESRAD_Family\BUILD\site1.bld

## Source Information

Source: 1
Location:: Room : 1 x: 0.00 y: 0.00 z: 0.00[m]
Geometry:: Type: Area Area:3.60E+01 [m2] Direction: x
Pathway ::
Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 5.000E-01
Time to Remove: 3.650E+02 [day]

Contamination::

| Nuclide | Concentration | Dose Conversion Factor (Library: FGR 11) | | |
|---|---|---|---|---|
| | | Ingestion | Inhalation | Submersion |
| | [pCi/m2] | [mrem/pCi] | [mrem/pCi] | [mrem/yr/ (pCi/m3)] |
| BA-133 | 2.500E+06 | 3.400E-06 | 7.810E-06 | 2.079E-03 |

Title': DCGL Determination 133Ba
Input File : C:\RESRAD_Family\BUILD\site1.bld
Evaluation Time: 0.00000000E+00 years

Assessment for Time: 1
Time =0.00E+00 yr

Source Information

Source: 1
Location:: Room : 1 x: 0.00 y: 0.00 z: 0.00 [m]
Geornetry:: Type: Area Area:3.60E+01 [m2] Direction: X
Pathway ::
Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 5.000E-01
Time to Remove: 3.650E+02 [day]

| Contamination:: | Nuclide | Concentration [pCi/m2] |
|---|---|---|
| | BA-133 | 2.500E+06 |

**Title':** **DCGL Determination** 133Ba

**Input File** : C:\RESRAD_Family\BUILD\site1.bld

**Evaluation Time:** 0.00000000E+00 **years**

## RESRAD-BUILD Dose Tables

### Source Contributions to Receptor Doses

[mrem]

| | Source 1 | Total |
|---|---|---|
| **Receptor 1** | 1.92E+01 | 1.92E+01 |
| **Total** | 1.92E+01 | 1.92E+01 |

Title : DCGL Determination 133Ba
Input File : C:\RESRAD_Family\BUILD\site1.bld
Evaluation Time: 0.00000000E+00 years

## Pathway Detail of Doses

[mrem]

Source: 1

| Receptor | External | Deposition | Immersion | Inhalation | Radon | Ingestion |
|---|---|---|---|---|---|---|
| 1 | 1.79E+01 | 1.00E+00 | 5.01E-03 | 1.23E-01 | 0.00E+00 | 1 43E-01 |
| Total | 1.79E+01 | 1.00E+00 | 5.01E-03 | 1.23E-01 | 0.00E+00 | 1.4 31-01 |

Title : DCGL Determination 133Ba
Input File : C:\RESRAD_Family\BUILD\site1.bld
Evaluation Time: 0.00000000E+00 years

## Nuclide Detail of Doses

[mrem]

Source: 1

| Nuclide | Receptor 1 | Total |
|---|---|---|
| BA-133 | 1.92E+01 | 1.92E+01 |

Title: DCGL Determination 133Ba
Input File : C:\RESRAD_Family\BUILD\site1.bld
Evaluation Time: 1.00000000 years

Assessment for Time: 2
Time =1.00E+00 yr

Source Information

Source: 1
Location:: Room: 1 x: 0.00 y: 0.00 z: 0.00 [m]
Geometry:: Type: Area Area:3.60E+01 [m2] Direction: x
Pathway ::
Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 0.000E+00
Time to Remove: 3.650E+02 [day]

| Contamination:: | Nuclide | Concentration [pCi/m2] |
|---|---|---|
| | BA-133 | 1.172E+06 |

Title : DCGL Determination 133Ba
Input File : C:\RESRAD_Family\BUILD\site1.bld
Evaluation Time: 1.00000000 years

## RESRAD-BUILD Dose Tables

### Source Contributions to Receptor Doses

[mrem]

| | Source 1 | Total |
|---|---|---|
| Receptor 1 | 1.12E+01 | 1.12E+01 |
| Total | 1.12E+01 | 1.12E+01 |

Title': DCGL Determination 1338a
Input File : C:\RESRAD_Family\BUILD\site1.bld
Evaluation Time: 1.00000000 years

Pathway Detail of Doses

[mrem]

Source: 1

| Receptor | External | Deposition | Immersion | Inhalation | Radon | Ingestion |
|---|---|---|---|---|---|---|
| 1 | 1.12E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total | 1.12E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

Title : DCGL Determination 133Ba
Input File : C:\RESRAD_Family\BUILD\site1.bld
Evaluation Time: 1.00000000 years

## Nuclide Detail of Doses

[mrem]

Source: 1

| Nuclide | Receptor 1 | Total |
|---|---|---|
| BA-133 | 1.12E+01 | 1.12E+01 |

Title : DCGL Determination 133Ba
Input File : C:\RESRAD_Family\BUILD\site1.bld
Full Summary

## RESRAD-BUILD Dose (Time) Tables

### Receptor Dose Received for the Exposure Duration

(mrem)

| | Evaluation Time [yr] | |
|---|---|---|
| | 0.00E+00 | 1.00E+00 |
| 1 | 1.92E+01 | 1.12E+01 |

### Receptor Dose/Yr Averaged Over Exposure Duration

(mrem/yr)

| | Evaluation Time [yr] | |
|---|---|---|
| | 0.00E+00 | 1.00E+00 |
| 1 | 1.92E+01 | 1.12E+01 |

**ATTACHMENT 3**

REFERENCE MATRICES and ASSOCIATED MEASUREMENTS

**Scalerlrate meter:** L2241-2 **Detector:** 43-37B
**SN:** 189777 **SN:** 149714

| | Laminate surface horiz. | Metal surface vert. | Metal surface horiz. | Cinderblock wall (painted) | Wood over cinder block | Wood surface vert. | Ceiling tiles | Drywall | Drywall over cinder block | Vinyl tile **12x12** | Carpet |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Counts/minute | 539 ± 30 | 478 ± 18 | 552 ± 25 | 934 ± 36 | 661 ± 31 | 505 ± 34 | 925 ± 18 | 565 ± 19 | 754 ± 32 | 532 ± 19 | 508 ± 26 |

| | Concrete floor |
|---|---|
| Counts/minute | 713 ± 19 |

**Scalerlrate meter:** L2241-2 **Detector:** 43-37A
**SN:** 189777 **SN:** 149714

| | Laminate surface horiz. | Metal surface vert. | Metal surface horiz. | Cinderblock wall (painted) | Wood over cinder block | Wood surface vert. | Ceiling tiles | Drywall | Drywall over cinder block | Vinyl tile **12x1**2 | Carpet |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Counts/minute | 7 ± 2 | 7 f 2 | 7 f 1 | 14 ± 3 | 8 ± 2 | 8 ± 2 | 16 ± 3 | 6 f 2 | 8 k 2 | 6 f 2 | 7 f 2 |

| | Concrete floor |
|---|---|
| Counts/minute | 13 ± 2 |

REFERENCE MATRICES and ASSOCIATED MEASUREMENTS

**Scaler/rate meter:** L2241-2 **Detector:** 43-68A
**SN:** 196826 **SN:** 159011

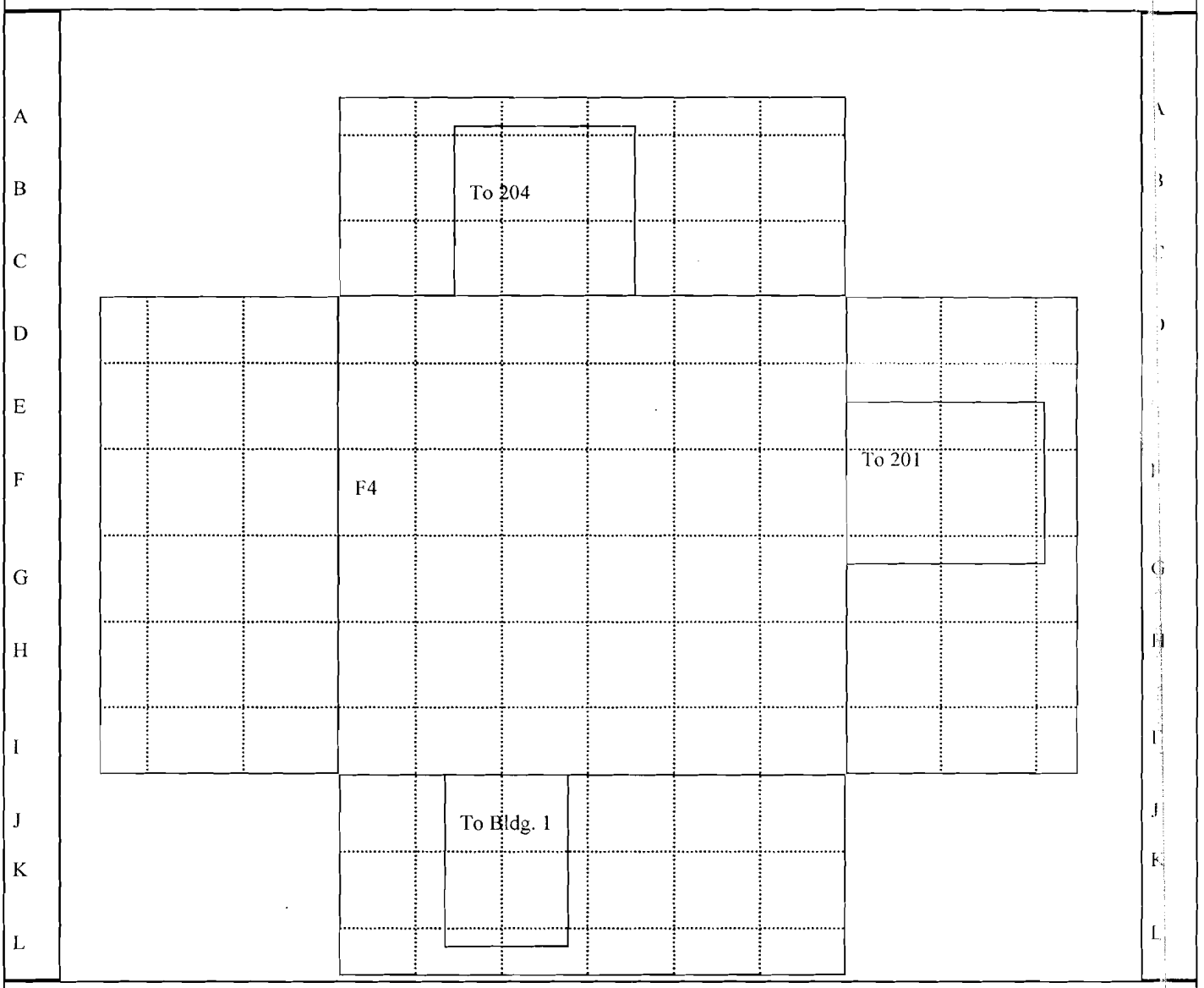
| | Wood surface vert. | Metal surface vert. | Metal surface horiz. | Concrete floor | Ceiling tile | Drywall | Drywall over cinder block | Cinderblock painted | Carpet | Floor vinyl tile wood lamin. |
|---|---|---|---|---|---|---|---|---|---|---|
| Counts/minute | 3 ± 1 | 1 ± 1 | 2 ± 1 | 5 ± 3 | 5 ± 2 | 3 ± 2 | 4 ± 2 | 3 ± 2 | 4 ± 1 | 2 ± 2 |

**Scaler/rate meter:** L2241-2 **Detector:** 43-68B
**SN:** 196826 **SN:** 159011

| | Wood surface vert. | Metal surface vert. | Metal surface horiz. | Laminate surface horiz. | Concrete floor | Vinyl tile 12x12 | Drywall | Carpet |
|---|---|---|---|---|---|---|---|---|
| Counts/minute | 214 ± 14 | 201± 12 | 258 ± 16 | 277 ± 12 | 356 ± 14 | 269 ± 15 | 256 ± 21 | 281 ± 11 |

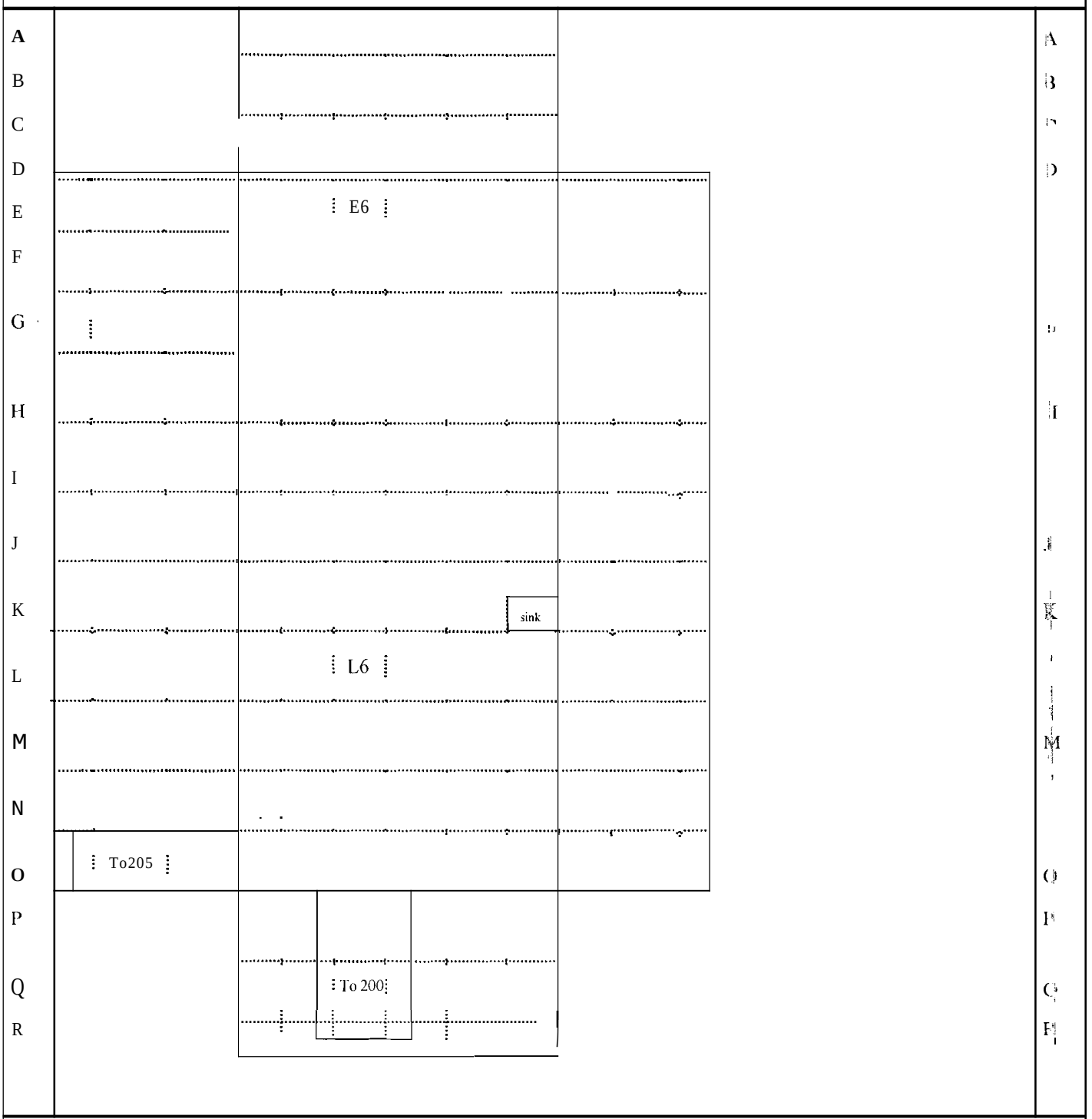
**ATTACHMENT 4**

| RADIATION SAFETY SURVEY REPORT | SURVEYOR NAME: | DATE: |
|---|---|---|
| | LAB: 200 | TIME: |



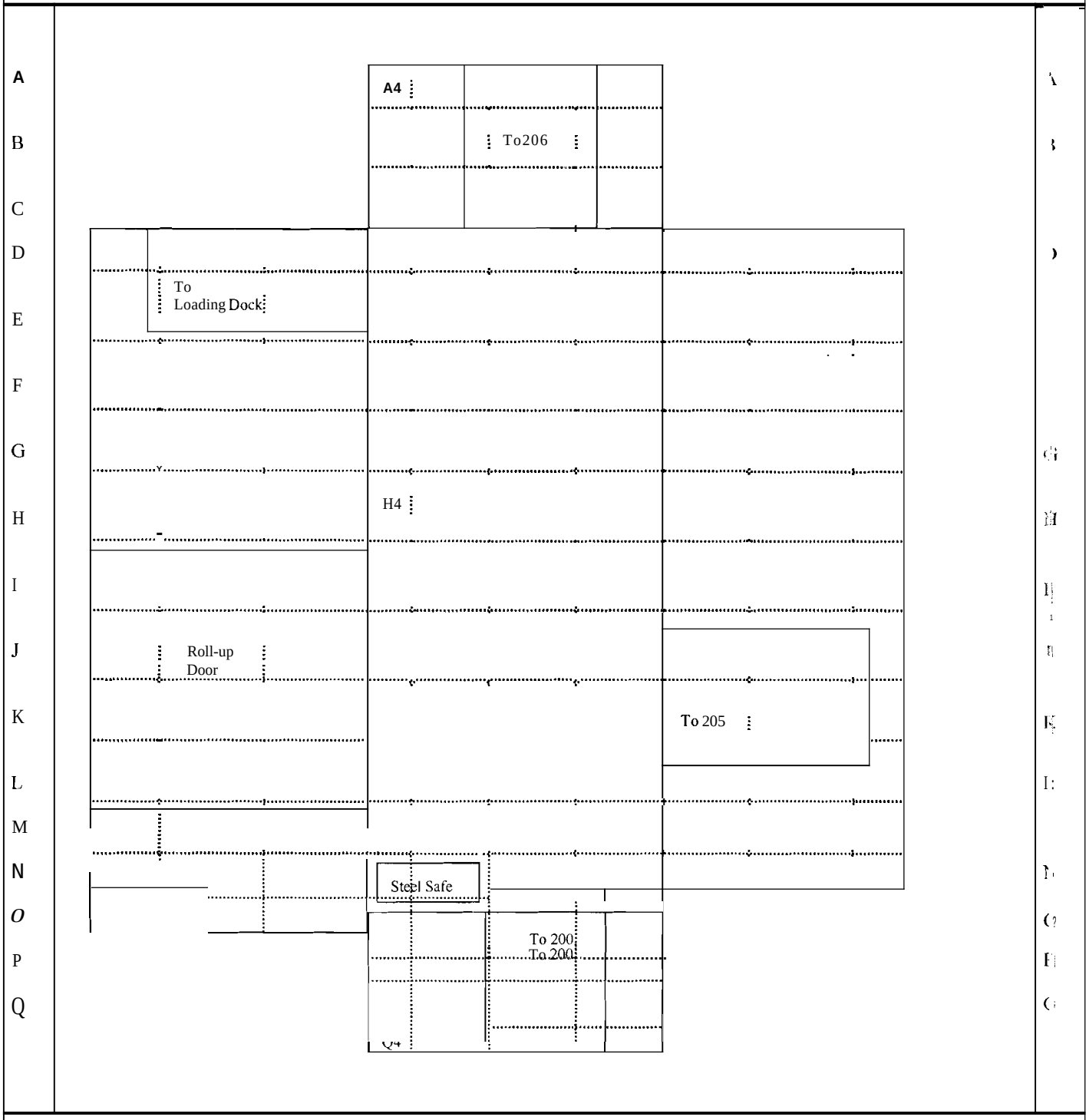

Comments:

| RADIATION SAFETY SURVEY REPORT | SURVEYOR NAME: | DATE: |
|---|---|---|
| | LAB: 201 | TIME: |



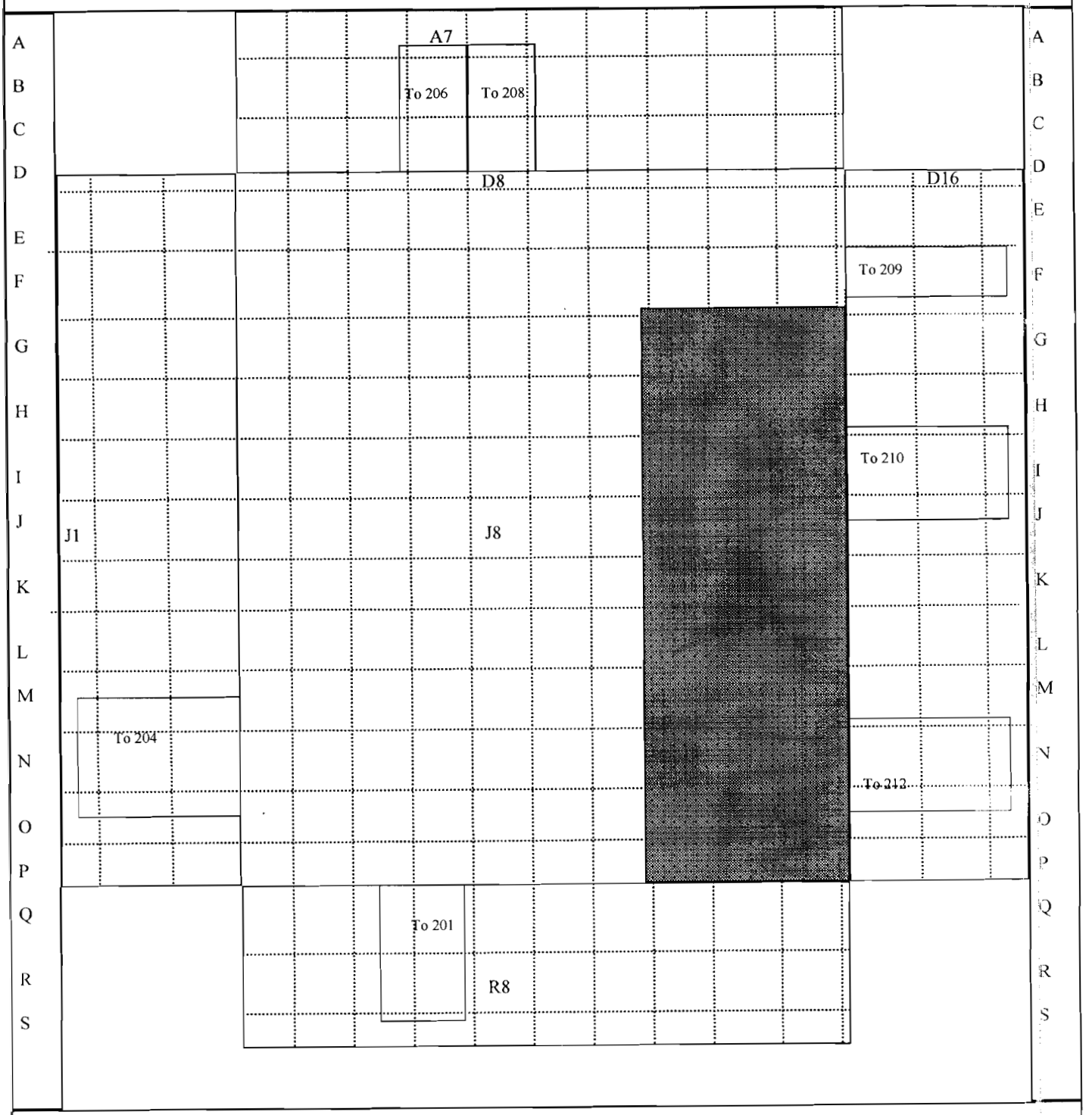

Comments:

| RADIATION SAFETY SURVEY REPORT | SURVEYOR NAME: | DATE: |
|---|---|---|
| | LAB: 204 | TIME: |



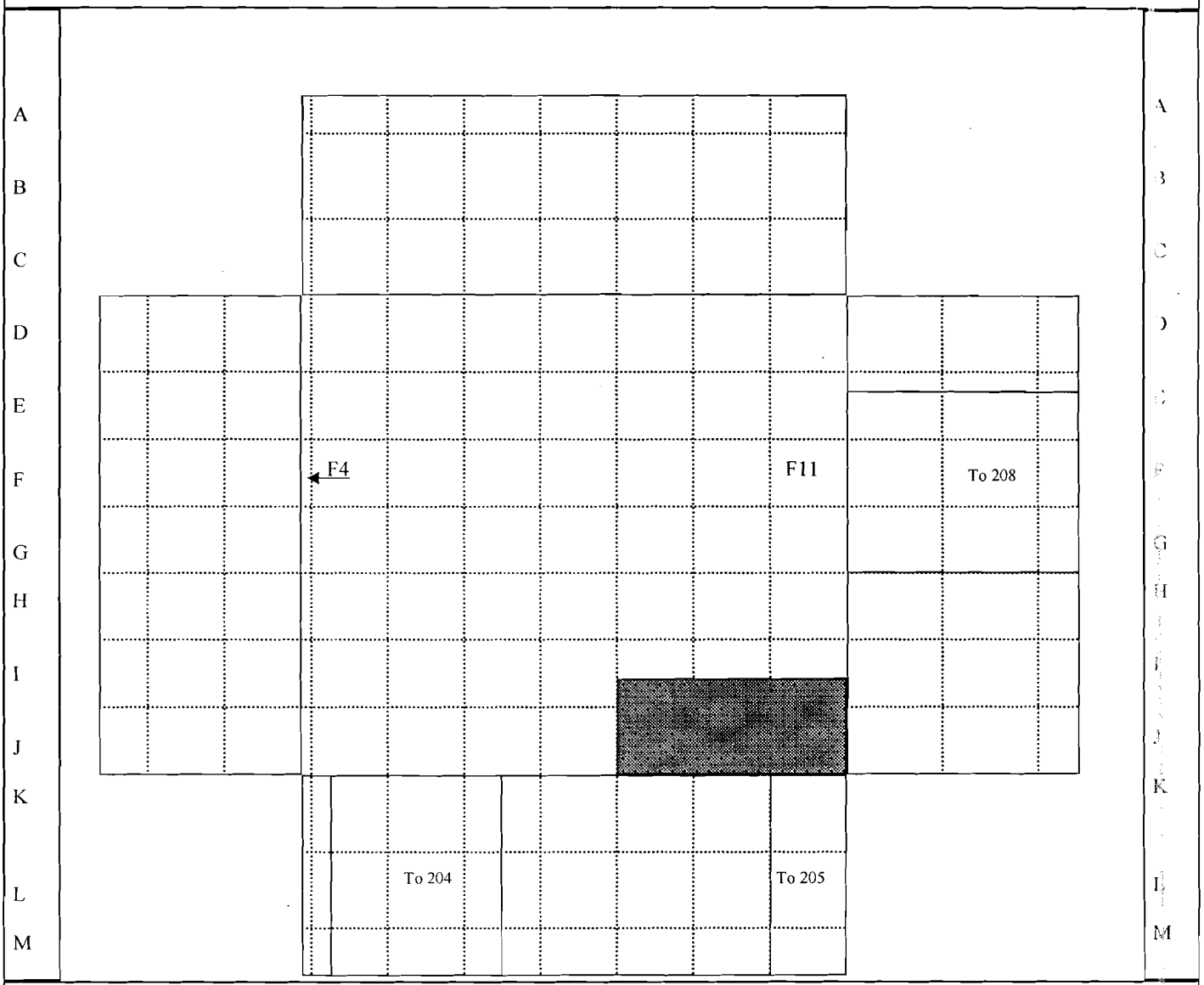

Comments:

| RADIATION SAFETY SURVEY REPORT | SURVEYOR NAME: | DATE: |
|---|---|---|
| | LAB: 205 | TIME: |



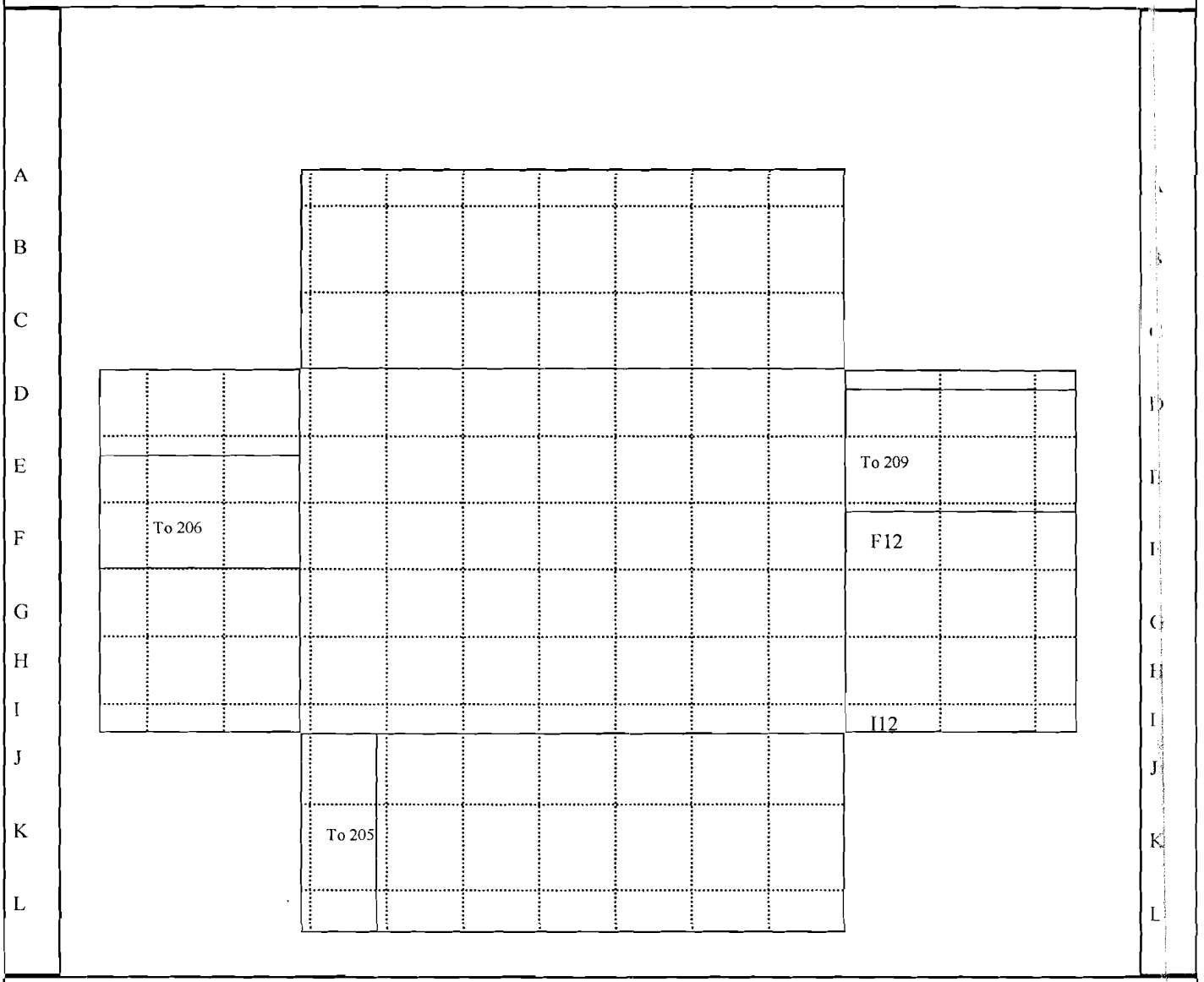

Comments:

| RADIATION SAFETY SURVEY REPORT | SURVEYOR NAME: | DATE: |
|---|---|---|
| | LAB: 206 | TIME: |



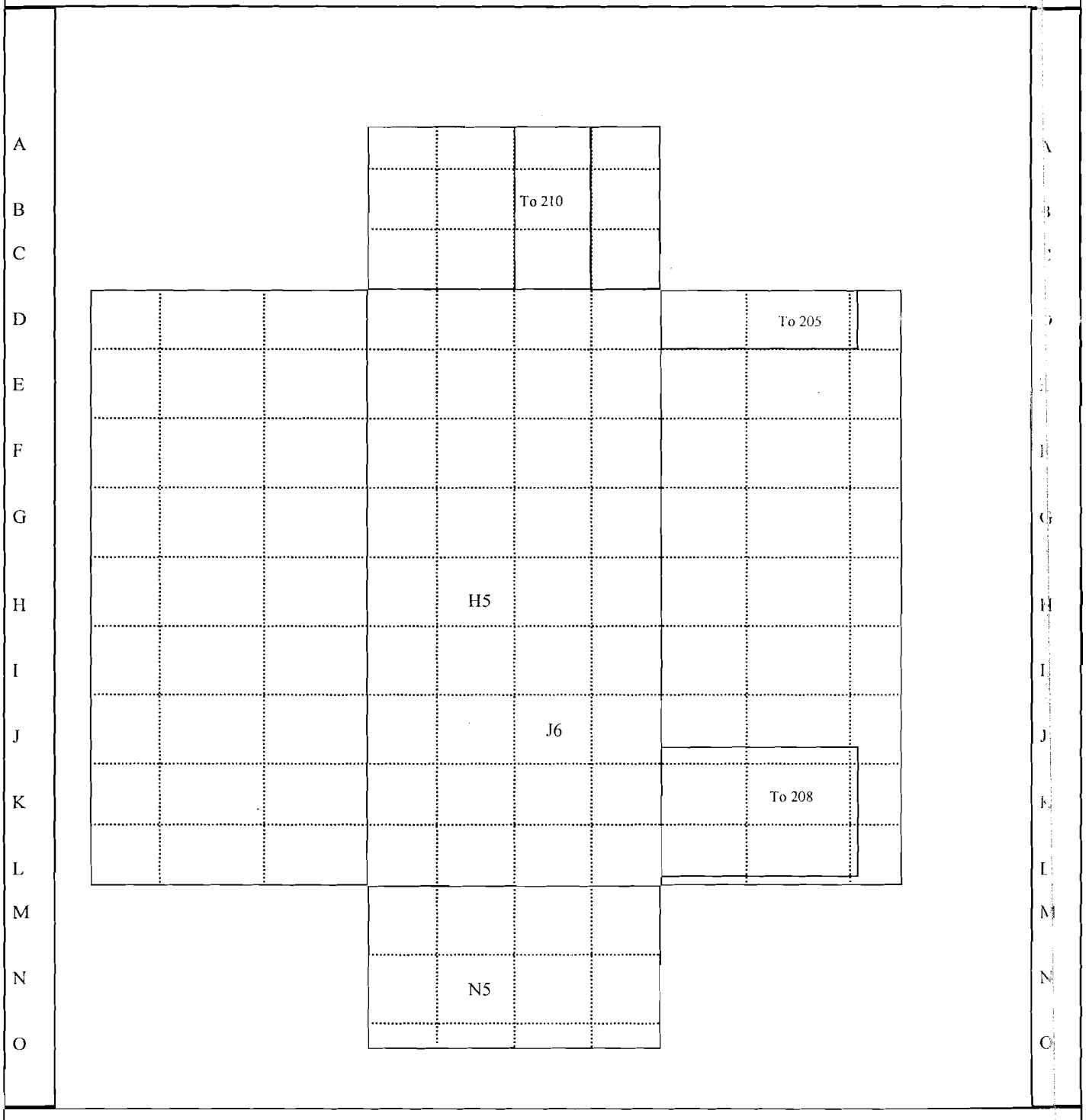

Comments:

| RADIATION SAFETY SURVEY REPORT | SURVEYOR NAME: | DATE: |
|---|---|---|
| | LAB: 208 | TIME: |



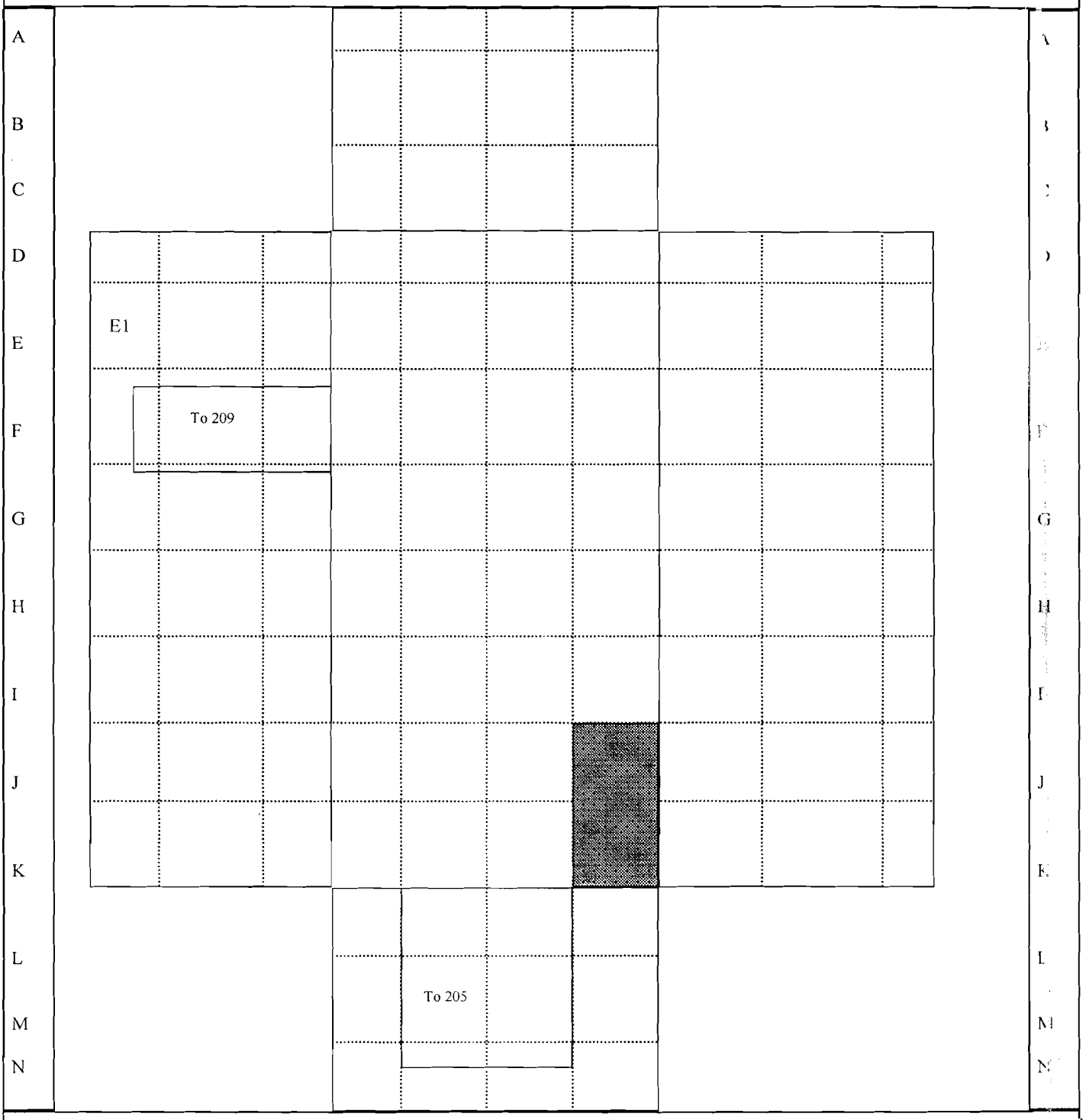

Comments:

| RADIATION SAFETY SURVEY REPORT | SURVEYOR NAME: | DATE: |
|---|---|---|
| | LAB: 209 | TIME: |



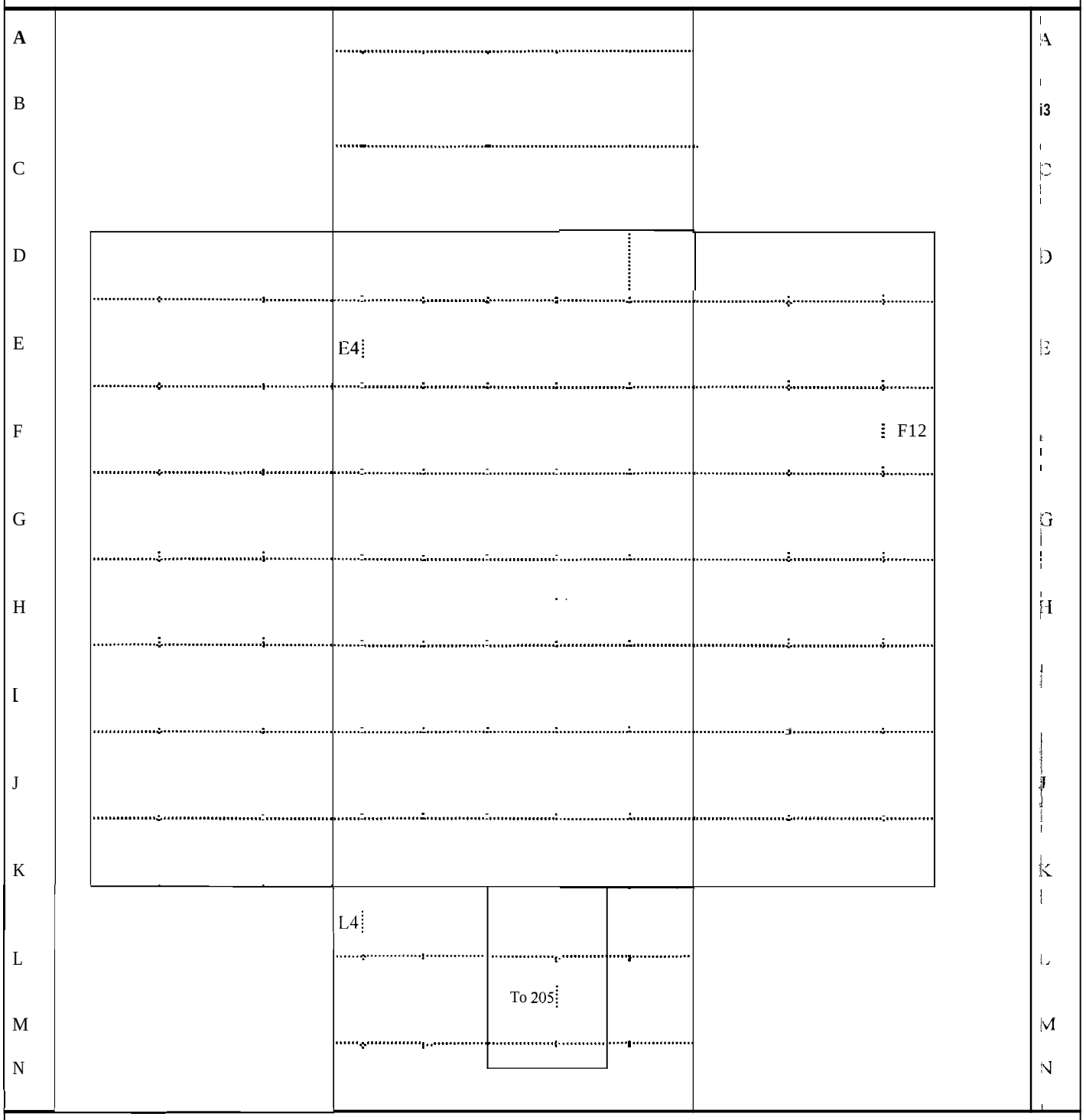

Comments:

| RADIATION SAFETY SURVEY REPORT | SURVEYOR NAME: | DATE: |
|---|---|---|
| | LAB: 210 | TIME: |




Comments:

| RADIATION SAFETY SURVEY REPORT | SURVEYOR NAME: | DATE: |
|---|---|---|
| | LAB: 212 | TIME: |




Comments:

**ATTACHMENT *5***

FINAL STATUS SURVEY GROSS BETA MEASUREMENTS

| Sample, Point | Bkg (counts) | Gross (counts) | Count time (in min) | Total Surface Activity[1] in DPM/100cm2 | | |
|---|---|---|---|---|---|---|
| | | | | Gross Beta | Uncertainty[2] | MDA |
| 200 - F4 | 281 | 340 | 1 | 488 | 404 | 647 |
| 201 - L6 | 269 | 339 | 1 | 579 | 400 | 633 |
| 204 - A4 | 308 | 283 | 1 | -207 | 394 | 677 |
| 205 - J1 | 256 | 256 | 1 | 0 | 367 | 618 |
| 205 - D16 | 256 | 212 | 1 | -364 | 351 | 618 |
| 206 - F4 | 356 | 360 | 1 | 33 | 434 | 728 |
| 206 - F I I | 356 | 320 | 1 | -298 | 421 | 728 |
| 208 - F12 | 256 | 228 | 1 | -231 | 356 | 618 |
| 208 - I12 | 256 | 208 | 1 | -397 | 349 | 618 |
| 209 - J6 | 356 | 301 | 1 | -455 | 415 | 728 |
| 209 - N5 | 214 | 225 | 1 | 91 | 340 | 565 |
| 210 - E1 | 256 | 242 | 1 | -116 | 362 | 618 |
| 212 - E4 | 356 | 378 | 1 | 182 | 439 | 728 |
| 212 - L4 | 256 | 251 | 1 | -41 | 365 | 618 |
| 212 - F12 | 256 | 247 | 1 | -74 | 363 | 618 |

[1] - $E_{weighted, total}$; 0.096, probe active area 126cm2

[2] - at the 95% confidence level

**Averaged Activity**

-54 (DPM/100cm2)

FINAL STATUS SURVEY UNIT GROSS ALPHA MEASUREMENTS

| Sample Point | Bkg (counts) | Gross (counts) | Count time (in min) | Total Surface Activity[1] in DPM/100cm2 | | |
|---|---|---|---|---|---|---|
| | | | | Gross Alpha | Uncertainty[2] | MDA |
| 200 - F4 | 80 | 54 | 20 | -22 | 19 | 37 |
| 201 - E6 | 40 | 51 | 20 | 9 | 16 | 27 |
| 204 - Q4 | 80 | 70 | 20 | -8 | 20 | 37 |
| 204 - H4 | 100 | 134 | 20 | 28 | 25 | 41 |
| 205 - J8 | 40 | 69 | 20 | 24 | 17 | 27 |
| 205 - R8 | 80 | 66 | 20 | -12 | 20 | 37 |
| 205 - A7 | 80 | 110 | 20 | 25 | 23 | 37 |
| 205 - D8 | 40 | 71 | 20 | 26 | 17 | 27 |
| 209 - J6 | 100 | 79 | 20 | -18 | 22 | 41 |
| 209 - H5 | 100 | 51 | 20 | -41 | 20 | 41 |
| 212 - L4 | 80 | 53 | 20 | -23 | 19 | 37 |

[1] - $E_{weighted, total}$; 0.06, probe active area 126cm2

[2] - at the 95% confidence level

| DPM/100cm2 | |
|---|---|
| 28 | Largest Survey Unit Measurement |
| -23 | Smallest Reference Area Measurement |
| 52 | Difference |

FINAL STATUS REFERENCE AREA
GROSS ALPHA MEASUREMENTS

| Sample Point | Bkg (counts) | Gross (counts) | Count time (in min) | Total Surface Activity[1] in DPM/100cm2 | | |
|---|---|---|---|---|---|---|
| | | | | Gross Alpha | Uncertainty[2] | MDA |
| 200 - F4 | 80 | 52 | 20 | -23 | 19 | 37 |
| 201 - E6 | 40 | 46 | 20 | 5 | 15 | 27 |
| 204 - Q4 | 80 | 68 | 20 | -10 | 20 | 37 |
| 204 - H4 | 100 | 97 | 20 | -3 | 23 | 41 |
| 205 - J8 | 40 | 54 | 20 | 12 | 16 | 27 |
| 205 - R8 | 80 | 75 | 20 | -4 | 20 | 37 |
| 205 - A7 | 80 | 102 | 20 | 18 | 22 | 37 |
| 205 - D8 | 40 | 62 | 20 | 18 | 16 | 27 |
| 209 - J6 | 100 | 82 | 20 | -15 | 22 | 41 |
| 209 - H5 | 100 | 118 | 20 | 15 | 24 | 41 |
| 212 - L4 | 80 | 75 | 20 | -4 | 20 | 37 |

[1] - $E_{weighted, total}$; 0.06, probe active area 126cm2

[2] - at the 95% confidence level

**ATTACHMENT 6**

| | | | | | |
|---|---|---|---|---|---|
| **Instrument:** | Scaler/rate meter | **Model:** | Ludlurn 2241 | **Serial Nr:** | 19682 |
| **Detector:** | Gas proportional | **Model:** | Ludlurn 43-1 | **Serial Nr:** | 159011 |

| | |
|---|---|
| **Calibration Date:** | 07/24/08 |
| **Calibration Date:** | 07/24/08 |

| Date | Time | Technician / Reviewer | Background in CPM | | Acceptable Range (CPM) | | Source ID Nr. | Isotope | Source Reading in CPM | | Acceptable Range (CPM) | | Results |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X | X | +20% / -20% | +3σ / -3σ | | | X | X | +10% / -10% | +3σ / -3σ | |
| 10/30/2008 | 0600 | ~~FW~~ | 346 | 346 | ~~415~~ | ~~414~~ | 1560 | 137Cs | 11730 | 11730 | 12903 | 12180 | Pass |
| | | FW | | | 277 | 279 | | | | | 10557 | 11280 | |
| 10/31/2008 | 0600 | ~~FW~~ | 359 | 347 | 417 | 412 | 1560 | 137Cs | 11744 | 11731 | 12904 | 12169 | Pass |
| | | FW | | | 278 | 283 | | | | | 10558 | 11292 | |
| 11/3/2008 | 0600 | ~~FW~~ | 366 | 349 | ~~419~~ | ~~412~~ | 1560 | 137Cs | 11410 | 11716 | 12888 | 12179 | Pass |
| | | FW | | | 279 | 286 | | | | | 10544 | 11253 | |
| 11/4/2008 | 0600 | ~~FW~~ | 335 | 348 | ~~417~~ | ~~409~~ | 1560 | 137Cs | 11722 | 11716 | 12888 | 12169 | Pass |
| | | FW | | | 278 | 286 | | | | | 10545 | 11264 | |
| 11/5/2008 | 0600 | ~~FW~~ | 341 | 347 | 417 | 406 | 1560 | 137Cs | 11287 | 11698 | 12868 | 12195 | Pass |
| | | FW | | | 278 | 288 | | | | | 10529 | 11202 | |
| 111612008 | 0600 | ~~FW~~ | 319 | 345 | ~~414~~ | ~~405~~ | 1560 | 137Cs | 11691 | 11698 | 12868 | 12184 | Pass |
| | | FW | | | 276 | 285 | | | | | 10528 | 11212 | |
| 11/7/2008 | 0600 | ~~FW~~ | 320 | 344 | 413 | 404 | 1560 | 137Cs | 12126 | 11715 | 12886 | 12238 | Pass |
| | | FW | | | 275 | 284 | | | | | 10543 | 11191 | |
| 11/10/2008 | 0600 | ~~FW~~ | 356 | 345 | ~~413~~ | ~~403~~ | 1560 | 137Cs | 12100 | 11729 | 12902 | 12277 | Pass |
| | | FW | | | 276 | 286 | | | | | 10556 | 11181 | |
| 11/14/2008 | 0600 | ~~FW~~ | 289 | 341 | ~~410~~ | ~~408~~ | 1560 | 137Cs | 11406 | 11717 | 12889 | 12277 | Pass |
| | | FW | | | 273 | 275 | | | | | 10546 | 11157 | |

| | | | | | |
|---|---|---|---|---|---|
| **Instrument:** | Scaler/rate meter | **Model:** | Ludlum 2241-2 | **Serial Nr:** | 196826 |
| **Detector:** | Gas proportional | **Model:** | Ludlum 43-68A | **Serial Nr:** | 148834 |

| | |
|---|---|
| **Calibration Date:** | 07/24/08 |
| **Calibration Date:** | 07/24/08 |

| Date | Time | Technician / Reviewer | Background in CPM | | Acceptable Range (CPM) | | Source ID Nr. | Isotope | Source Reading in CPM | | Acceptable Range (CPM) | | Results |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X | $\bar{X}$ | +200% / -200% | +3σ / -3σ | | | X | $\bar{X}$ | +10% / -10% | +30 / -30 | |
| 10/30/2008 | 0600 | EW | 1 | 1 | 2 | 2 | 61 | 241Am | 6559 | 6559 | 7214 | 7154 | Pass |
| | | FW | | | -2 | -1 | | | | | 5901 | 5964 | |
| 10/31/2008 | 0600 | EW | 1 | 1 | 2 | 2 | 61 | 241Am | 6511 | 6557 | 7213 | 7138 | Pass |
| | | FW | | | -2 | 0 | | | | | 5901 | 5977 | |
| 11/3/2008 | 0600 | EW | 0 | 1 | 2 | 2 | 61 | 241Am | 6454 | 6552 | 7208 | 7122 | Pass |
| | | FW | | | -2 | -1 | | | | | 5897 | 5983 | |
| 11/4/2008 | 0600 | EW | 1 | 1 | 2 | 2 | 61 | 241Am | 6575 | 6553 | 7209 | 7110 | Pass |
| | | FW | | | -2 | -1 | | | | | 5898 | 5997 | |
| 11/5/2008 | 0600 | EW | 1 | 1 | 2 | 2 | 61 | 241Am | 6201 | 6539 | 7193 | 7114 | Pass |
| | | FW | | | -2 | -1 | | | | | 5885 | 5964 | |
| 11/6/2008 | 0600 | EW | 1 | 1 | 2 | 2 | 61 | 241Am | 6315 | 6530 | 7183 | 7104 | Pass |
| | | FW | | | -2 | 0 | | | | | 5877 | 5955 | |
| 11/7/2008 | 0600 | EW | 1 | 1 | 2 | 2 | 61 | 241Am | 6570 | 6531 | 7184 | 7095 | Pass |
| | | FW | | | -2 | 0 | | | | | 5878 | 5968 | |
| 11/10/2008 | 0600 | EW | 1 | 1 | 2 | 2 | 61 | 241Am | 6355 | 6525 | 7177 | 7084 | Pass |
| | | FW | | | -2 | 0 | | | | | 5872 | 5965 | |
| 11/12/2008 | 0600 | EW | 2 | 1 | 2 | 2 | 61 | 241Am | 6422 | 6521 | 7173 | 7072 | Pass |
| | | FW | | | -2 | 0 | | | | | 5869 | 5970 | |
| 11/13/2008 | 0600 | | 2 | 1 | 2 | 2 | 61 | 241Am | 6335 | 6515 | 7166 | 7063 | Pass |
| | | FW | | | -2 | 0 | | | | | 5863 | 5966 | |
| 11/14/2008 | 0600 | EW | 1 | 1 | 2 | 2 | 61 | 241Am | 6439 | 6512 | 7163 | 7052 | Pass |
| | | FW | | | -2 | 0 | | | | | 5861 | 5972 | |
| 11/17/2008 | 0600 | EW | 0 | 1 | 2 | 2 | 61 | 241Am | 6265 | 6504 | 7155 | 7048 | Pass |
| | | FW | | | -2 | -1 | | | | | 5854 | 5961 | |
| 11/21/2008 | 0600 | EW | 1 | 1 | 2 | 2 | 61 | 241Am | 6486 | 6504 | 7154 | 7038 | Pass |
| | | FW | | | -2 | -1 | | | | | 5853 | 5969 | |
| 1112412008 | 0600 | | 1 | 1 | 2 | 2 | 61 | 241Am | 6273 | 6497 | 7146 | 7033 | Pass |
| | | FW | | | -2 | 0 | | | | | 5847 | 5960 | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Instrument:** | Scaler/rate meter | | **Model:** | Ludlum 2241-2 | **Serial Nr:** | 189777 | | **Calibration Date:** | 07/21/08 | | | | |
| **Detector:** | Gas proportional | | **Model:** | Ludlum 43-37B | **Serial Nr:** | 148745 | | **Calibration Date:** | 07/21/08 | | | | |

| Date | Time | Technician / Reviewer | Background in CPM | | Acceptable Range (CPM) | | Source ID Nr. | Isotope | Source Reading in CPM | | Acceptable Range (CPM) | | Results |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X | $\bar{X}$ | +20% / -20% | +3σ / -3σ | | | X | $\bar{X}$ | +10% / -10% | -3a | |
| 10/30/2008 | 0630 | FW | 898 | 898 | 1077 | 997 | 1559 | 137Cs | 24265 | 24265 | 26691 | 25599 | Pass |
| | | FW | | | 718 | 799 | | | | | 21838 | 22931 | |
| 10/31/2008 | 0630 | FW | 897 | 898 | 1077 | 991 | 1559 | 137Cs | 24957 | 24287 | 26716 | 25637 | Pass |
| | | FW | | | 718 | 804 | | | | | 21858 | 22937 | |
| 11/3/2008 | 0630 | FW | 889 | 897 | 1076 | 987 | 1559 | 137Cs | 25626 | 24329 | 26762 | 25791 | Pass |
| | | FW | | | 718 | 807 | | | | | 21896 | 22867 | |
| 11/5/2008 | 0630 | FW | 901 | 897 | 1077 | 983 | 1559 | 137Cs | 25439 | 24363 | 26799 | 25885 | Pass |
| | | FW | | | 718 | 811 | | | | | 21926 | 22840 | |
| 11/6/2008 | 0630 | FW | 870 | 895 | 1074 | 980 | 1559 | 137Cs | 25829 | 24406 | 26846 | 26039 | Pass |
| | | FW | | | 716 | 811 | | | | | 21965 | 22772 | |
| 11/7/2008 | 0630 | FW | 944 | 899 | 1078 | 986 | 1559 | 137Cs | 25714 | 24428 | 26871 | 26072 | Pass |
| | | FW | | | 719 | 811 | | | | | 21985 | 22784 | |

| | | | | | |
|---|---|---|---|---|---|
| **Instrument:** | Scaler/rate meter | **Model:** | Ludlum 2241-2 | **Serial Nr:** | 189777 |
| **Detector:** | Gas proportional | **Model:** | Ludlum 43-37A | **Serial Nr:** | 148745 |

| | |
|---|---|
| **tic D t** | 07/21/08 |
| **tic Date:** | 07/21/08 |

| Date | Time | Technician / Reviewer | Background in CPM X | Background in CPM $\bar{X}$ | Acceptable Range (CPM) +200% / -200% | Acceptable Range (CPM) +3σ / -3σ | Source ID Nr. | Isotope | Source Reading in CPM X | Source Reading in CPM $\bar{X}$ | Acceptable Range (CPM) +10% / -10% | Acceptable Range (CPM) +3σ / -3σ | Results |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/3/2008 | 0700 | FW | 4 | 4 | 9 | 7 | 61 | 241Am | 6139 | 6139 | 6753 | 6746 | Pass |
| | | FW | | | -9 | 2 | | | | | 5525 | 5532 | |
| 11/5/2008 | 0700 | FW | 5 | 4 | 9 | 7 | 61 | 241Am | 5984 | 6134 | 6748 | 6736 | Pass |
| | | FW | | | -9 | 2 | | | | | 5521 | 5533 | |
| 11/6/2008 | 0700 | FW | 4 | 4 | 9 | 7 | 61 | 241Am | 6022 | 6131 | 6744 | 6724 | Pass |
| | | FW | | | -9 | 2 | | | | | 5518 | 5537 | |
| 11/7/2009 | 0700 | FW | 5 | 4 | 9 | 7 | 61 | 241Am | 6018 | 6127 | 6740 | 6714 | Pass |
| | | FW | | | -9 | 2 | | | | | 5515 | 5541 | |
| 11/10/2008 | 0700 | FW | 5 | 4 | 9 | 7 | 61 | 241Am | 6132 | 6127 | 6740 | 6705 | Pass |
| | | FW | | | -9 | 2 | | | | | 5515 | 5550 | |

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

4/13/2009, and to inform you that the initial processing which includes an administrative review has been performed.

☑ AMEND. 19-07538-01 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** 143643.
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