Nemours Alfred I. duPont Hospital for Children

Office of the Chief Executive Officer

Br. 2

May 29, 2013

Mr. Steve Courtemanche
U.S. Nuclear Regulatory Commission – Region 1
2100 Renaissance Boulevard, Suite 100
King of Prussia, PA 19406-2713

REC RG1 05 31 '13 AM 10:53

License Renewal 07-16199-01
Docket No. 03010568
Control No. 577803 (Ref.) RLJ
License renewal

Dear Mr. Courtemanche:

Attached is our NRC license renewal application. We have followed the guidance provided in NUREG 1556 Volume 7, dated December 1999. Included with the license renewal is our response to your letter dated July 27, 2012.

We request the following changes:

Termination of all restricted areas in the Administration and Research Building, 1600 Rockland Road, Wilmington, DE 19803 and removal from our license. Any short-lived radioactive materials in the Administration and Research Building have decayed to background, as the last times they were used in the building were: Cobalt 57, 1998; Iron 59, 1998; Iodine 125, 2006; Phosphorous 32, 2009; Rubidium 86, 2001, Sulfur 35, 2006. Please see attached documentation that all labs and areas in the Administration and Research Building and waste storage shed where long-lived radioactive materials, Hydrogen 3, Carbon 14 and Calcium 45, have been used or stored are free of contamination. Other items listed on the license in item #5 have not been used in the Administration and Research Building at least since 1992. No radioactive materials are stored in the Administration and Research Building. The Life Science Center (animal facility), 1600 Rockland Road, Wilmington, DE 19803 remains on our license.

In item #5 on our license renewal, we request the reduction in amounts of Hydrogen 3 and Carbon 14, and elimination of Calcium 45. Please see attached documentation that all labs and areas where Hydrogen 3, Carbon 14 and Calcium 45 have been used are free of contamination. We currently have 14.03 millicuries of Hydrogen 3, 0.15 millicuries of Carbon 14, and 0 millicuries of Calcium 45 in active inventory. We have no Hydrogen 3, Carbon 14 or Calcium 45 in radwaste storage. Except for the amounts in active inventory, all Hydrogen 3, Carbon 14 and Calcium 45 was disposed by vendor (see attached documentation) or by sanitary sewer.

1600 Rockland Road, Wilmington, DE 19803
Phone: (302) 651-6084 / Fax: (302) 651-6012
kchurchw@nemours.org

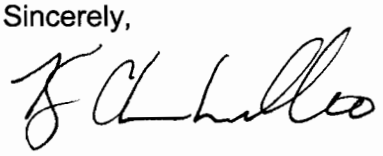
581038
NMSS/RGN1 MATERIALS-002

Termination of our parent company guarantee.

In item #7, amendment of Authorized Users list: Remove Wenlan Wang, PhD and Carolyn Schanen, MD, PhD. Change Sigrid Rajasekaran's name to Sigrid Langhans, PhD. Addition of Matthew Butchbach, PhD as an Authorized User - See #7 and Attachment 7B on the license renewal application for his training and experience.

Thank you for your assistance. If you need any additional information, please contact me at (302) 651-6708 or the RSO, Grace M. Hobson, Ph.D., at (302) 651-6829.

Sincerely,



Kevin Churchwell, MD
Chief Executive Officer
Nemours/Alfred I. duPont Hospital for Children

cc Grace M. Hobson, Ph.D., Radiation Safety Officer
Vicky L. Funanage, Ph.D., Director of Biomedical Research
Gunsel Acikgoz, M.D., Chair, Radiation Safety Committee
Marc Felice, Consultant

NRC FORM 313 **U.S. NUCLEAR REGULATORY COMMISSION**
(05-2012)
10 CFR 30, 32, 33,
34, 35, 36, 39, and 40

APPLICATION FOR MATERIALS LICENSE

APPROVED BY OMB: NO. 3150-0120 **EXPIRES: (05/31/2015)**

Estimated burden per response to comply with this mandatory collection request: 4.3 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 Information Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@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:

OFFICE OF FEDERAL & STATE MATERIALS AND
ENVIRONMENTAL MANAGEMENT PROGRAMS
DIVISION OF MATERIALS SAFETY AND STATE AGREEMENTS
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, 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
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PA 19406-2713

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, MISSISSIPPI, 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
1600 E. LAMAR BOULEVARD
ARLINGTON, TX 76011-4511

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
- [x] C. RENEWAL OF LICENSE NUMBER 07-16199-01

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

Alfred I. duPont Hospital for Children
PO Box 269
Wilmington, DE 19899

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Life Science Center, 1600 Rockland Road, Wilmington, DE 19803;
Rockland Center 1, 1701 Rockland Road
Wilmington, DE 19803

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Grace M. Hobson, PhD, RSO

BUSINESS TELEPHONE NUMBER	BUSINESS CELLULAR TELEPHONE NUMBER
(302) 651-6829	(302) 377-1451

BUSINESS EMAIL ADDRESS
ghobson@nemours.org

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. maiximum 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.

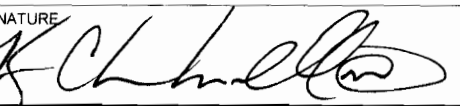
10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES *(See 10 CFR 170 and Section 170.31)*
FEE CATEGORY N/A AMOUNT ENCLOSED $

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 C RIMINAL 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
Kevin Churchwell, MD		5/29/13

FOR NRC USE ONLY

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

5. RADIOACTIVE MATERIAL

a) Element and Mass Number	b) Chemical/Physical form	c) Maximum Activity
Hydrogen 3	Any	300 millicuries
Carbon 14	Any	60 millicuries
Sodium 24	Any	100 millicuries
Phosphorus 32	Any	500 millicuries
Phosphorus 33	Any	500 millicuries
Sulfur 35	Any	300 millicuries
Potassium 42	Any	100 millicuries
Chromium 51	Any	50 millicuries
Iron 59	Any	20 millicuries
Rubidium 86	Any	500 millicuries
Molybdenum 99	Any	2 curies
Technetium 99m	Any	2 curies
Iodine 125	Any	100 millicuries
Iodine 131	Any	100 millicuries

6. USE OF RADIOACTIVE MATERIAL

The radioactive materials listed in Item 5 will be used for research and development as defined in 10CFR 30.4 and for animal studies.

Radioactive materials may be used to test room shielding integrity and effectiveness.

Radioactive materials will not be used on or in human beings.

7. INDIVIDUALS RESPONSIBLE FOR RADIATION SAFETY PROGRAM

Radiation Safety Officer

Grace Hobson, Ph.D. - Training and experience as previously submitted
See Attachment 7A, "Delegation of Authority"

Although our NRC license does not require a Radiation Safety Committee (RSC), the RSO meets with the hospital's RSC quarterly for the purpose of communication with management. Other methods of communication with management may be substituted.

Authorized Users

Training and experience; types and quantities of licensed materials to be used as previously submitted:
Robert Akins, Ph.D.
Vicky Funanage, Ph.D.
Zhaoping He, Ph.D.
Grace M. Hobson, Ph.D.
Robert Mason, Ph.D.
Ayyappan K. Rajasekaran, Ph.D.
Sigrid Langhans, Ph.D., formerly Sigrid Rajasekaran, Ph.D.

With this license renewal, we request addition of:
Matthew Butchbach, Ph.D. – See Attachment 7B for training and experience

Nemours Alfred I. duPont Hospital for Children

Memorandum

DELEGATION OF AUTHORITY

RADIATION SAFETY OFFICER

To: **All Nemours Associates**

From: **Kevin Churchwell, M.D., Chief Executive Officer**
Vicky L. Funanage, Ph.D., Director of Nemours Biomedical Research

Subject: **Delegation of Authority for Radiation Safety Officer**

Grace M. Hobson, PhD, has been appointed Radiation Safety Officer for Nemours Biomedical Research at the Alfred I. duPont Hospital for Children and is responsible for ensuring the safe use of radioactive materials and radiation-producing equipment. The Radiation Safety Officer is responsible for managing the radiation safety program; identifying radiation safety problems; initiating, recommending, or providing corrective actions; verifying implementation of corrective actions; and ensuring compliance with regulations for the use of radioactive materials and radiation-producing equipment. The Radiation Safety Officer is hereby delegated the authority necessary to meet these responsibilities.

The Radiation Safety Officer has the authority to immediately stop any operations involving the use of radioactive materials and radiation-producing equipment in which health and safety may be compromised or may result in non-compliance with NRC requirements.

Kevin Churchwell, M.D.
Chief Executive Officer

Vicky L. Funanage, Ph.D. 5/14/13
Vicky L. Funanage, Ph.D.
Director, Nemours Biomedical Research

Attachment 7B

Dr. Matthew Butchbach received a Ph.D. in Biochemistry from Ohio State University, Columbus, OH, in [redacted]. He completed required training and on-the-job training at Ohio State University as documented on the attached Authorized User Information form and our documents. Letters of support from his doctoral advisor and from his postdoctoral advisor/supervisor are also attached. He also completed our Initial Radiation Safety Training course at Alfred I. duPont Hospital for Children (2 hours) that includes the following topics: Characteristics of ionizing radiation, units of radiation dose and quantities, radiation detection instrumentation, and biological hazards of exposure to radiation appropriate to the types and forms of byproduct material of her proposed use. In addition, he has hands-on experience with use of radioactive materials that is appropriate to the types and forms of byproduct material of his proposed use.

Dr. Butchbach's proposed type, form, quantity and use:

Type	Form	Quantity	Uses
P-32	NTPs	20 mCi	Hybridization blotting; kinase assays
S-35	Amino acids	80 mCi	Metabolic labeling of proteins

PERSONAL INFORMATION WAS REMOVED BY NRC. NO COPY OF THIS INFORMATION WAS RETAINED BY THE NRC.

OHIO STATE UNIVERSITY
UNIVERSITY MEDICAL CENTER

Department of Neuroscience

4068 Graves Hall
333 West 10th Avenue
Columbus, OH 43210-1239

Phone: (614) 688-8527
FAX: (614) 688-8742

Grace Hobson, Ph.D.
Radiation Safety Officer
Nemours Biomedical Research
A. I. duPont Hospital for Children
1600 Rockland Road
Wilmington DE 19803

Dear Dr. Hobson,

I am writing this to provide documentation of Dr. Matthew E. R. Butchbach's experience with radioisotopes. Matt is applying for Authorized User status on your Nuclear Regulatory Commission license. Matt was doctoral student in my laboratory from June 2000 until June 2003. He received training on the use of radioisotopes through the Radiation Safety Short Course at the Ohio State University in May 1996 as well as through annual laboratory training sessions conducted by me in accordance with regulations from our Radiation Safety Office. While working in my laboratory, Matt learned and completed [^{3}H]glutamate uptake assays on synaptosomal preparations he generated. Each [^{3}H]glutamate uptake experiment used about 12 □Ci of tritium. In addition to performing these assays, he was responsible for radioactive recordkeeping in the laboratory and for completing the periodic swipe surveys in the laboratory.

Matt also helped train more junior members of my laboratory on these techniques and radiation safety procedures.

If you need any additional information about Matt's experience using radioisotopes, then please feel free to contact me by email (lin.492@osu.edu) or telephone ((614) 688-5433).

Sincerely,

Chien-Liang G Lin

C Glenn Lin, Ph.D.
Associate professor of Neuroscience
The Ohio State University
E-mail: lin.492@osu.edu
Phone: (614)688-5433

THE OHIO STATE UNIVERSITY Medical Center

Department of
Molecular and Cellular Biochemistry

333 Hamilton Hall
1645 Neil Avenue
Columbus, OH 43210

Phone: (614) 292-5451
FAX: (614) 292-4118

01 September 2011

Grace Hobson, Ph.D.
Radiation Safety Officer
Nemours Biomedical Research
A. I. duPont Hospital for Children
1600 Rockland Road
Wilmington DE 19803

Dear Dr. Hobson,

I am writing this letter pursuant to Dr. Matthew E. R. Butchbach being placed on your Nuclear Regulatory Commission license as an Authorized User. Matt has worked as part of research group both as a postdoctoral researcher and an independent research scientist from June 2003 until September 2011. He received training on the use of radioisotopes through the Radiation Safety Short Course at the Ohio State University in May 1996. All members of my research team also complete annual laboratory training in radiation safety which is required by the university's Radiation Safety Office. While working in my laboratory, Matt learned and applied the following techniques which use radioisotopes:

- random priming/hybridization (Southern blot) which required 50 μCi α-[^{32}P]dATP per assay
- primer end-labeling (for reverse transcriptase-PCR) which required 50 μCi γ-[^{32}P]ATP per assay
- *in vivo* labeling of proteins in cells which required 100 μCi [^{35}S]methionine per assay.

Matt has had practical experience with each of these techniques and has helped train more junior members of my laboratory on these techniques.

If you require any additional information, then you can contact me by email (burghes.1@osu.edu) or telephone ((614) 688-4759).

Sincerely,

Arthur H.M Burghes

Arthur Burghes
Professor of Molecular and Cellular Biochemistry

AUTHORIZED USER INFORMATION RS–2
AUGUST 2001

Section I: User Identification

Name: BUTCHBACH (Please Print) LAST MATTHEW FIRST ELLIS REINHART MIDDLE

SSN: [redacted] Date of Birth: [redacted] MM DD YY Email: butchbach.1@osu.edu

College: MEDICINE (e.g. Medicine) Department: MOLECULAR/CELL. BIOCHEM Radiology Classification: STAFF Faculty, Staff, etc.)

Building: HAMILTON HALL (e.g. Graves Hall) Room No.: 363 B-042 Street Address: 1645 NEIL AVE 333 W. 10th Ave.)

Campus Phone: 688.9210 Home Phone: 267.0091 Emergency Contact: TIMOTHY A. PAESONS Emergency Phone: 267.0091

Section II: Training and Experience

OSU Radiation Safety Short Course, date of completion: 05/96 5/1/96 (LD)

Other Applicable Training:

Type of Training	Where Trained	When	What kind: Formal Course, Seminar; OJT (hrs. of experience)
Radiation Protection	OHIO UNIVERSITY	09/94	OURS COURSE; 7 yrs OJT
Radiation Physics	OHIO UNIVERSITY	04/93	GENERAL PHYSICS; 7 yrs OJT
Mathematics and Calculations basic to radionuclide use	OHIO UNIVERSITY	09/94	BIOCHEMICAL METHODS COURSE 7 yrs OJT
Radiation Biology		09/94	7 yrs OJT

Previous Radionuclide Handling Experience:

Radionuclide	Activity	Type of Use (RIA's, Iodination Procedures, DNA Sequencing)
^{3}H	0.5 mCi 120 mCi	Receptor Autoradiography; vesicle uptake
^{32}P	250 mCi	DNA Sequencing
^{35}S	250 mCi	DNA Sequencing

Section III: Approved Supervisor's Request*

I will assume complete responsibility for the above named individual and ask that he/she be added to my projects as a user of Radioactive Material (RAM). Also, I certify I have read OAC chapter 3701:1-38, and the *Radiation Safety Standards for The Ohio State University*. Further, if use involves Radioactive Material in humans, I certify I have read 10CFR35.

D. W. M. Bowles (Supervisor's Name (Please Print)) D. W. M. Bowles (Supervisor's Signature) 6/30/03 (Date Signed)

*Approved Supervisor — Faculty member with University Radiation Safety Committee Approval

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PERSONAL INFORMATION WAS REMOVED BY NRC. NO COPY OF THIS INFORMATION WAS RETAINED BY THE NRC.

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Alfred I. duPont Hospital for Children
Nemours Biomedical Research
Radiation Safety

Statement of Training and Experience

Name: **Matthew E. R. Butchbach, Ph.D.**
Date: **29 August 2011**
Name of Authorized User:

On the Job Training by an Authorized User:

	Yes	No	Where trained	Dates	Length (in hours)
Principles and Practices of Radiation Protection	XX		Ohio U; Ohio State U	09/94-present	15 years OJT
Radioactivity Measurement, Monitoring Techniques, and Instruments	XX		Ohio U; Ohio State U	09/94-present	15 years OJT
Mathematics and Calculations Basic to the Use and Measurement of Radioactivity	XX		Ohio U; Ohio State U	09/94-present	15 years OJT
Biological Effects of Radiation	XX		Ohio U; Ohio State U	09/94-present	15 years OJT

Training provided by a Radiation Safety Office:

	Yes	No	Where trained	Dates	Length (in hours)
Principles and Practices of Radiation Protection	XX		Ohio U; Ohio State U	09/94; 05/96	3 hours; 2 hours
Radioactivity Measurement, Monitoring Techniques, and Instruments	XX		Ohio U; Ohio State U	09/94; 05/96	3 hours; 2 hours
Mathematics and Calculations Basic to the Use and Measurement of Radioactivity	XX		Ohio U; Ohio State U	09/94; 05/96	3 hours; 2 hours
Biological Effects of Radiation	XX		Ohio U; Ohio State U	09/94; 05/96	3 hours; 2 hours

Formal courses (for credit):

Title/Description of Course	Credits	College/University	Dates and Duration
Biochemical Methods	3	Ohio U	Autumn 1994
General Physics	4	Ohio U	Spring 1993

Alfred I. duPont Hospital for Children
Nemours Biomedical Research
Radiation Safety

Previous Isotope Handling Experience (If you need more room, attach a page):

Isotope	Amount handled per experiment	Estimated number of expts per yr	Dates	Where	Type of experiment
^{3}H	24 mCi	5	06/96-05/98	Ohio State University	Receptor autoradiography
^{3}H	13 µCi	5	06/00-06/03	Ohio State University	Vesicular uptake
^{32}P	25 µCi	4	09/94-06/95	Ohio University	DNA sequencing
^{35}S	25 µCi	4	09/94-06/95	Ohio University	DNA sequencing
^{32}P	40 µCi	5	06/03-06/09	Ohio State University	Southern, probe labeling
^{35}S	50 µCi	1	06/03-06/09	Ohio State University	Cell labeling

You must take our Initial Radiation Safety Tranining Course available at S:\research\Radiation_Safety\Training. Please attach the quiz to this document.

Passed initial training quiz

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS
(Occupationally Exposed Individuals and Ancillary Personnel)

Training is consistent with that described in Appendix J of NUREG 1556- Volume 7.

Personnel are classified in one of three categories: Authorized User, User, or Frequenter

1. Authorized User is the professional staff member approved by the NRC to use radioactive materials. This individual directs research projects, supervises the laboratory, and is responsible for on-the-job training of Users.
   Training
   All Authorized Users are required to complete the initial training course with quiz such as the one currently available on the computer as well as annual training courses with quizzes made available annually on the computer. All courses include:
   - Principles and practices of radiation protection,
   - Radioactivity measurements standardization and monitoring techniques and instruments,
   - Mathematics and calculations basic to the use and measurement of radioactivity
   - Characteristics and biological Effects of radiation

2. User – is the technical staff person who assists the Authorized User in carrying out the research project. Their required training is as follows:
   Training – All Users are required to take the initial training course with quiz such as the one currently available on the computer and on-the-job training to be performed by the Authorized User covering the above subjects. All Users are required to complete an annual computer course with quiz such as the one currently available.

3. Frequenter – is any employee other than an Authorized User or User who may need to enter a radionuclide laboratory.
   Training - Employees working in the area are instructed annually in procedures to keep their exposure to radioactive materials and associated radiation as low as reasonably achievable. Employees and contractors who need to enter a radionuclide laboratory to repair or maintain the facility are required to notify the RSO prior to entering the laboratory. This allows the RSO to evaluate any possible contamination or radiation hazard associated with the problem to be corrected and provide guidance as needed to keep exposures as low as reasonably achievable.

All training and testing will be documented.

All initial training courses with quizzes and annual training courses with quizzes will be reviewed and approved by the RSO.

9. FACILITIES AND EQUIPMENT

Research using radioactive materials is conducted in the research lab facilities of the Life Science Center (animal facility) at 1600 Rockland Road and of Rockland Center 1 at 1701 Rockland Road, Wilmington, DE. Access to both buildings is controlled by prox card.

A sketch of a typical research laboratories at approximate scale and indicating fume hood, sink, benches, waste disposal receptacles, refrigerator, etc are attached as Attachment 9.

The Life Science Center is a cinderblock building with animal housing rooms and laboratories. One side of the building abuts a garage, but the animal housing rooms and laboratories are not on this side of the building.

The Radiation Safety Officer (RSO) has the responsibility to approve the use of radionuclides in any given location. With regard to the general design specifications, the RSO will consider the amount of laboratory space, sinks, work-bench surfaces, ventilation, and availability of a fume hood acceptable for use with radioactive materials, wall surfaces and floor covering. In the case of animal work, the RSO will verify training of the veterinarian and will give instruction to caretakers that are consistent with and conform to those in Appendix H NUREG-1556 Vol. 7, dated December, 1999.

Work-benches have non-absorbent surfaces. The use of disposable plastic-backed absorbent paper is recommended on work surfaces in all radionuclide laboratories.

The RSO will ensure proper shielding of radioactive materials while in storage.

Unless specifically exempted by the RSO, each laboratory shall have on hand, or be readily available, in operating condition a properly calibrated survey instrument or monitoring equipment appropriate for the type and level of ionizing radiation used.

The RSO will determine if other special equipment (remote handling devices, special shielding, containers, and respiratory protective equipment) is necessary based on the anticipated needs of each individual radioisotope laboratory; the energy, radiation emitted, and amount of radioactive materials used; and the type of operation for which the radioactive materials are contemplated.

Work will be carried out in hoods, if possible. Where not practical, the design of the experiment and the equipment will be such as to ensure the trapping of vapors, gases, and dusts. Other special restrictive conditions due to the experiment may be imposed by the RSO.

Hoods are single-ducted and filtered with exhaust ducts going from the hood to the outside roof of the building. Hoods will have an exhaust rate of at least 100 linear feet per minute as measured by a qualified contractor or the RSO. Hoods not meeting the 100 fpm criterion will be used only for operations which will not produce airborne contamination or will be up-graded to meet this criterion.

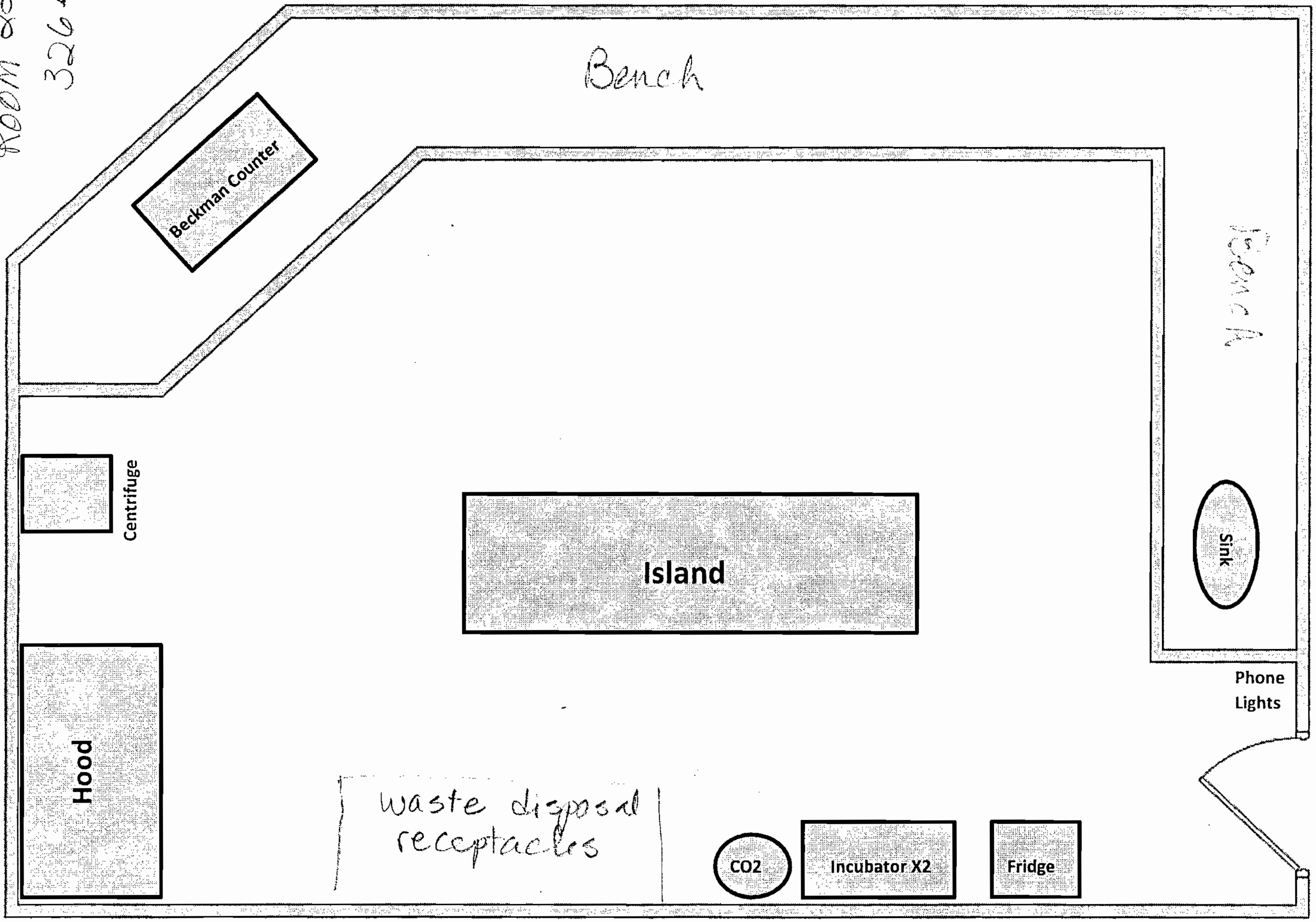
Hoods for major radionuclide use are equipped with a pre-filter and charcoal filter.

Filter changes and work on any ducts associated with hoods used for radionuclide work shall only be conducted after the filters and ducts have been surveyed by the RSO or designee. The RSO will evaluate survey results and determine any hazard to the workers. Work personnel will be provided protective clothing and masks if needed.

Attachment 9 Typical Lab
Rockland Center
Room 225
326 sq. ft.

Lab -RC1 -225

5-29-13 Dave



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10. RADIATION SAFETY PROGRAM

10.1 Audit Program

The applicant is not required to, and should not, submit its audit program to the NRC for review during the licensing phase. However, this matter may be reviewed during NRC inspections.

10. RADIATION SAFETY PROGRAM

10.2. Radiation Monitoring Instruments

We will use instruments that meet the radiation monitoring instrument specifications published in Appendix M to NUREG - 1556, Vol. 7, "Program-specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope", dated December 1999. Additionally, we will implement the model survey meter calibration program published in Appendix M to NURDG – 1556, Vol. 7, "Program-specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope", dated December 1999. Alternatively, instruments will be calibrated by an accredited group, such as Ludlum Measurements, Inc. We reserve the right to upgrade our survey instruments as necessary.

10. RADIATION SAFETY PROGRAM

10.3 Material Receipt and Accountability

Requisitions for all radioactive materials and radiation devices must be directed to the RSO or designee of the RSO, who will verify that the request adheres to the limitations of our NRC By-Product Material License, the Supervisor's use limit, and any other limits set by the RSO.

During normal working hours, carriers are instructed to deliver radioactive packages directly to the Receiving Department. Personnel in the Receiving Department will be trained to place the package in a designated locked cabinet. Personnel in the Receiving Department will be trained to immediately contact the RSO if the package appears damaged and ask the carrier to remain at the facility until it can be determined that neither the carrier nor the vehicle is contaminated.

During off-duty hours, packages are not normally accepted. Should a package arrive, trained Security personnel will accept delivery of radioactive packages in accordance with the following procedure: Any package containing radioactive material shall be signed for by the security guard and taken immediately to the designated Receiving area. Security personnel will unlock the door, place the package in the designated secured storage cabinet and re-lock the room door. They will be trained to immediately contact the RSO if the package appears damaged and ask the carrier to remain at the facility until it can be determined that neither the carrier nor the vehicle is contaminated.

Packages will be picked up from the Receiving Department and checked for exposure and contamination and logged in by the RSO or designee. The package will then be turned over to the responsible individual user along with a usage form such as the attached Radionuclide Inventory form (Attachment 10.3).

Whenever any of the radioactive material is removed from its container, the user's name, date, amount or activity withdrawn, and its final disposition will be recorded on this form. When the material is depleted, the usage form is appropriately notated and the original returned to the RSO. The user is advised to retain a copy of the usage form. This mechanism provides a means for maintaining a running inventory of all radionuclides used throughout the facility.

Annually, each Authorized User is required to provide a total inventory of radionuclides on hand at that time in order to verify that all inventory records concur.

Attachment 10.3

Alfred I. duPont Hospital for Children
Radiation Safety

Control number:_____

Radionuclide Inventory

Date ordered	
Requested by	
Authorized User	
Isotope	
Material	
Amount (μCi)	
Vendor	
Catalog number	
To be filled out when item is received:	
Lot number	
Date received	
Wipe tested by	
Surveyed by	

			Amount (μCi) disposed via each method:			
Date	User	Amt. Used	Hold for Decay	Sewer	Commercial Vendor	Nonradioactive
		Totals				

When radioactive material is depleted:

Totals are required for each category of waste
Retain a copy
Sign and return original to RSO

Authorized User's signature:_____

10. RADIATION SAFETY PROGRAM

10.4 Occupational Dose

We will monitor individuals in accordance with the criteria in the section entitled 'Radiation Safety Program-Occupational Dose' in NUREG-1556 Vol.7, 'Consolidated Guidance about Materials Licenses: Program-specific Guidance about Academic, Research and Development and Other Licenses of Limited Scope'" dated December 1999.

10. RADIATION SAFETY PROGRAM

10.5 Public Dose N/A

No response is required.

10. RADIATION SAFETY PROGRAM

10.6 Safe Use of Radionuclides and Emergency Procedures

Procedures for safe use and for emergencies have been developed and are distributed to all Authorized Users of by-product materials. These are consistent with and conform to Appendix P NUREG-1556 Vol. 7, dated December, 1999.

10. RADIATION SAFETY PROGRAM

10.7 Surveys

Surveys will be performed by personnel who have successfully completed training in the proper use of survey meters.

The following is a description of our survey program: All areas where radionuclides are used will be monitored by wipe test with the following frequencies:

	Monthly	Weekly	Daily
Fe-59, I-125, I-131	less than 9 µCi	9 to 89 µCi	90 µCi and above
P-32, Ca-45, Rb-86, Mo-99	less than 50 µCi	50 to 499 µCi	500 µCi and above
All other isotopes	less than 200 µCi	200 to 999 µCi	1000 µCi and above

In addition, the area, clothing and person will be monitored by survey meter after each use of a gamma-emitting radionuclide (such as I-125) or a beta-emitting nuclide exceeding 0.250 MeV (such as P-32). If radionuclides are not being used, surveys are not required. Contamination shall not be allowed to remain on working surfaces or floors unless properly shielded. Contamination is defined as beta or gamma activity greater than 200 dpm or alpha activity greater than 200 dpm as determined by wipe test on a surface of 100 cm^2. Surface contamination in non-controlled areas shall be background. The location of the wiped areas and counting results (plus control values) must be logged into an Area Monitoring Log maintained by the supervisor of each radionuclide laboratory. The Area Monitoring Log must contain a diagram of the laboratory with the monitored area numbers, the net count per minute at each location, the background, date, the radionuclides used in the area since the previous wipe test, and the name of the person who performs the test. In addition, the RSO or a designee. will check records and spot check by means of unscheduled wipe tests at least once every three months. **If radionuclides are not being used, the wipe test is not required**.

Leak Test

Leak tests will be performed at intervals approved by the NRC and specified in the SSD Registration Certificate.

We will implement the model leak test program published in Appendix R of NUREG-1556, Vol. 7 dated December 1999.

As an alternative, leak tests will be performed by an organization authorized by NRC or an Agreement State to provide leak testing services for other licensees or using a leak test kit supplied by an organization authorized by NRC or an Agreement State to provide leak test kits to other licensees and according to the sealed source or plated foil manufacturer's (or distributor's) and kit supplier's instructions.

10.0 RADIATION SAFETY PROGRAM

10.8 Transportation N/A

No response is needed during licensing phase.

10.0 RADIATION SAFETY PROGRAM

10.9 Minimization of Contamination N/A

A response to the minimization of contamination section is not provided as we feel our responses meet the criteria in the following sections: "Radioactive Material - Unsealed Sources and/or Sealed Sources," "Facilities and Equipment," "Radiation Safety Program – Safe Use of Radioisotopes and Emergency Procedures," "Radiation Safety Program - Surveys," and "Radiation Safety Program - Waste Management."

11. WASTE MANAGEMENT

We will use the model waste procedures published in Appendix T to NUREG-1556, Vol. 7, 'Program-Specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope,' dated December 1999.

Disposal of waste with a half-life greater than 120 days will be by transfer of the radioactive material to the sanitary sewer, or to the manufacturer, or to a licensee specifically authorized to accept it.

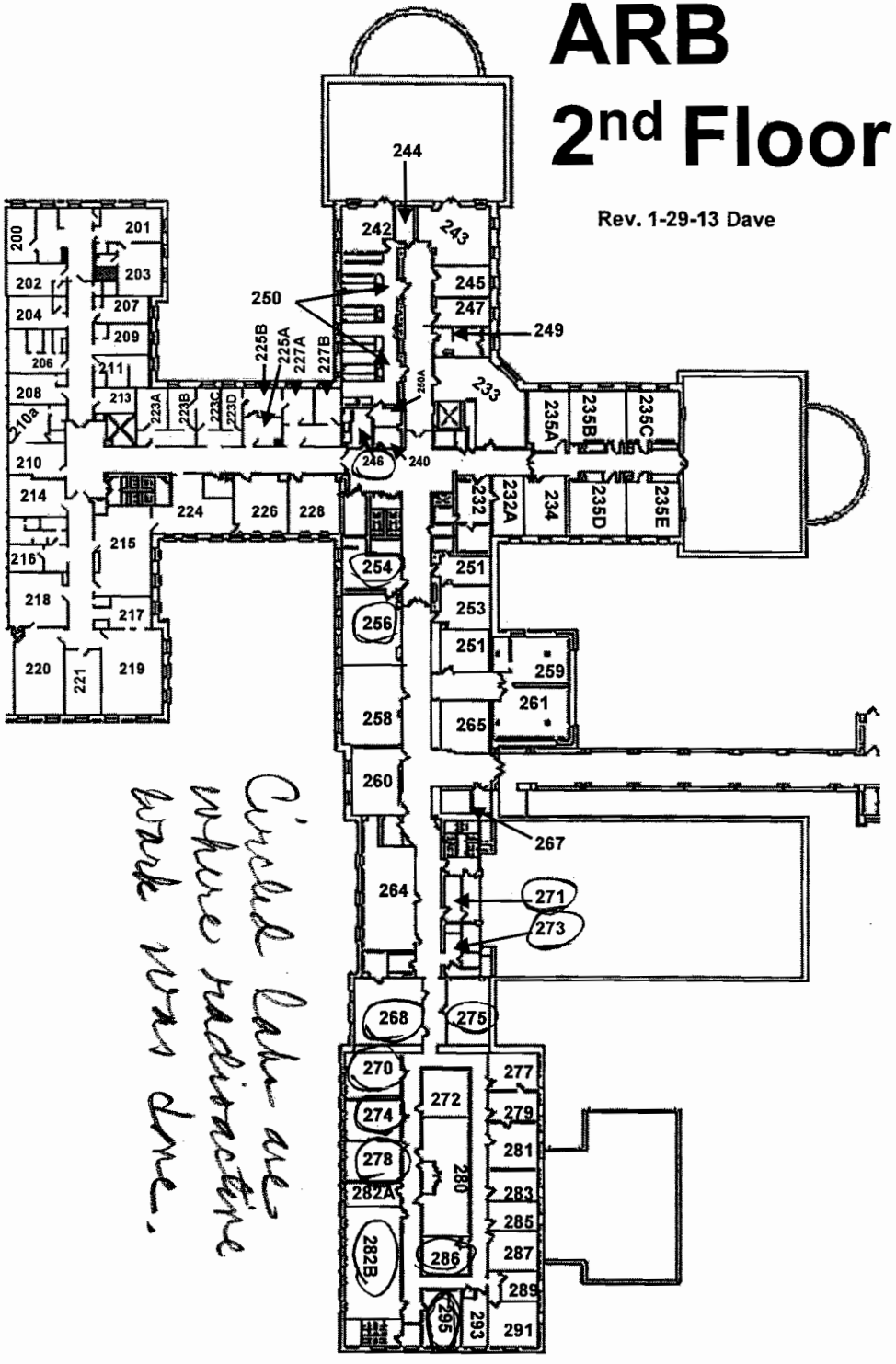
ARB 2nd Floor

Rev. 1-29-13 Dave

2nd Floor ARB NON RESEARCH Rooms			
OCCUPANT/USE Rev. 3-29-12 - Dave	ROOM#		TOTAL SQ FT
Info. Systems/HOSPITAL	232	A	162
Info. Systems/HOSPITAL	232		247
Shared Videoconference Rm.	234		196
Photo Studio	243		394
Photo Office	245		164
Dark Room	247		150
Info. Systems/HOSPITAL	235 A-E		1,299
Total			2,612

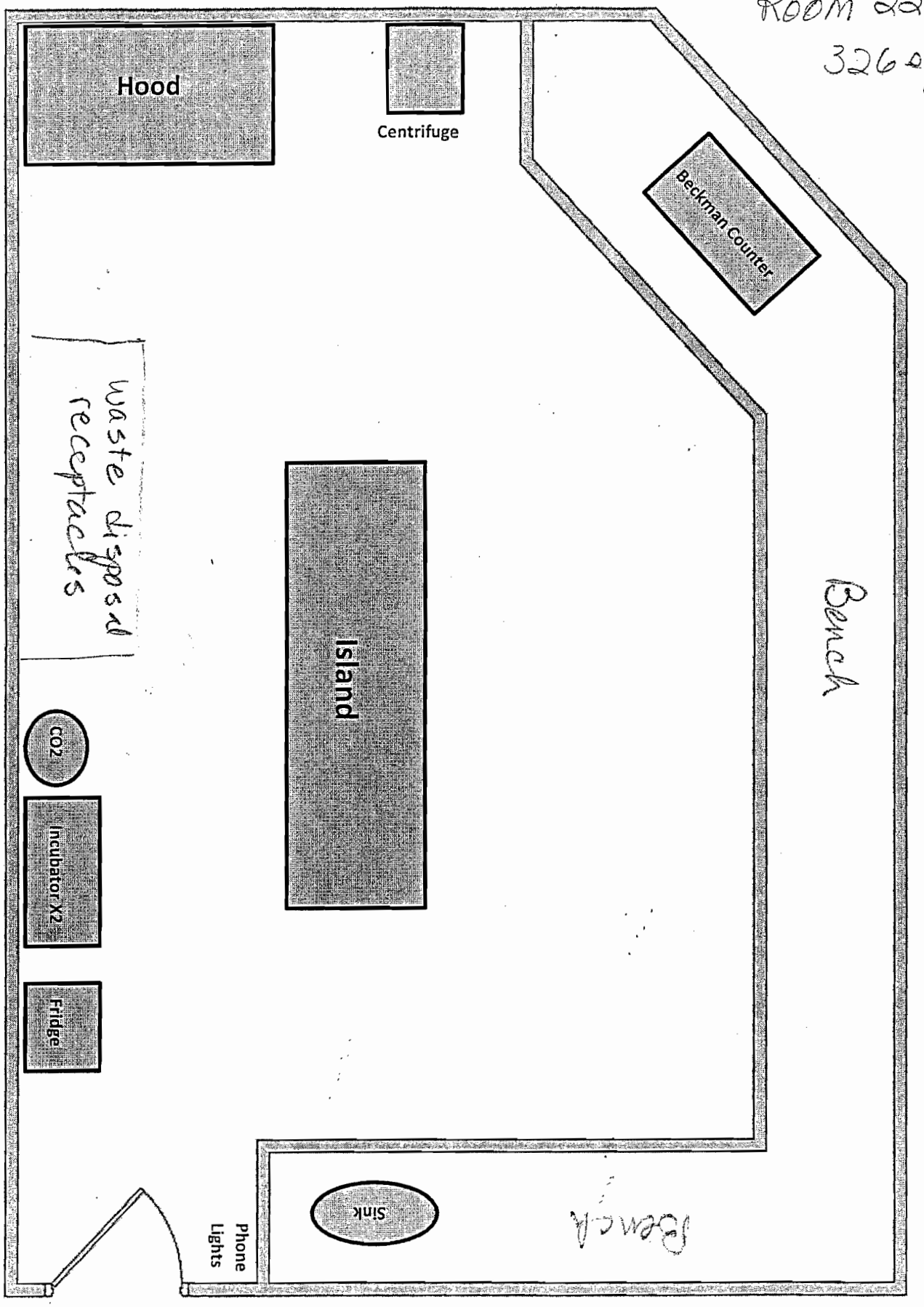
Research Rooms Front Wing 2nd Floor A/R Building			
OCCUPANT/USE Rev. 5-21-12 Dave	ROOM#		TOTAL SQ FT
Research Suit Enter & Waiting	n/a		205
Research Suit Small Meeting Area	n/a		128
Vicky Funanage	200		184
File-Copy-Processing	201		207
Terry Pedicone	202		213
Main Meeting Rm. and Lavatory	203		286
Greg Stets	204		238
Janitor Closet	205		n/a
Ladies Lavatory	206		n/a
Director of Clinical Research	207		144
Anna Marie Mincey	208		305
Mark Patrick	209		144
Stacey Koletty	210	A	151
Pialee Roy	210		182
Alicia Olivant Fisher/Terry Miller	211		144
Dave Pedicone	213		96
Michael Primiani, PhD	214		185
Whitney Sample	215		486
Storage	216		95
Mark Ma	217		156
Research Conference Room	218		255
Rahman Lab	219		483
Research Associate Room	220		430
Tariq Rahman, PhD	221		209
Mech Fabrication Shop	224		268
Pam Rullo	225	A	122
Kim Bogia	225	B	122
Med Sci Computer Room	226		273
S McDaniel	227	A	165
D. Axsmith	227	B	165
Res. Asst. Group Office	228		291
Research Secure Storage	223	A	138
Liz Kelly	223	B	135
Vicky Maduskuie	223	C	114
Susah Kirwin	223	D	114
Storage	Attic		1,048
Total Without Hallways			7,881
Hallways			1,966
Total With Hallways			9,847

Research Rooms Back Wing 2nd Floor A/R Building			
OCCUPANT/USE Rev. 11-29-13 - Dave	ROOM#		TOTAL SQ FT
Shared Cell Culture Lab	233		428
Info. Cable Closet/ Non - Res.	240		N/A
COBRE - Khan - Tsuda	242		912
Zhaoping He, PhD	244		77
BioSafety Level 2 - Lab	246		96
Tim Stetson	249		106
IPD Lab - Zhaoping He	250		760
IPD Lab Storage - Zhaoping He	250	A	48
Break Room	253		182
MID - Neurogenetics Lab	254		215
MID - Neurogenetics Lab	256		802
Immunology - Fawcett	257		62
Carol Barone	258		344
Immunology - Fawcett	259		257
Histotechnology	260		117
Immunology - Fawcett	261		258
Histotechnology	264		628
Utility Room	265		62
Utility Room	267		161
Akins Lab	268		350
Shared Research Lab	270		246
Centrifuge Room	271		70
Shared Research Lab	272		226
Cold Room Core	273		165
Tissue Culture	274		212
Akins Lab	275		330
Robert Akins, PhD	277		180
Fawcett Lab	278		207
Mary McElwain	279		140
Shaffer Lab	280		525
Anne Kazak, PhD	281		225
Elena Rodriguez, MD	282	A	123
Shaffer Lab	282	B	617
Stephanie Schneider	283		135
Pending Health Delivery Science	285		135
Admin. Records Room	286		186
Paul Fawcett, PhD	287		184
Pending Health Delivery Science	289		114
Tara Ketterer	291		217
Kimberly Klipner	293		153
Tissue Culture	295		216
Total Sq. Feet w/o Hallways			10,471
Hallways/Common			4,456
Total Sq. Feet with Hallways			14,927



Circle labs where radioactive work was done.

Attachment 9 Typical Lab Rockland Center:
Room 225
326 sq. ft.



Lab -RC1 -225
5-29-13 Dave

Admin Research Bldg
Room 246
96 x 8 ft.

Alfred I. duPont Hospital for Children
Radiation Safety

Wipe Test Record

Building: A/R
Room number: 246

Dufu
9-22-09

Date	8/13/09				
Isotopes used	H3				
Done by	Tina Yan				
Counting system	cpm				
Efficiency	50%				

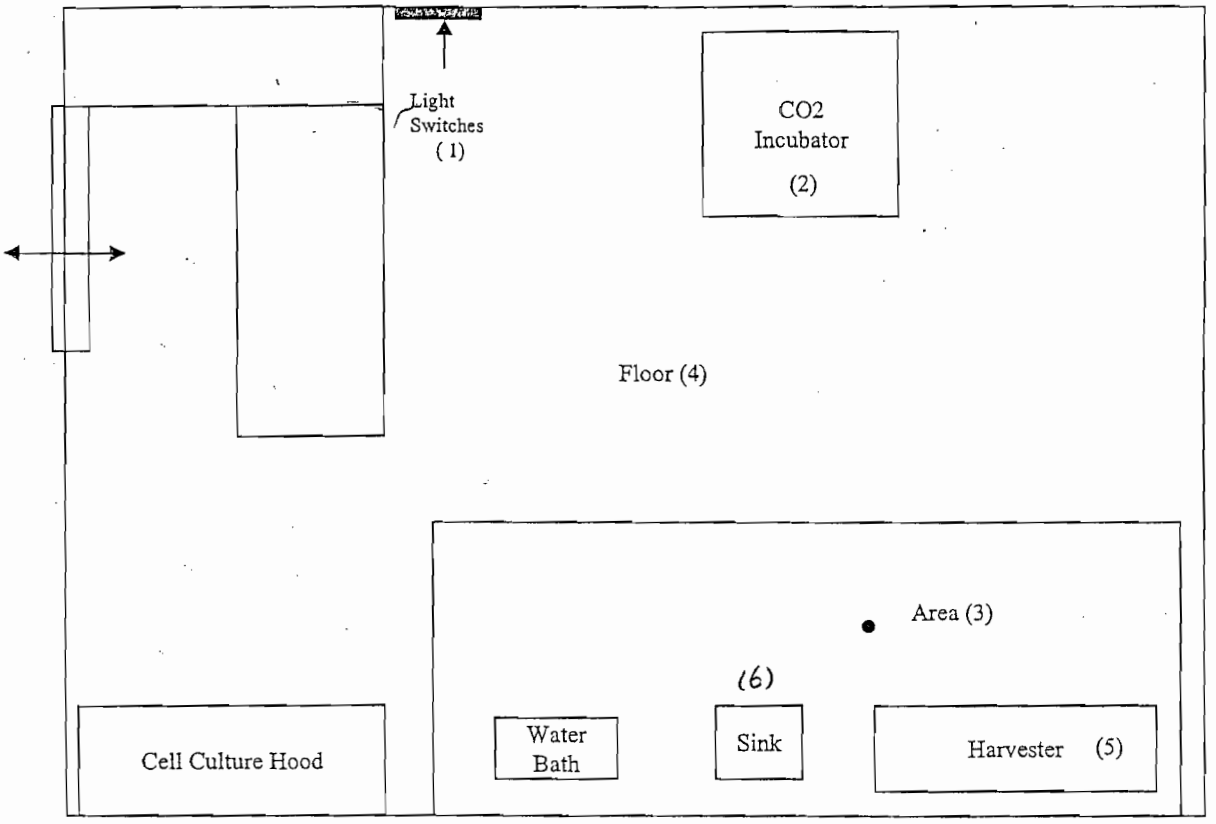
Location (Refer to floor plan)		Activity in DPM or µCi				
Light	1					
Inside Incubator	2					
Bench	3					
Floor	4					
Harvestor	5					
Faucent Handles Sink	6					
Pump	7					
Blank	8					

David Talk

```
Protocol #: 8          Name:Swipe test 3H                13-Aug-2009 15:58
Region A: LL-UL= 0.0-18.6   Lcr=    0  Bkg= 0.00  %2 Sigma=0.00
Region B: LL-UL= 2.0-18.6   Lcr=    0  Bkg= 0.00  %2 Sigma=0.00
Region C: LL-UL= 0.0- 0.0   Lcr=    0  Bkg= 0.00  %2 Sigma=0.00
Time = 10.00      QIP = tSIE/AEC       ES Terminator = Count
Conventional DPM
Nuclide 1 = 258256
```

S#	TIME	CPMA	DPM1	FLAG	% EFF
1	10.00	18.40	38.15		48.2
2	10.00	12.50	26.49		47.2
3	10.00	14.20	30.26		46.9
4	10.00	15.60	33.01		47.3
5	10.00	11.00	23.31		47.2
6	10.00	12.50	26.24		47.6
7	10.00	15.50	32.87		47.2
8	10.00	12.10	25.30		47.8

Schematic Diagram of Radio Isotope Used Area(Wipe Test for 3H Use)
Room # 246 (Cell Culture Lab)



Admin Research Bldg.
ARB 254/256 - 1017
5/3-5/6/13

1-18

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	1	**-1	3.00	132.4	26.33	22.50	1.23	3.72
2	2	**-2	3.00	124.6	21.67	24.81	1.68	7.45
3	3	**-3	3.00	119.8	22.33	24.43	2.28	11.19
4	4	**-4	3.00	125.4	21.67	24.81	1.55	14.81
5	5	**-5	3.00	130.1	20.33	25.61	1.95	18.54
6	6	**-6	3.00	130.5	32.67	20.20	0.77	22.28
7	7	**-7	3.00	121.3	22.67	24.25	1.47	25.91
8	8	**-8	3.00	120.1	20.33	25.61	1.20	29.65
9	9	**-9	3.00	122.8	21.00	25.20	1.39	33.39
10	10	**-10	3.00	123.8	23.00	24.08	1.62	37.14
11	11	**-11	3.00	123.7	23.67	23.74	1.32	40.78
12	12	**-12	3.00	123.9	25.33	22.94	1.20	44.52
13	13	**-13	3.00	122.4	21.00	25.20	1.10	48.16
14	14	**-14	3.00	123.9	23.00	24.08	0.91	51.90
15	15	**-15	3.00	122.3	20.67	25.40	1.31	55.54
16	16	**-16	3.00	126.0	22.67	24.25	1.12	59.18
17	17	**-17	3.00	123.6	21.00	25.20	1.09	62.92
18	18	**-18	3.00	119.4	26.33	22.50	1.55	66.56

19-36

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
19	1	**-1	3.00	122.1	21.33	25.00	1.37	3.54
20	2	**-2	3.00	123.2	25.67	22.79	0.99	7.16
21	3	**-3	3.00	122.8	19.00	26.49	1.46	10.79
22	4	**-4	3.00	122.3	22.67	24.25	0.98	14.54
23	5	**-5	3.00	124.3	20.00	25.82	1.43	18.16
24	6	**-6	3.00	128.8	24.33	23.41	1.11	21.90
25	7	**-7	3.00	127.1	24.67	23.25	1.16	25.63
26	8	**-8	3.00	128.0	21.67	24.81	1.07	29.37
27	9	**-9	3.00	126.0	39.67	18.33	0.68	33.10
28	10	**-10	3.00	120.9	24.00	23.57	0.69	36.85
29	11	**-11	3.00	126.4	21.67	24.81	0.88	40.58
30	12	**-12	3.00	125.6	23.33	23.90	0.90	44.33
31	13	**-13	3.00	120.8	21.00	25.20	0.67	48.07
32	14	**-14	3.00	126.1	20.00	25.82	0.99	51.82
33	15	**-15	3.00	129.0	25.33	22.94	0.85	55.55
34	16	**-16	3.00	125.8	19.33	26.26	1.06	59.19
35	17	**-17	3.00	123.6	22.00	24.62	1.01	62.93
36	18	**-18	3.00	128.8	21.00	25.20	1.09	66.66

37-54

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
37	1	**-1	3.00	127.2	22.67	24.25	0.76	3.65
38	2	**-2	3.00	127.0	21.33	25.00	0.89	7.39
39	3	**-3	3.00	130.1	24.67	23.25	1.35	11.12
40	4	**-4	3.00	126.4	23.33	23.90	1.30	14.85
41	5	**-5	3.00	126.1	22.00	24.62	1.12	18.48
42	6	**-6	3.00	127.0	25.00	23.09	0.87	22.20
43	7	**-7	3.00	124.7	23.33	23.90	0.90	25.93
44	8	**-8	3.00	127.0	20.33	25.61	1.57	29.67
45	9	**-9	3.00	129.2	26.00	22.65	1.06	33.40
46	10	**-10	3.00	125.0	20.33	25.61	0.93	37.15
47	11	**-11	3.00	124.7	25.00	23.09	1.08	40.90
48	12	**-12	3.00	128.2	25.00	23.09	0.89	44.53
49	13	**-13	3.00	128.8	25.33	22.94	0.85	48.27
50	14	**-14	3.00	128.3	18.67	26.73	1.15	51.91
51	15	**-15	3.00	127.0	21.00	25.20	1.11	55.65
52	16	**-16	3.00	126.2	22.00	24.62	1.15	59.39
53	17	**-17	3.00	129.6	23.33	23.90	1.57	63.03
54	18	**-18	3.00	124.9	25.00	23.09	1.17	66.68

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
55	1	**-1	3.00	128.8	**19.33**	26.26	1.38	3.65
56	2	**-2	3.00	127.5	**21.33**	25.00	1.36	7.39
57	3	**-3	3.00	125.5	**22.67**	24.25	1.19	11.12
58	4	**-4	3.00	128.2	**24.00**	23.57	1.00	14.87
59	5	**-5	3.00	126.8	**24.33**	23.41	0.93	18.60
60	6	**-6	3.00	129.5	**23.67**	23.74	1.25	22.33
61	7	**-7	3.00	129.9	**25.00**	23.09	0.93	26.07
62	8	**-8	3.00	128.2	**19.33**	26.26	0.97	29.80
63	9	**-9	3.00	120.9	**27.67**	21.95	0.81	33.53
64	10	**-10	3.00	127.7	**22.33**	24.43	1.31	37.27
65	11	**-11	3.00	123.2	**21.33**	25.00	1.00	41.00
66	12	**-12	3.00	126.8	**19.33**	26.26	0.95	44.75
67	13	**-13	3.00	129.2	**25.67**	22.79	0.83	48.48
68	14	**-14	3.00	125.1	**22.67**	24.25	0.85	52.13
69	15	**-15	3.00	126.3	**24.67**	23.25	1.23	55.76
70	16	**-16	3.00	125.6	**18.67**	26.73	1.32	59.39
71	17	**-17	3.00	123.5	**16.67**	28.28	1.12	63.13
72	18	**-18	3.00	125.1	**26.33**	22.50	0.79	66.89

55-72

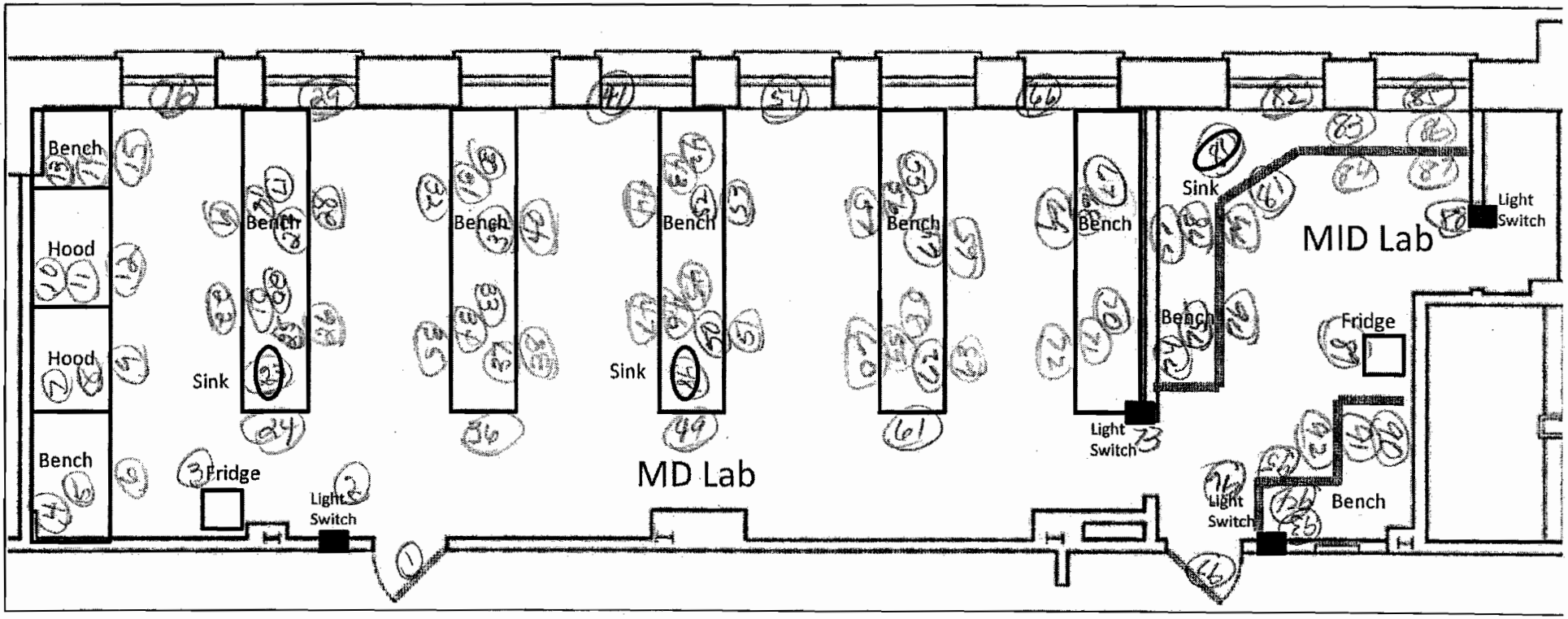
	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
73	1	**-1	3.00	128.6	**24.00**	23.57	0.37	3.67
74	2	**-2	3.00	122.5	**22.00**	24.62	0.52	7.29
75	3	**-3	3.00	133.1	**22.33**	24.43	0.41	10.91
76	4	**-4	3.00	128.8	**23.33**	23.90	0.85	14.54
77	5	**-5	3.00	129.3	**24.33**	23.41	1.64	18.27
78	6	**-6	3.00	130.5	**21.67**	24.81	4.63	21.92
79	7	**-7	3.00	124.8	**22.00**	24.62	0.50	25.54
80	8	**-8	3.00	133.3	**15.00**	29.81	0.75	29.28
81	9	**-9	3.00	124.8	**19.33**	26.26	0.41	33.02
82	10	**-10	3.00	128.9	**15.33**	29.49	0.69	36.75
83	11	**-11	3.00	128.9	**24.00**	23.57	0.49	40.50
84	12	**-12	3.00	131.8	**27.00**	22.22	0.47	44.12
85	13	**-13	3.00	129.7	**24.33**	23.41	0.52	47.87
86	14	**-14	3.00	130.4	**21.00**	25.20	0.51	51.62
87	15	**-15	3.00	128.8	**24.67**	23.25	0.37	55.35
88	16	**-16	3.00	132.6	**20.33**	25.61	0.39	59.09
89	17	**-17	3.00	129.5	**27.33**	22.09	0.32	62.82
90	18	**-18	3.00	129.4	**24.67**	23.25	0.45	66.46

73-90

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
91	1	**-1	3.00	124.2	**21.00**	25.20	0.40	3.54
92	2	**-2	3.00	130.8	**20.67**	25.40	0.52	7.16
93	3	**-3	3.00	128.8	**21.67**	24.81	0.53	10.90
94	4	**-4	3.00	132.7	**22.67**	24.25	0.43	14.63
95	5	**-5	3.00	131.1	**27.33**	22.09	0.53	18.26
96	6	**-6	3.00	128.9	**18.00**	27.22	0.58	21.98
97	7	**-7	3.00	129.1	**18.67**	26.73	0.60	25.72
blank	8	**-8	3.00	112.1	**21.67**	24.81	0.94	29.45

91-97 + blank

MID Lab ARB 256
MD Lab ARB 254
4-4-13 Dave



Wipes ARB256/254

1. Door handle
2. Light switch
3. Fridge door
4. Cabinet front
5. Bench top
6. Floor
7. Wall of hood
8. Work space of hood
9. Floor
10. Wall of hood
11. Workspace of hood
12. Floor
13. Cabinet front
14. Bench
15. Floor
16. Window sill
17. Shelf
18. Bench
19. Floor
20. Shelf
21. Bench
22. Floor
23. Sink
24. Floor
25. Bench
26. Floor
27. Bench
28. Floor
29. Sill
30. Shelf
31. Bench
32. Floor
33. Shelf
34. Bench
35. Floor
36. Floor
37. Bench
38. Floor
39. Bench
40. Floor

41. Sill
42. Shelf
43. Bench
44. Floor
45. Shelf
46. Bench
47. Floor
48. Sink
49. Floor
50. Bench
51. Floor
52. Bench
53. Floor
54. Sill
55. Shelf
56. Bench
57. Floor
58. Shelf
59. Bench
60. Floor
61. Floor
62. Bench
63. Floor
64. Bench
65. Floor
66. Sill
67. Shelf
68. Bench
69. Floor
70. Shelf
71. Bench
72. Floor
73. Light switch
74. Cabinet
75. Bench
76. Floor
77. Cabinet
78. Bench
79. Floor
80. Sink
81. Floor
82. Sill

83. Bench
84. Floor
85. Sill
86. Bench
87. Floor
88. Light switch
89. Refrig door
90. Cabinet
91. Bench
92. Floor
93. Cabinet
94. Bench
95. Floor
96. Light switch
97. Door

Admin Research Bldg.
ARB 268 - 350 sq ft.
1-56

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	1	**-1	3.00	327.9	21.33	25.00	2.10	3.72
2	2	**-2	3.00	329.0	18.67	26.73	2.88	7.47
3	3	**-3	3.00	328.0	28.67	21.57	2.04	11.21
4	4	**-4	3.00	329.6	19.00	26.49	2.58	14.95
5	5	**-5	3.00	330.1	24.67	23.25	2.40	18.69
6	6	**-6	3.00	331.3	26.67	22.36	4.28	22.45
7	7	**-7	3.00	332.6	20.67	25.40	2.42	26.19
8	8	**-8	3.00	330.9	23.00	24.08	2.59	29.92
9	9	**-9	3.00	330.9	19.00	26.49	3.66	33.68
10	10	**-10	3.00	331.2	21.33	25.00	1.99	37.42
11	11	**-11	3.00	332.2	24.00	23.57	2.42	41.17
	12	**-12	SAMPLE TERMINATED:					

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
	MISSING SAMPLE							
12	12	**-12	3.00	332.7	21.00	25.20	3.18	3.89
13	13	**-13	3.00	334.1	23.33	23.90	1.50	7.64
14	14	**-14	3.00	333.9	17.33	27.74	2.52	11.37
15	15	**-15	3.00	330.0	23.00	24.08	2.96	15.02
16	16	**-16	3.00	331.0	19.67	26.04	2.73	18.76
17	17	**-17	3.00	329.9	22.67	24.25	2.68	22.38
18	18	**-18	3.00	335.0	22.33	24.43	2.47	26.13

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
19	1	**-1	3.00	333.3	16.33	28.57	5.11	3.66
20	2	**-2	3.00	333.4	19.67	26.04	2.52	7.39
21	3	**-3	3.00	332.4	26.33	22.50	2.80	11.14
22	4	**-4	3.00	334.8	24.67	23.25	3.58	14.88
23	5	**-5	3.00	335.2	21.33	25.00	1.71	18.62
24	6	**-6	3.00	334.1	20.33	25.61	2.97	22.36
25	7	**-7	3.00	336.0	20.33	25.61	2.46	26.15
26	8	**-8	3.00	332.9	17.67	27.47	2.96	29.89
27	9	**-9	3.00	334.9	28.00	21.82	1.69	33.64
28	10	**-10	3.00	338.4	19.67	26.04	3.53	37.39
29	11	**-11	3.00	335.0	19.67	26.04	3.14	41.14
30	12	**-12	3.00	331.8	20.33	25.61	2.90	44.89
31	13	**-13	3.00	334.7	22.00	24.62	3.47	48.64
32	14	**-14	3.00	333.0	19.67	26.04	3.02	52.39
33	15	**-15	3.00	336.9	21.67	24.81	2.69	56.14
34	16	**-16	3.00	339.0	18.00	27.22	2.40	59.89
35	17	**-17	3.00	334.7	20.33	25.61	2.45	63.64
36	18	**-18	3.00	340.2	16.67	28.28	6.71	67.29

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
37	1	**-1	3.00	335.3	25.00	23.09	1.76	3.66
38	2	**-2	3.00	335.7	19.33	26.26	2.41	7.39
39	3	**-3	3.00	338.0	22.00	24.62	2.58	11.14
40	4	**-4	3.00	333.2	22.67	24.25	3.43	14.88
41	5	**-5	3.00	334.1	23.33	23.90	4.02	18.63
42	6	**-6	3.00	337.0	20.67	25.40	2.52	22.37
43	7	**-7	3.00	333.6	19.00	26.49	4.37	26.11
44	8	**-8	3.00	337.6	24.67	23.25	2.26	29.85
45	9	**-9	3.00	334.8	16.67	28.28	3.29	33.59
46	10	**-10	3.00	337.8	21.00	25.20	5.69	37.24
47	11	**-11	3.00	335.6	25.67	22.79	2.27	40.99
48	12	**-12	3.00	337.5	23.67	23.74	2.50	44.74
49	13	**-13	3.00	336.1	24.00	23.57	2.80	48.49
50	14	**-14	3.00	336.9	24.33	23.41	3.07	52.24
51	15	**-15	3.00	335.3	24.67	23.25	3.27	55.99
52	16	**-16	3.00	335.0	23.33	23.90	2.73	59.74
53	17	**-17	3.00	335.7	22.00	24.62	3.05	63.49
54	18	**-18	3.00	333.3	23.33	23.90	4.26	67.24

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
55	1	**-1	3.00	333.4	19.00	26.49	2.09	3.65
56	2	**-2	3.00	332.3	21.00	25.20	2.62	7.37

ARB 268 = A
1A-56A

Wipes ARB 268 1A-56A

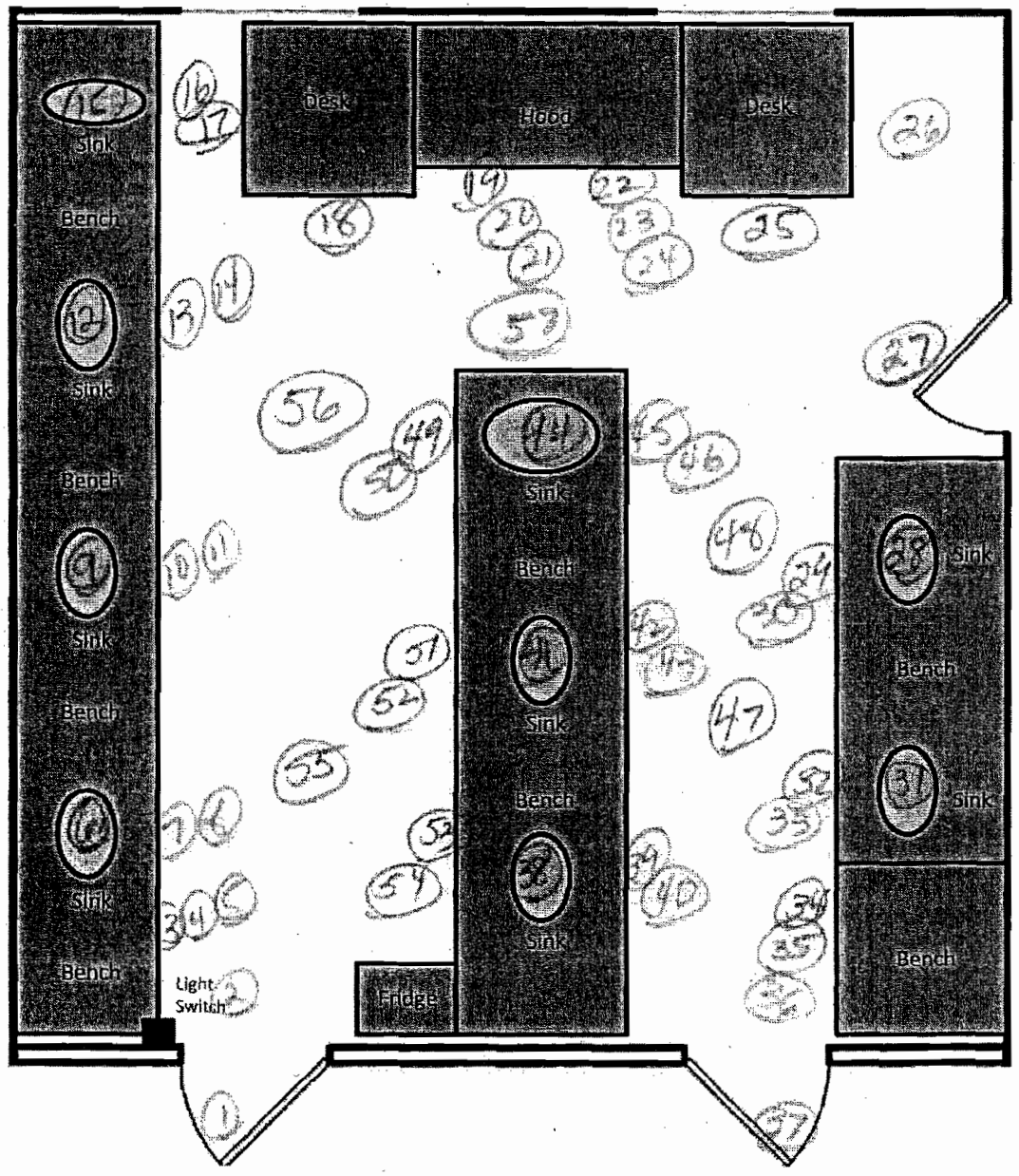
1. Door handle
2. Light switch
3. Over bench
4. Bench
5. Floor
6. Sink
7. Over bench
8. Floor
9. Sink
10. Over bench
11. Floor
12. Sink
13. Over bench
14. Floor
15. Sink
16. Window
17. Floor
18. Floor
19. Back wall of hood
20. Work surface of hood
21. Floor
22. Back wall of hood
23. Work surface of hood
24. Floor
25. Floor
26. Floor
27. Door handle
28. Sink
29. Over bench
30. Floor
31. Sink
32. Over bench
33. Floor
34. Over bench
35. Bench
36. Floor
37. Door handle
38. Sink
39. Over bench
40. Floor

Wipes ARB268, continued

41. Sink
42. Over bench
43. Floor
44. Sink
45. Over sink
46. Floor
47. Floor
48. Floor
49. Over bench
50. Floor
51. Bench
52. Floor
53. Bench
54. Floor
55. Floor
56. Floor

Lab ARB 268

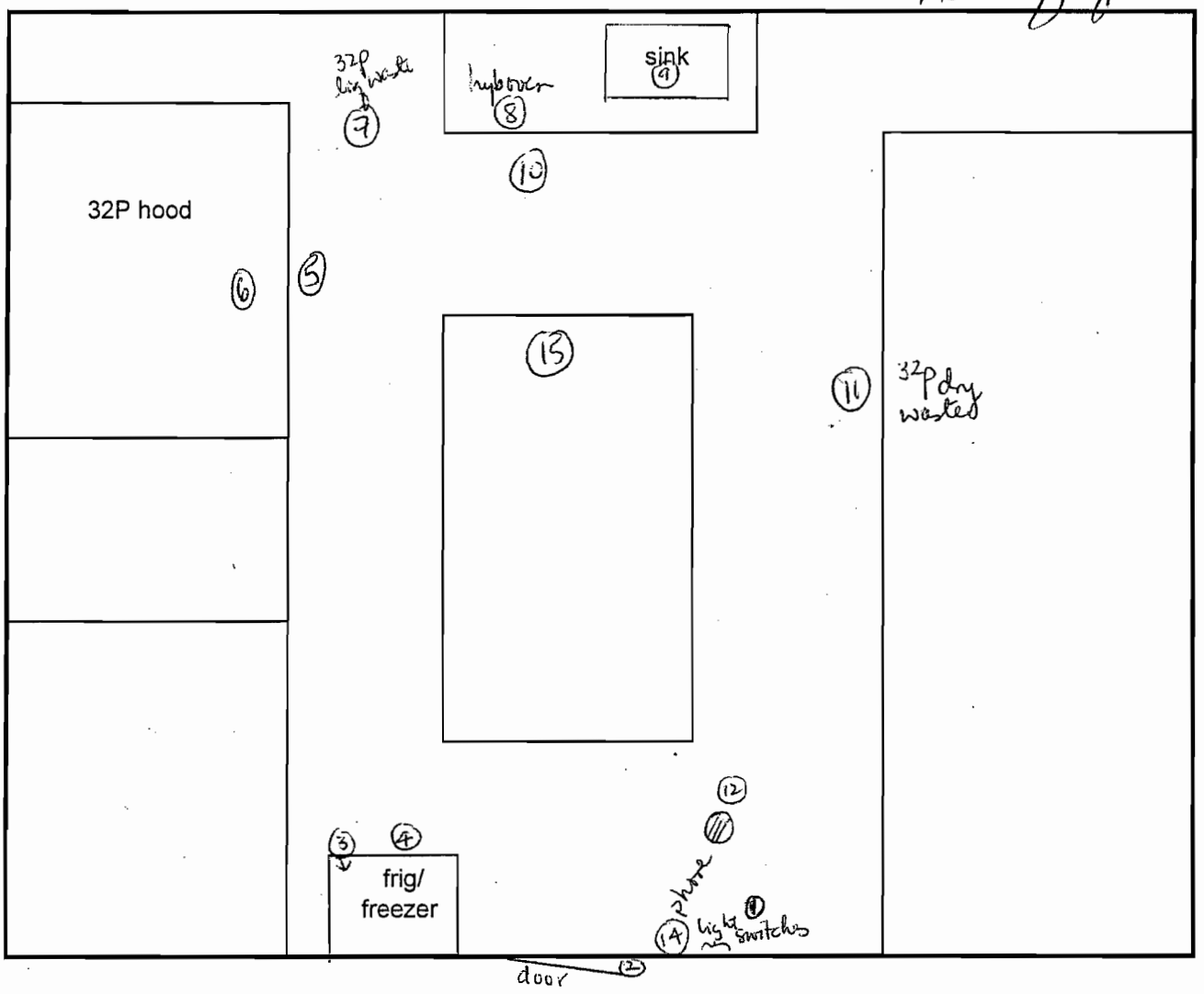
4-4-13 Dave



swipesmap.xls

Administration Research Building
270
246 sq. ft.

A/R 270



(4) + (5) added 3/28/07

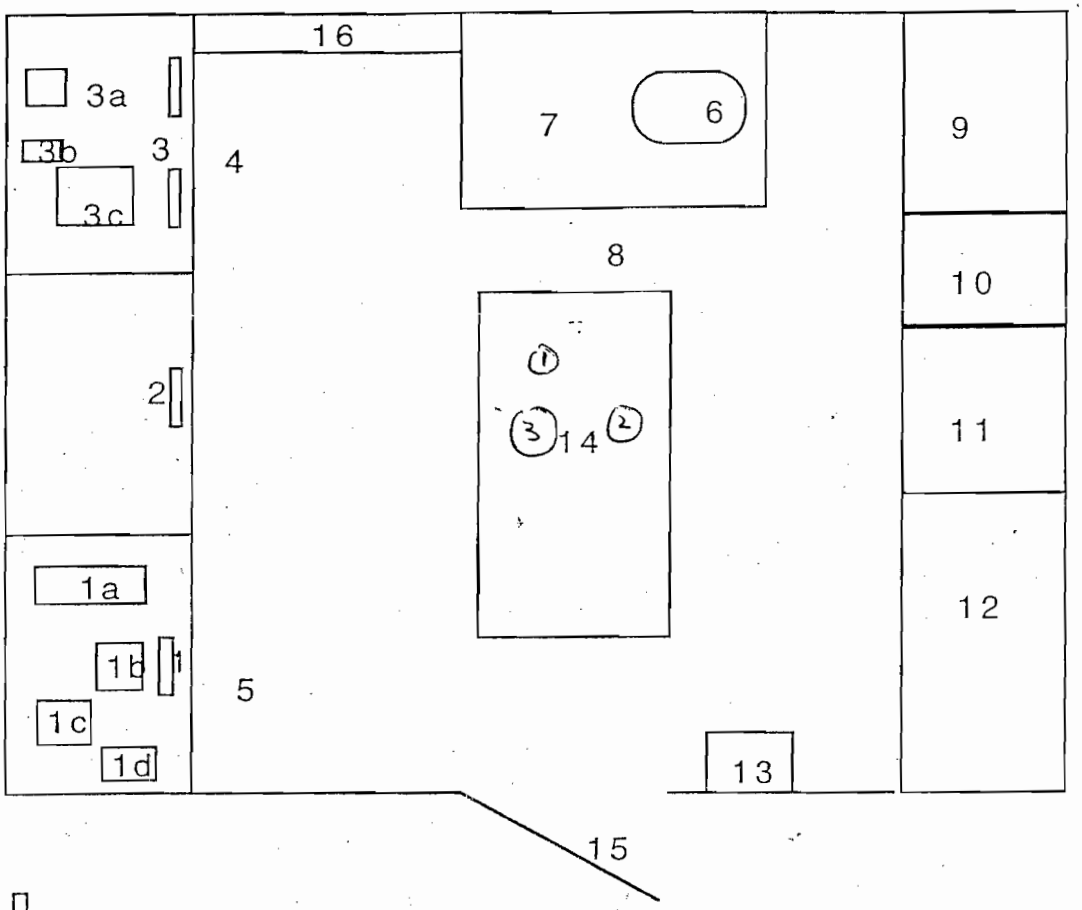
Protocol #:15 Name:H3/C14/P32 02-Apr-2010 09:04
Region A: LL-UL= 0.0-12.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region B: LL-UL=12.0-156. Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region C: LL-UL=156.-1700 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Time = 3.00 QIP = tSIE/AEC ES Terminator = Count
Conventional DPM
Nuclide 1 = 258256 Nuclide 2 = 109200

final wipe test 3/11/10 Spsle

S#	TIME	CPMA	DPM1	CPMB	DPM2	CPMC	tSIE	FLAG
1	3.00	41.33	81.66	19.67	19.63	6.00	470.	light switches
2	3.00	17.67	35.32	11.00	11.60	5.00	441.	door handle
3	3.00	20.67	40.82	14.67	15.78	6.00	439.	frig/freezer
4	3.00	14.33	27.81	18.00	20.75	6.33	385.	floor in front of frig/freezer
5	3.00	16.33	35.29	12.67	13.98	5.00	371.	floor in front of hood (^{32}P)
6	3.00	16.67	30.20	16.67	18.61	6.67	470.	front area of hood (^{32}P)
7	3.00	64.00	138.36	39.00	41.36	6.33	387.	floor by liquid waste (^{32}P)
8	3.00	21.33	20.48	16.67	19.13	5.67	462.	hyb oven
9	3.00	11.67	22.54	15.33	17.75	6.00	381.	sink
10	3.00	21.33	43.24	13.33	14.09	6.33	431.	floor in front of hyb oven
11	3.00	17.00	37.53	16.00	18.19	5.33	344.	floor in front of dry waste (^{32}P)
12	3.00	25.67	49.89	19.00	20.54	6.33	448.	floor drain
13	3.00	15.33	27.25	17.00	19.16	5.33	471.	bkgd
14	3.00	23.00	44.49	15.00	15.90	5.33	464.	phone
15	3.00	13.00	24.43	12.33	13.73	5.00	447.	bench across fr. hyb oven (island)
16	3.00	8.33	13.88	12.67	14.62	4.00	461.	mini fuge
17	3.00	12.33	20.89	17.67	20.32	4.33	462.	hot plate
18	3.00	12.00	19.94	18.33	21.17	6.33	463.	dry block heater
19	3.00	10.00	17.23	12.00	13.60	7.00	485.	2 shields fr. ^{32}P hood
20	3.00	11.33	19.12	16.00	18.37	3.67	468.	P20 & P200 used in ^{32}P work
21	3.00	12.00	21.39	13.00	14.62	5.33	472.	NucTrap push shield (for ^{32}P work)
22	3.00	13.00	23.71	13.33	14.94	5.67	461.	metal holder for µfuge tubes
23	3.00	15.67	27.58	18.00	20.35	4.67	473.	µfuge tube shield
24	3.00	14.67	27.23	12.00	13.11	5.33	476.	stock vial storage (4 compartments)
25	3.00	10.67	19.88	10.00	11.11	4.33	455.	waste box in hood (^{32}P)
26	3.00	23.00	46.32	16.67	18.03	6.00	423.	pink µfuge rack
27	3.00	9.00	14.41	16.00	18.65	6.67	453.	3 forceps

swipe test protocol #15 5/15/01

Rm 270 map



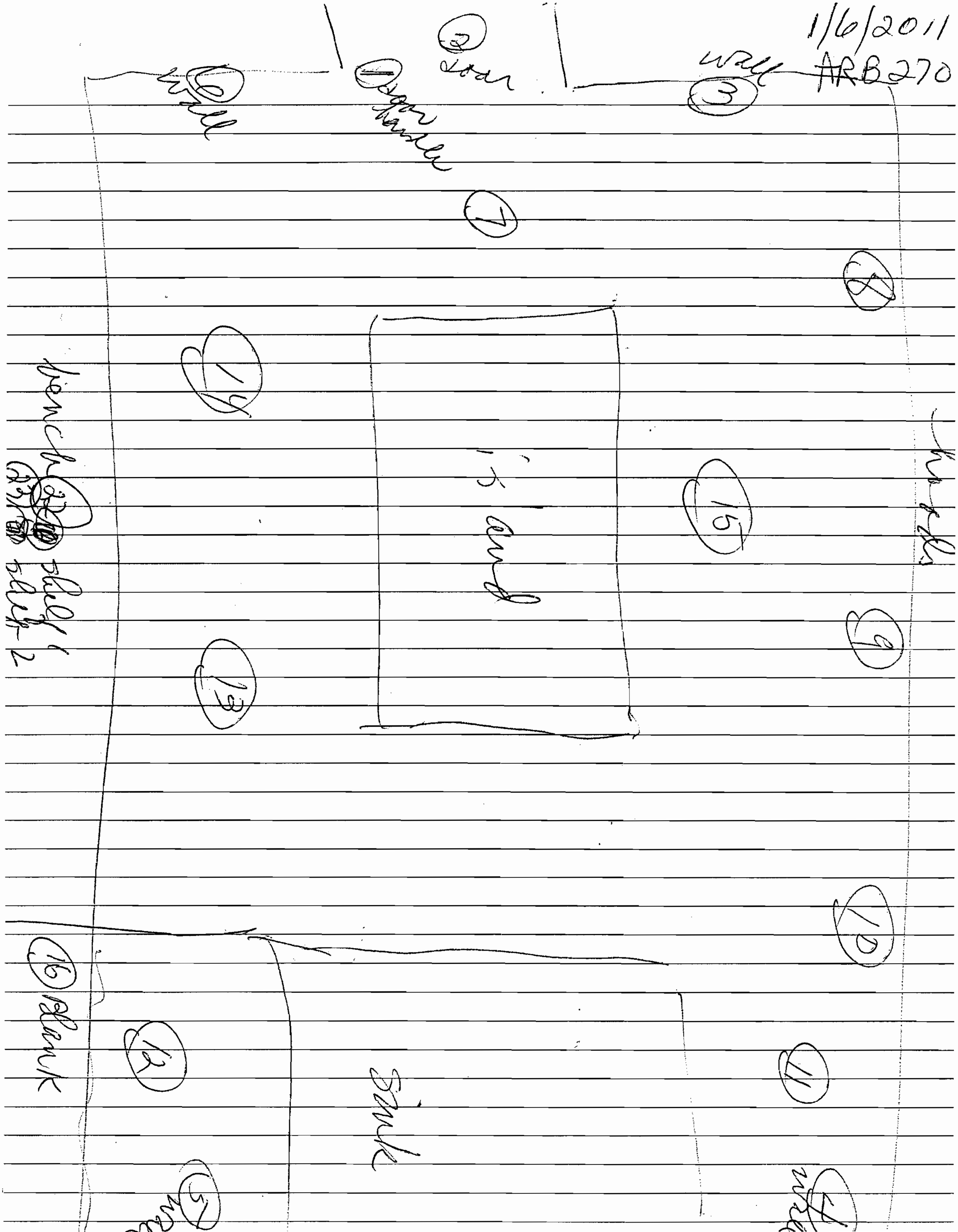
[ ] =shield(lead in 1&2, plexiglas in 3)

1=hood1
2=hood2
3=hood3
4=floor
5=floor
6=sink
7=bench
8=floor
9=refrigerator handle
10=incubator
11=not waste containers
12=bench
13=lightswitch
14=island
15=doorknob
16=shelves

1a=waterbath
1b=dribath
1c=125I stock waste
1d=125I assay tubes waste

3a=hot waste
3b=liquid 32Pwaste collected onto kitty litter
3c=dribath

1/6/2011
ARB270



17 Plastic at #11
18 Cans at #12
19 Box with water bath
20 Box with Plastic
21 Plastic shields & equipment at #14
22 shelves on drawing
23
24 Box with racks & wire basket
25 Survey meters
26 I-125 waste container
27 P.32 waste container
28 Shandon centrifuge 998
29 stuff in window
30 Stack of plastic holders on bench

1/7/11
Spike

SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	**-1	3.00	108.8	24.00	23.57	0.22	3.63
2	**-2	3.00	105.0	33.00	20.10	0.32	7.23
3	**-3	3.00	124.3	25.67	22.79	0.53	10.86
4	**-4	3.00	113.8	27.33	22.09	0.33	14.50
5	**-5	3.00	134.1	27.67	21.95	0.52	18.13
6	**-6	3.00	120.0	94.67	11.87	0.10	21.76
7	**-7	3.00	112.2	22.67	24.25	0.54	25.40
8	**-8	3.00	134.7	49.67	16.38	0.35	29.03
9	**-9	3.00	130.4	36.67	19.07	0.55	32.66
10	**-10	3.00	114.2	48.67	16.55	0.39	36.28
11	**-11	3.00	139.1	25.67	22.79	0.48	39.91
12	**-12	3.00	133.8	30.00	21.08	0.27	43.54
13	**-13	3.00	116.1	28.33	21.69	0.40	47.18
14	**-14	3.00	126.5	26.00	22.65	0.59	50.81
15	**-15	3.00	132.0	72.00	13.61	0.17	54.46
16	**-16	3.00	101.3	26.00	22.65	0.27	58.10
17	**-17	3.00	126.4	27.33	22.09	0.23	61.74
18	**-18	3.00	124.9	29.33	21.32	0.36	65.38

SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
19 1	**-1	3.00	143.9	30.33	20.97	0.17	3.54
2	**-2	3.00	141.7	25.67	22.79	0.38	7.16
3	**-3	3.00	129.7	27.67	21.95	0.42	10.78
4	**-4	3.00	130.1	32.67	20.20	0.65	14.41
5	**-5	3.00	121.4	32.00	20.41	0.29	18.04
6	**-6	3.00	146.3	25.67	22.79	0.48	21.66
7	**-7	3.00	107.9	74.00	13.42	0.24	25.30
8	**-8	3.00	142.9	37.33	18.90	0.44	28.93
9	**-9	3.00	124.7	28.00	21.82	0.77	32.56
10	**-10	3.00	109.5	28.33	21.69	0.26	36.19
11	**-11	3.00	144.5	21.00	25.20	0.58	39.81
30 12	**-12	3.00	156.6	24.00	23.57	0.63	43.46

gpsl 12/2/10

SAM NO	POS	TIME MIN	IC#	35S CPM	35S %ERROR	32P CPM	32P %ERROR	LUMEX %	ELAPSED TIME
1	**-1	1.00	56.96	20.00	44.72	2.00	141.42	6.36	1.38
2	**-2	1.00	127.8	24.00	40.82	5.00	89.44	6.81	2.71
3	**-3	1.00	67.20	25.00	40.00	4.00	100.00	7.79	4.04
4	**-4	1.00	59.56	32.00	35.36	3.00	115.47	5.97	5.41
5	**-5	1.00	75.83	23.00	41.70	4.00	100.00	7.63	6.74
6	**-6	1.00	72.72	16.00	50.00	3.00	115.47	10.03	8.08

SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	**-1	1.00	112.0	42.00	30.86	1.77	2.06
2	**-2	1.00	113.9	25.00	40.00	3.54	3.66
3	**-3	1.00	110.8	23.00	41.70	5.07	5.29
4	**-4	1.00	113.7	27.00	38.49	4.02	6.89
5	**-5	1.00	116.4	27.00	38.49	3.43	8.51
6	**-6	1.00	112.6	21.00	43.64	5.45	10.11

Wipe test of items from ARB 270:

1. Water bath with thermometer
2. filter flasks and glassware
3. Stratagene NucTrap
4. ~~pipets~~ pipets, diapers, beige dividers
5. all racks
6. ~~background~~ background

2nd counting after leaving in dark sev. hrs

Spde 12/2/10

SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	**-1	1.00	119.6	21.00	43.64	2.10	1.99
2	**-2	1.00	121.9	21.00	43.64	2.18	3.69
3	**-3	1.00	122.5	23.00	41.70	3.47	5.32
4	**-4	1.00	122.3	37.00	32.88	2.36	6.92
5	**-5	1.00	122.9	24.00	40.82	1.91	8.66
6	**-6	1.00	119.5	25.00	40.00	1.98	10.25

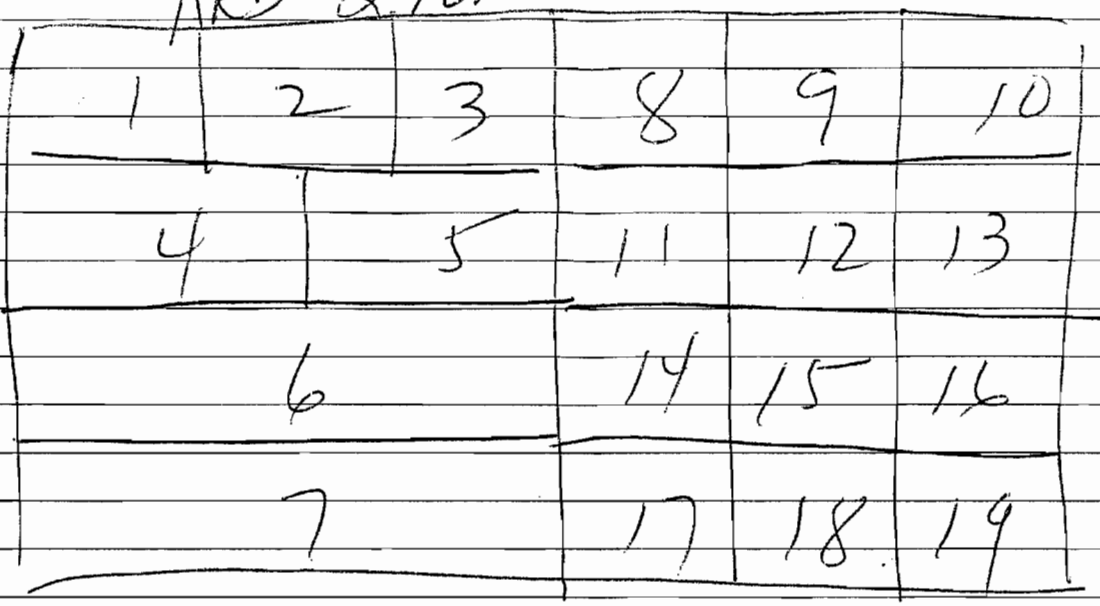
Tim's wipes 12/16/2010 given to Karen to count

Hot lab 270

1	incubator handle /top
2	incub. Knobs
3	incub tryas
4	multigamma panel
5	mult. Vials
6	printer
7	pump
8	hose
9	trap
10	drier bed
11	drier dials
12	electric pipe
13	Blank
notes:	everything had Dirt on it

Equipment in hot lab ARB

Brace wires 12/16/2010
AR13 270



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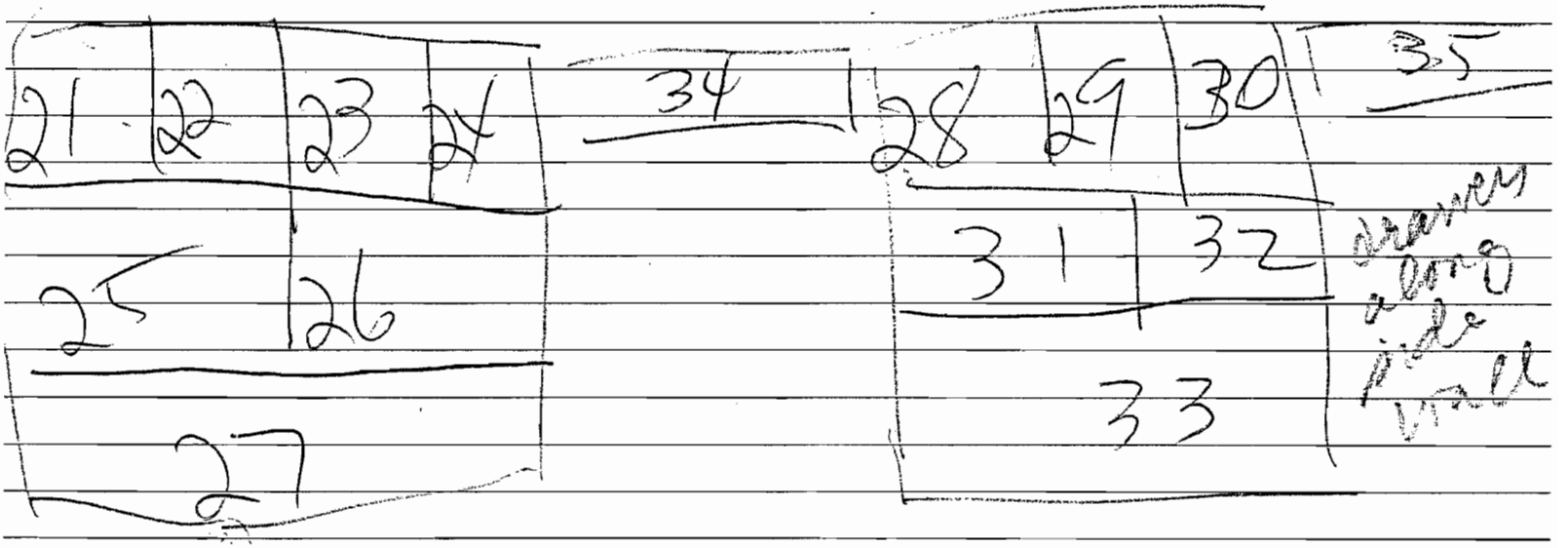


Refrigerator
36 Freezer inside
37 Freezer outside
38 Refrig inside
39 Refrig out
40 Refrig top outside
41 Refrig sides outside

17 DEC 2010 12:09

Tim's 13 samples fr. ARB 270

SAM NO	POS	TIME MIN	H#	3H CPM	3H %ERROR	14C CPM	14C %ERROR	3H DPM	14C DPM	3H EFF-1	3H EFF-2	14C EFF-1	14C EFF-2	RATIO	LUMEX %	ELAPSED TIME
1	**-1	5.00	100.1	7.60	32.44	13.60	24.25	10.32	17.90	42.54	0.74	17.92	75.53	0.576	0.20	5.62
2	**-2	5.00	107.1	7.20	33.33	13.60	24.25	9.76	17.98	40.77	0.75	17.91	75.23	0.543	0.22	11.27
3	**-3	5.00	117.5	11.40	26.49	15.40	22.79	20.34	20.39	38.14	0.76	17.87	74.75	0.997	0.21	16.94
4	**-4	5.00	104.2	8.20	31.23	11.40	26.49	13.28	15.00	41.51	0.74	17.92	75.36	0.886	0.34	22.70
5	**-5	5.00	102.2	10.00	28.28	10.80	27.22	17.77	14.14	42.01	0.74	17.92	75.44	1.257	0.43	28.36
6	**-6	5.00	105.3	8.20	31.23	9.20	29.49	14.64	12.07	41.23	0.74	17.91	75.31	1.213	0.28	34.02
7	**-7	5.00	115.3	6.40	35.36	12.20	25.61	9.05	16.21	38.68	0.76	17.88	74.85	0.559	0.29	39.69
8	**-8	5.00	108.7	7.40	32.88	11.60	26.26	11.54	15.32	40.36	0.75	17.90	75.15	0.753	0.37	45.36
9	**-9	5.00	120.2	6.40	35.36	8.00	31.62	12.04	10.60	37.43	0.76	17.85	74.62	1.136	0.55	51.11
10	**-10	5.00	104.6	6.20	35.92	11.00	26.97	8.69	14.52	41.81	0.74	17.92	75.34	0.599	0.55	56.79
11	**-11	5.00	114.1	6.40	35.36	11.60	26.26	9.35	15.39	39.00	0.75	17.88	74.91	0.608	0.29	62.48
12	**-12	5.00	[illegible]	8.40	30.86	11.00	26.97	13.[illegible]	14.42	42.74	0.[illegible]	17.93	75.57	0.9[illegible]	0.18	68.14
Blank 13	**-13	5.00	[illegible]	6.60	34.82	13.40	24.43	6.[illegible]	17.73	40.71	[illegible]	17.91	75.22	0.4[illegible]	0.15	73.81

Grace's 42 samples fr. ARB 270

SAM NO	POS	TIME MIN	H#	3H CPM	3H %ERROR	14C CPM	14C %ERROR	3H DPM	14C DPM	3H EFF-1	3H EFF-2	14C EFF-1	14C EFF-2	RATIO	LUMEX %	ELAPSED TIME
1	**-1	5.00	101.3	6.80	34.30	15.00	23.09	7.70	19.80	42.24	0.74	17.92	75.48	0.389	0.29	5.59
2	**-2	5.00	99.0	7.20	33.33	13.20	24.62	9.54	17.37	42.84	0.74	17.93	75.58	0.549	0.27	11.26
3	**-3	5.00	102.7	7.00	33.81	11.80	26.04	10.06	15.55	41.89	0.74	17.92	75.42	0.647	0.60	16.93
4	**-4	5.00	112.0	7.00	33.81	12.00	25.82	10.51	15.89	39.53	0.75	17.89	75.01	0.662	0.35	22.59
5	**-5	5.00	109.8	6.60	34.82	10.20	28.01	10.45	13.48	40.09	0.75	17.90	75.11	0.775	0.29	28.26
6	**-6	5.00	119.6	6.60	34.82	9.60	28.87	11.50	12.74	37.60	0.76	17.86	74.65	0.903	0.40	33.91
7	**-7	5.00	136.6	5.80	37.14	9.40	29.17	10.70	12.62	33.31	0.79	17.71	73.81	0.848	0.39	39.58
8	**-8	5.00	104.7	6.40	35.36	9.20	29.49	10.22	12.11	41.37	0.74	17.91	75.33	0.844	0.38	45.24
9	**-9	5.00	111.3	6.00	36.51	13.00	24.81	7.34	17.25	39.71	0.75	17.90	75.04	0.425	0.32	50.90
10	**-10	5.00	112.8	7.60	32.44	10.40	27.74	13.08	13.74	39.31	0.75	17.89	74.97	0.952	0.49	56.58
11	**-11	5.00	111.3	10.40	27.74	12.60	25.20	18.72	16.60	39.69	0.75	17.90	75.04	1.127	0.29	62.26
12	**-12	5.00	120.2	5.20	39.22	9.40	29.17	7.92	12.52	37.43	0.76	17.85	74.62	0.633	0.41	67.93
13	**-13	5.00	116.1	5.40	38.49	9.20	29.49	8.36	12.21	38.49	0.76	17.88	74.82	0.685	0.35	73.61
14	**-14	5.00	117.4	10.40	27.74	10.20	28.01	20.97	13.43	38.15	0.76	17.87	74.76	1.561	0.26	79.28
15	**-15	5.00	104.0	8.40	30.86	11.20	26.73	13.87	14.73	41.55	0.74	17.92	75.36	0.942	0.28	84.96
16	**-16	5.00	111.3	8.20	31.23	11.60	26.26	13.75	15.32	39.70	0.75	17.90	75.04	0.897	0.28	90.63
17	**-17	5.00	117.5	5.40	38.49	10.00	28.28	7.93	13.30	38.14	0.76	17.87	74.75	0.596	0.24	96.31
18	**-18	5.00	114.1	8.20	31.23	12.40	25.40	13.50	16.42	38.99	0.75	17.88	74.91	0.822	0.23	101.98

SAM NO	POS	TIME MIN	H#	3H CPM	3H %ERROR	14C CPM	14C %ERROR	3H DPM	14C DPM	3H EFF-1	3H EFF-2	14C EFF-1	14C EFF-2	RATIO	LUMEX %	ELAPSED TIME
19 1	**-1	5.00	118.6	15.20	22.94	13.00	24.81	32.11	17.08	37.84	0.76	17.86	74.70	1.880	0.12	5.59
2	**-2	5.00	97.6	6.40	35.36	9.60	28.87	9.59	12.60	43.19	0.73	17.93	75.64	0.761	0.21	11.24
3	**-3	5.00	104.4	13.20	24.62	10.80	27.22	25.76	14.08	41.45	0.74	17.92	75.35	1.829	0.19	16.90
4	**-4	5.00	101.3	10.60	27.47	9.00	29.81	20.12	11.73	42.24	0.74	17.92	75.48	1.715	0.[illegible]	[illegible]
5	**-5	5.00	112.3	4.80	40.82	12.60	25.20	4.57	16.76	39.45	0.75	17.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	**-6	5.00	113.9	6.00	36.51	8.60	30.50	[illegible]	[illegible]	[illegible]	[illegible]	17.[illegible]	[illegible]	0.897	0.36	33.97
7	**-7	5.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.45	14.29	[illegible]	0.74	17.91	75.26	0.452	[illegible]	[illegible]
8	**-8	[illegible]	[illegible]	5.20	[illegible]	9.60	28.87	10.19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	**-9	5.00	105.6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	16.07	[illegible]	[illegible]	17.92	[illegible]	[illegible]	[illegible]	[illegible]
10	**-10	5.00	[illegible]	[illegible]	[illegible]	[illegible]	24.[illegible]	[illegible]	17.25	[illegible]	0.76	17.86	74.72	0.812	0.52	56.53
11	**-11	[illegible]	[illegible]	[illegible]	[illegible]	9.80	28.57	8.92	12.92	41.31	0.74	17.91	75.32	0.690	0.47	62.19
[illegible]	**-12	5.00	105.4	6.40	35.36	8.20	31.23	10.85	10.78	41.20	0.74	17.91	75.30	1.006	0.67	67.88
13	**-13	5.00	99.9	7.60	32.44	11.40	26.49	11.54	14.98	42.59	0.74	17.92	75.54	0.770	0.26	73.54
14	**-14	5.00	117.9	7.00	33.81	10.60	27.47	11.80	14.06	38.01	0.76	17.87	74.73	0.839	0.29	79.22
15	**-15	5.00	117.8	4.60	41.70	13.00	24.81	3.94	17.35	38.06	0.76	17.87	74.74	0.227	0.25	84.89
16	**-16	5.00	127.4	5.80	37.14	9.00	29.81	10.28	12.01	35.63	0.78	17.80	74.28	0.856	0.45	90.56
17	**-17	5.00	124.5	10.00	28.28	15.00	23.09	17.71	19.97	36.36	0.77	17.82	74.42	0.887	0.62	96.23
36 18	**-18	5.00	101.9	10.60	27.47	11.40	26.49	18.83	14.92	42.09	0.74	17.92	75.46	1.262	0.21	101.91

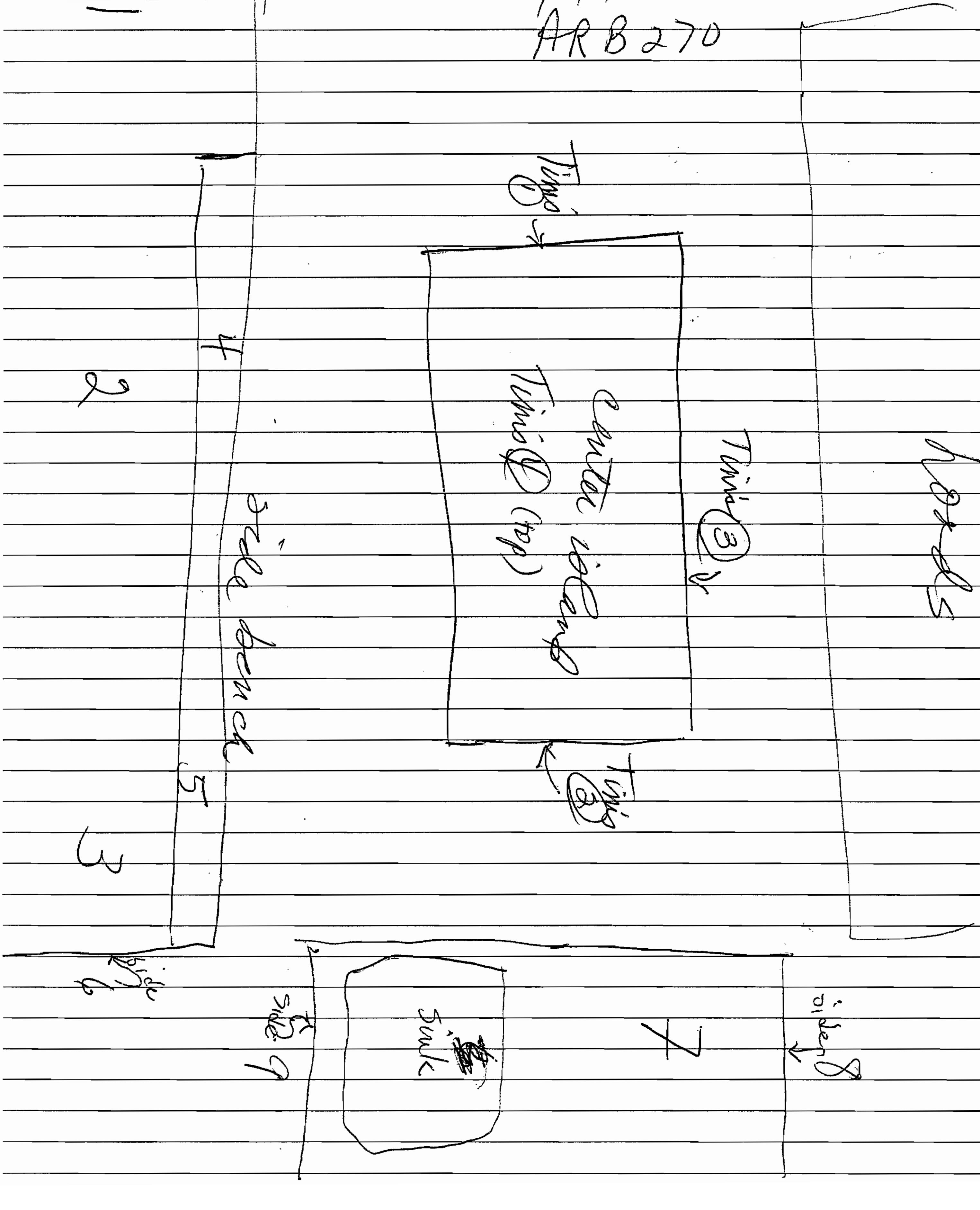
SAM NO	POS	TIME MIN	H#	3H CPM	3H %ERROR	14C CPM	14C %ERROR	3H DPM	14C DPM	3H EFF-1	3H EFF-2	14C EFF-1	14C EFF-2	RATIO	LUMEX %	ELAPSED TIME

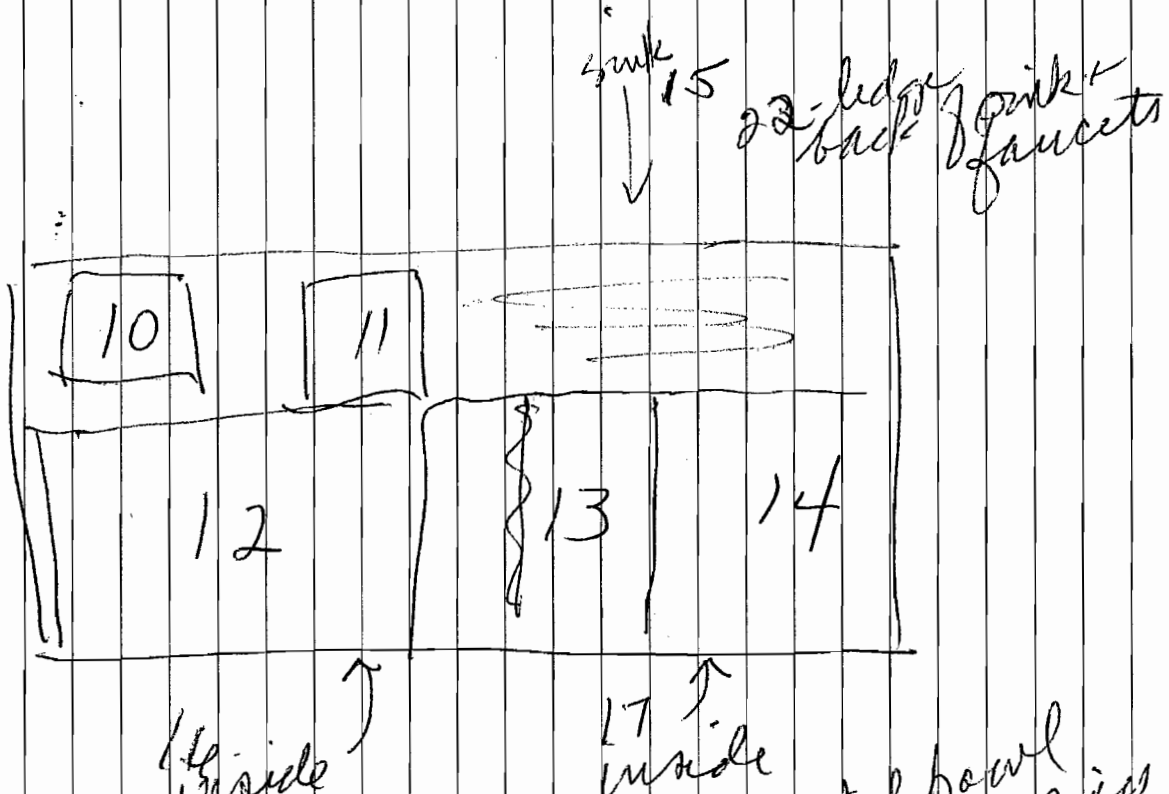
SAM NO	POS	TIME MIN	H#	3H CPM	3H %ERROR	14C CPM	14C %ERROR	3H DPM	14C DPM	3H EFF-1	3H EFF-2	14C EFF-1	14C EFF-2	RATIO	LUMEX %	ELAPSED TIME
37 1	**-1	5.00	97.4	9.20	29.49	12.20	25.61	**14.65**	**15.98**	43.24	0.73	17.93	75.65	0.916	0.15	5.61
2	**-2	5.00	100.6	29.60	16.44	16.60	21.95	**60.72**	**21.39**	42.43	0.74	17.92	75.51	2.839	0.12	11.26
3	**-3	5.00	103.5	10.60	27.47	12.60	25.20	**18.32**	**16.53**	41.68	0.74	17.92	75.39	1.108	0.26	16.93
4	**-4	5.00	104.3	5.60	37.80	6.80	34.30	**9.64**	**8.93**	41.49	0.74	17.92	75.35	1.080	0.33	22.59
5	**-5	5.00	104.4	7.60	32.44	9.60	28.87	**12.88**	**12.61**	41.46	0.74	17.92	75.35	1.021	0.32	28.26
42 6	**-6	5.00	96.6	12.80	25.00	10.00	28.28	**24.11**	**12.98**	43.44	0.73	17.93	75.68	1.858	0.18	33.92

Grace's quarterly wipes for RCI

SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	**-1	3.00	113.4	28.00	21.82	0.38	3.55
2	**-2	3.00	102.9	26.33	22.50	0.43	7.16
3	**-3	3.00	107.3	31.00	20.74	0.79	10.80
4	**-4	3.00	103.9	26.67	22.36	0.60	14.43
5	**-5	3.00	105.4	22.33	24.43	0.82	18.07
6	**-6	3.00	98.3	24.67	23.25	1.01	21.70
7	**-7	3.00	111.2	24.33	23.11	0.78	25.33
8	**-8	3.00	112.9	42.33	17.75	0.44	28.97
9	**-9	3.00	104.5	32.33	20.31	0.36	32.60
10	**-10	3.00	98.0	26.33	22.50	0.66	36.23
11	**-11	3.00	105.0	27.00	22.22	0.73	39.87
xtra 12	**-12	3.00	98.3	51.00	16.17	0.38	43.52

Wipe Tests
1/4/2011
ARB270





18 metal bowl
19 outside of pipes
20 outside pipes
21 underside of sink

23 Blank
24 Tina's container - inside
25 Tina's container - outside
26 Tina's lid inside
27 " " outside
28 Big lead container outside
29 Big lead container inside
30 Stuff under drawer & center island
31 Pile of trash

Lin Stetson wipes
Counted 1/4/2011

Hot lab 270	1/3/2011
1	island side front
2	Island side far
3	island long back
4	island top
5	long bench top
6	long bench side by window
7	top sink
8	faucets
9	side near hoods
10	side near trash cans
11	Blank

1/4/11

Spole

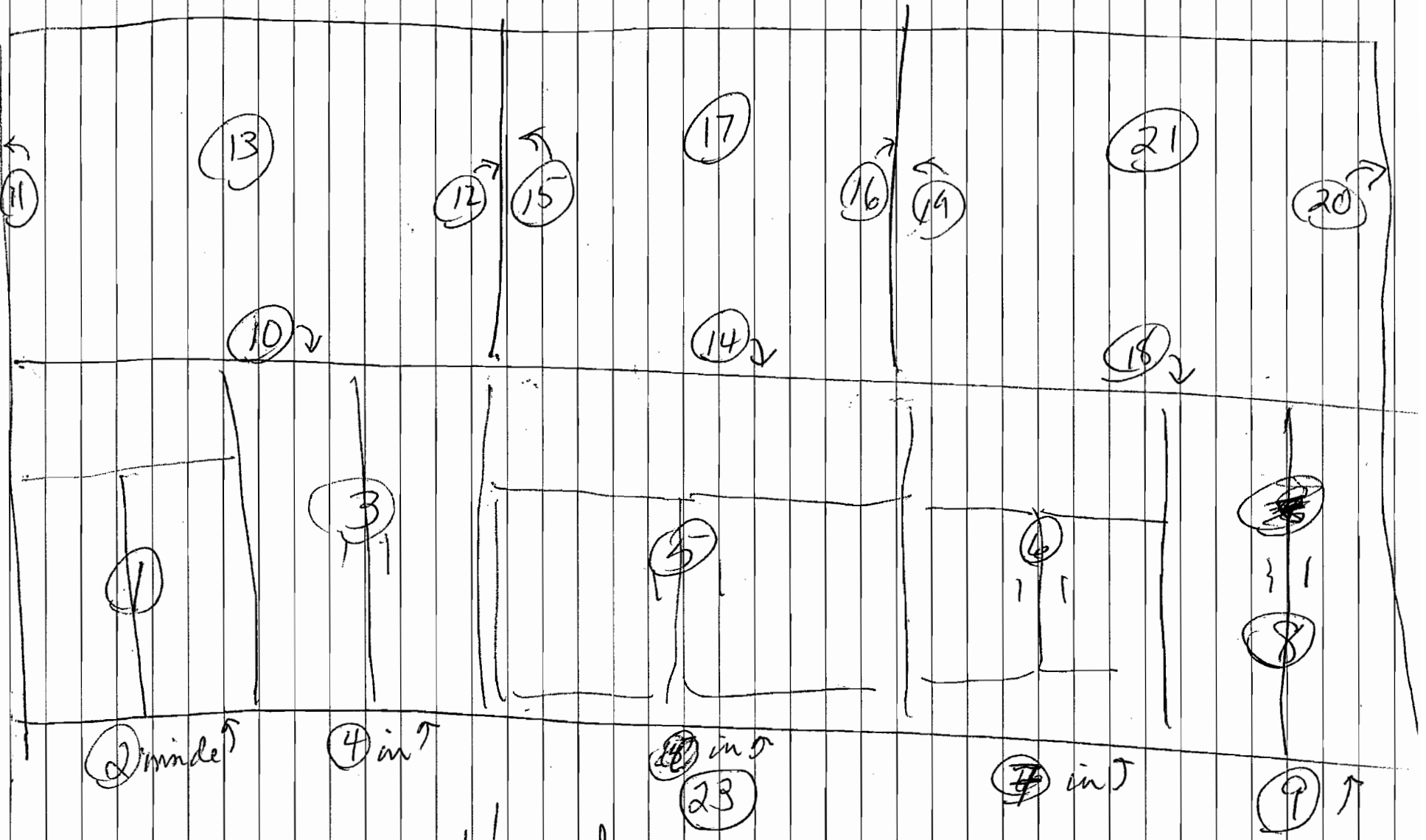
SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1st set 1	**-1	0.35	102.9	74.93	39.22	0.44	0.92
2	**-2	3.00	105.4	34.33	19.71	0.75	5.13
3	**-3	3.00	100.8	28.00	21.82	1.30	8.77
4	**-4	3.00	139.0	106.67	11.18	0.53	12.42
5	**-5	3.00	151.4	36.67	19.07	1.42	16.05
6	**-6	3.00	130.3	40.33	18.18	1.69	19.69
7	**-7	3.00	140.6	50.33	16.28	0.94	23.32
8	**-8	3.00	104.6	27.00	22.22	0.94	26.95
9	**-9	3.00	106.3	27.33	22.09	1.13	30.58
10	**-10	3.00	114.8	31.67	20.52	1.35	34.22
blank 11	**-11	3.00	102.9	29.67	21.20	0.70	37.86
Xtra 12	**-12	3.00	107.1	28.67	21.57	0.53	41.49

SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
2nd set 1	**-1	3.00	128.8	31.33	20.63	0.42	3.54
2	**-2	3.00	120.3	34.67	19.61	0.71	7.17
3	**-3	3.00	116.9	74.33	13.39	0.40	10.80
4	**-4	3.00	127.1	20.67	25.40	1.58	14.43
5	**-5	3.00	143.0	21.67	24.81	1.41	18.07
6	**-6	3.00	122.9	40.33	18.18	1.16	21.70
7	**-7	3.00	120.7	28.67	21.57	1.15	25.44
8	**-8	3.00	118.5	30.33	20.97	1.02	29.06
9	**-9	3.00	119.2	28.00	21.82	1.08	32.70
10	**-10	3.00	122.2	19.33	26.26	1.24	36.33
11	**-11	3.00	123.2	22.00	24.62	1.23	39.97
12	**-12	3.00	123.7	30.67	20.85	0.58	43.59
13	**-13	3.00	118.6	66.33	14.18	0.87	47.24
14	**-14	3.00	121.3	28.67	21.57	1.18	50.88
15	**-15	3.00	98.2	31.00	20.74	1.01	54.52
16	**-16	3.00	164.9	27.00	22.22	1.63	58.17
17	**-17	3.00	120.2	33.00	20.10	0.41	61.80
18	**-18	3.00	134.8	73.67	13.45	0.37	65.45

SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
19 1	**-1	3.00	136.0	26.00	22.65	0.54	3.55
2	**-2	3.00	120.2	335.67	6.30	0.07	7.17
3	**-3	3.00	173.0	34.33	19.71	5.23	10.81
4	**-4	3.00	130.8	33.00	20.10	0.93	14.45
23 5	**-5 blank	3.00	107.9	29.00	21.44	0.43	18.08
6	**-6	3.00	127.4	33.67	19.90	1.21	21.72
7	**-7	3.00	99.1	29.33	21.32	0.91	25.35
8	**-8	3.00	103.4	29.33	21.32	0.67	28.98
9	**-9	3.00	103.3	27.67	21.95	0.56	32.61
10	**-10	3.00	124.2	25.67	22.79	1.03	36.25
11	**-11	3.00	107.6	29.33	21.32	0.64	39.90
12	**-12	3.00	110.9	33.00	20.10	0.46	43.53
31 13	**-13	3.00	124.2	27.33	22.09	0.68	47.18
14	**-14	3.00	103.9	31.33	20.63	0.89	50.82
15	**-15	3.00	139.3	31.33	20.63	0.78	54.47

SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
#20 2nd set 1	**-1	3.00	121.1	28.00	21.82	0.47	3.61

1/5/2011
AR 8270



(23) C-14/H3 cam w/ blue tape
(24) C-14/H3 other cam

1/6/11
Sparla

SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	**-1	3.00	120.4	27.33	22.09	0.27	3.61
2	**-2	3.00	143.0	26.33	22.50	0.39	7.25
3	**-3	3.00	116.7	27.00	22.22	0.42	10.88
4	**-4	3.00	142.1	42.67	17.68	0.26	14.50
5	**-5	3.00	121.0	26.33	22.50	0.70	18.13
6	**-6	3.00	113.0	23.00	24.08	0.37	21.76
7	**-7	3.00	124.7	25.00	23.09	0.90	25.38
8	**-8	3.00	113.1	28.00	21.82	0.35	29.01
9	**-9	3.00	142.0	34.00	19.80	0.40	32.65
10	**-10	3.00	115.5	32.67	20.20	0.50	36.28
11	**-11	3.00	127.6	20.67	25.40	0.30	39.93
12	**-12	3.00	123.4	29.33	21.32	0.55	43.56
13	**-13	3.00	122.6	28.33	21.69	0.41	47.20
14	**-14	3.00	116.0	26.00	22.65	0.51	50.83
15	**-15	3.00	110.6	27.00	22.22	0.38	54.48
16	**-16	3.00	117.4	44.67	17.28	0.18	58.11
17	**-17	3.00	130.4	29.00	21.44	0.27	61.75
18	**-18	3.00	131.0	396.33	5.80	0.04	65.40

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
19	1	**-1	3.00	136.2	26.67	22.36	0.29	3.58
20	2	**-2	3.00	106.4	62.00	14.66	0.21	7.20
21	3	**-3	3.00	108.8	30.33	20.97	0.51	10.83
22	4	**-4	3.00	99.0	24.33	23.41	0.45	14.46
23	5	**-5	3.00	129.9	44.00	17.41	0.46	18.10
23	6	**-6	3.00	119.6	27.33	22.09	0.75	21.73
24	7	**-7	3.00	137.4	29.00	21.44	0.34	25.36
#18	8	**-8	3.00	133.3	231.67	7.59	0.09	28.98

2nd time

SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
#18 1	**-1	3.00	132.2	42.67	17.68	0.29	3.60

3rd time

1/18/2011
OK TONIA

Hot lab 270	1/13/2011
1	hood 3 left inside
2	right inside upper
3	center upper
4	blank
5	hood 2 left upper
6	right upper
7	center upper
8	hood 1 left upper
9	right upper
10	center upper

Hot lab	1/14/2011
B 1	vent front
B 2	vent back
B 3	vent center
B 4	vent right
B 5	vent left
B 6	blank

↑ vent above center island in ARB 270

Spole 1/17/11

SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	1 **-1	1.00	110.0	25.00	40.00	1.08	2.01
	2 **-2	1.00	115.7	26.00	39.22	1.31	3.61
	3 **-3	1.00	113.6	24.00	40.82	1.82	5.22
	4 **-4	1.00	108.5	27.00	38.49	2.21	6.83
	5 **-5	1.00	113.4	192.00	14.43	0.56	8.46
	6 **-6	1.00	114.6	49.00	28.57	2.28	10.06
	7 **-7	1.00	116.4	15.00	51.64	5.17	11.69
	8 **-8	1.00	110.6	26.00	39.22	4.40	13.29
	9 **-9	1.00	110.2	42.00	30.86	2.14	14.93
10	10 **-10	1.00	114.5	26.00	39.22	2.35	16.52
B1	11 **-11	1.00	113.6	33.00	34.82	1.92	18.16
B2	12 **-12	1.00	118.0	23.00	41.70	3.47	19.77
B3	13 **-13	1.00	109.0	28.00	37.80	1.35	21.41
B4	14 **-14	1.00	111.8	19.00	45.88	1.45	23.01
B5	15 **-15	1.00	106.5	61.00	25.61	0.49	24.64
B6	16 **-16	1.00	107.0	37.00	32.88	0.84	26.26

2nd time

SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	1 **-1	1.00	110.2	21.00	43.64	2.01	2.01
	2 **-2	1.00	115.5	27.00	38.49	1.85	3.61
	3 **-3	1.00	113.8	33.00	34.82	1.16	5.24
	4 **-4	1.00	109.4	22.00	42.64	1.97	6.84
	5 **-5	1.00	115.0	27.00	38.49	1.49	8.46
	6 **-6	1.00	115.6	26.00	39.22	2.06	10.06
	7 **-7	1.00	116.3	36.00	33.33	1.65	11.69
	8 **-8	1.00	111.0	31.00	35.92	1.33	13.29
	9 **-9	1.00	110.5	35.00	33.81	0.85	14.92
10	10 **-10	1.00	114.6	22.00	42.64	1.39	16.52
B1	11 **-11	1.00	115.0	28.00	37.80	1.30	18.16
B2	12 **-12	1.00	118.0	22.00	42.64	2.46	19.76
B3	13 **-13	1.00	108.1	19.00	45.88	1.51	21.39
B4	14 **-14	1.00	112.2	21.00	43.64	0.83	23.01
B5	15 **-15	1.00	107.0	132.00	17.41	0.11	24.64
B6	16 **-16	1.00	107.6	18.00	47.14	0.62	26.24

Spole
1/17/11

SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
3rd time							
5 1	**-1	1.00	112.1	14.00	53.45	0.61	1.62
BS 2	**-2	1.00	107.2	22.00	42.64	0.23	3.22

BECKMAN INSTRUMENTS, INC.
LS ANALYZER

9 MAY 2013 17:03

Admin Res Bldg

ARB 271

1-20

70 eff

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	1	**-1	3.00	99.2	24.33	23.41	4.59	3.69
2	2	**-2	3.00	100.4	30.00	21.08	3.37	7.44
3	3	**-3	3.00	101.7	23.67	23.74	2.19	11.08
4	4	**-4	3.00	102.6	24.00	23.57	2.50	14.72
5	5	**-5	3.00	104.4	24.33	23.41	1.51	18.35
6	6	**-6	3.00	100.8	26.00	22.65	1.61	22.09
7	7	**-7	3.00	101.2	27.33	22.09	2.05	25.74
8	8	**-8	3.00	100.9	29.00	21.44	1.35	29.36
9	9	**-9	3.00	100.7	20.67	25.40	1.99	33.00
10	10	**-10	3.00	102.4	21.67	24.81	1.66	36.74
11	11	**-11	3.00	103.3	25.00	23.09	1.11	40.49
12	12	**-12	3.00	102.5	23.00	24.08	1.87	44.24
13	13	**-13	3.00	102.5	27.00	22.22	1.58	47.88
14	14	**-14	3.00	104.9	24.67	23.25	1.55	51.51
15	15	**-15	3.00	102.9	28.33	21.69	1.71	55.27
16	16	**-16	3.00	103.1	24.00	23.57	1.48	59.02
17	17	**-17	3.00	101.3	21.00	25.20	1.93	62.65
18	18	**-18	3.00	101.9	26.00	22.65	1.47	66.30

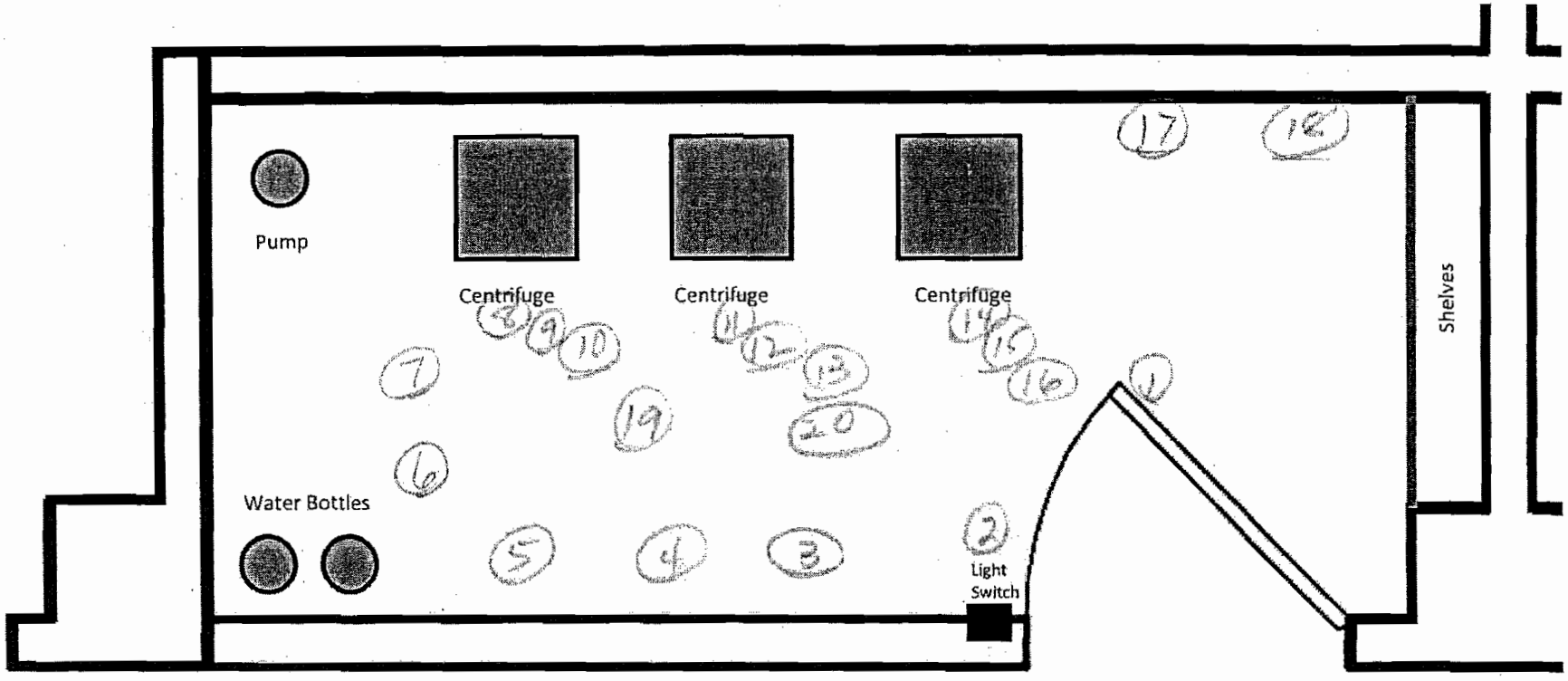
	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
19	1	**-1	3.00	102.0	23.33	23.90	0.98	3.54
20	2	**-2	3.00	102.8	23.67	23.74	1.24	7.18

ARB 271 = B
1B - 20B

Wipes ARB~~256/254~~ 271 1B-20B

1. Door handle
2. Light switch
3. Floor
4. Wall
5. Floor
6. Floor
7. Floor
8. Over centrifuge
9. Centrifuge
10. Floor
11. Over centrifuge
12. Centrifuge
13. Floor
14. Over centrifuge
15. Centrifuge
16. Floor
17. Floor
18. Wall
19. Floor
20. Floor

ARB 271
Centrifuge Room
4-4-13 Dave



Admin Bldg. ARB 273

1–50 + blank

165 sq ft.

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	1	**-1	3.00	329.3	21.67	24.81	2.61	3.69
2	2	**-2	3.00	331.3	22.67	24.25	2.10	7.42
3	3	**-3	3.00	331.6	18.33	26.97	2.53	11.15
4	4	**-4	3.00	331.0	20.00	25.82	2.05	14.89
5	5	**-5	3.00	329.7	24.00	23.57	1.90	18.62
6	6	**-6	3.00	334.2	22.33	24.43	2.03	22.35
7	7	**-7	3.00	332.1	22.67	24.25	1.64	26.09
8	8	**-8	3.00	332.9	21.33	25.00	1.77	29.82
9	9	**-9	3.00	330.6	18.00	27.22	2.68	33.55
10	10	**-10	3.00	329.7	20.00	25.82	1.84	37.30
11	11	**-11	3.00	330.2	19.67	26.04	2.32	41.06
12	12	**-12	3.00	333.4	19.33	26.26	1.66	44.80
13	13	**-13	3.00	333.3	24.33	23.41	0.90	48.53
14	14	**-14	3.00	331.6	22.00	24.62	1.45	52.29
15	15	**-15	3.00	332.8	27.33	22.09	1.32	56.02
16	16	**-16	3.00	332.3	22.33	24.43	1.45	59.77
17	17	**-17	3.00	335.1	20.00	25.82	1.59	63.52
18	18	**-18	3.00	332.3	22.00	24.62	1.27	67.27

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
19	1	**-1	3.00	332.6	21.33	25.00	1.99	3.63
20	2	**-2	3.00	333.6	21.00	25.20	2.00	7.26
21	3	**-3	3.00	332.6	22.00	24.62	1.46	11.00
22	4	**-4	3.00	333.4	19.67	26.04	3.37	14.74
23	5	**-5	3.00	330.0	18.00	27.22	2.18	18.46
24	6	**-6	3.00	335.4	21.00	25.20	2.17	22.20
25	7	**-7	3.00	332.2	22.67	24.25	1.60	25.95
26	8	**-8	3.00	337.8	18.67	26.73	2.75	29.69
27	9	**-9	3.00	334.3	18.67	26.73	4.24	33.42
28	10	**-10	3.00	335.9	24.33	23.41	1.69	37.17
29	11	**-11	3.00	335.6	19.00	26.49	3.21	41.02
30	12	**-12	3.00	333.8	25.00	23.09	1.80	44.77
31	13	**-13	3.00	334.1	23.33	23.90	2.31	48.50
32	14	**-14	3.00	334.1	24.67	23.25	2.40	52.26
33	15	**-15	3.00	331.8	21.33	25.00	1.62	56.00
34	16	**-16	3.00	332.8	20.00	25.82	1.53	59.75
35	17	**-17	3.00	335.1	20.67	25.40	2.46	63.50
36	18	**-18	3.00	336.8	21.67	24.81	2.62	67.26

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
37	1	**-1	3.00	338.9	20.67	25.40	3.79	3.66
38	2	**-2	3.00	335.0	18.33	26.97	3.75	7.39
39	3	**-3	3.00	335.3	22.67	24.25	2.71	11.12
40	4	**-4	3.00	332.9	20.00	25.82	1.95	14.85
41	5	**-5	3.00	333.3	20.00	25.82	2.92	18.59
42	6	**-6	3.00	336.1	22.00	24.62	2.98	22.34
43	7	**-7	3.00	334.8	21.00	25.20	2.34	26.07
44	8	**-8	3.00	333.5	13.00	32.03	3.69	29.82
45	9	**-9	3.00	334.8	21.33	25.00	1.72	33.55
46	10	**-10	3.00	334.9	19.67	26.04	4.59	37.29
47	11	**-11	3.00	336.8	18.67	26.73	2.89	41.04
48	12	**-12	3.00	336.4	23.33	23.90	1.77	44.78
49	13	**-13	3.00	336.2	23.00	24.08	2.59	48.54
50	14	**-14	3.00	334.2	20.00	25.82	2.12	52.29
blank	15	**-15	3.00	338.2	21.33	25.00	2.21	56.04

ARB 273 = C
1C - 50C

Wipes ARB 273 1C - 50C

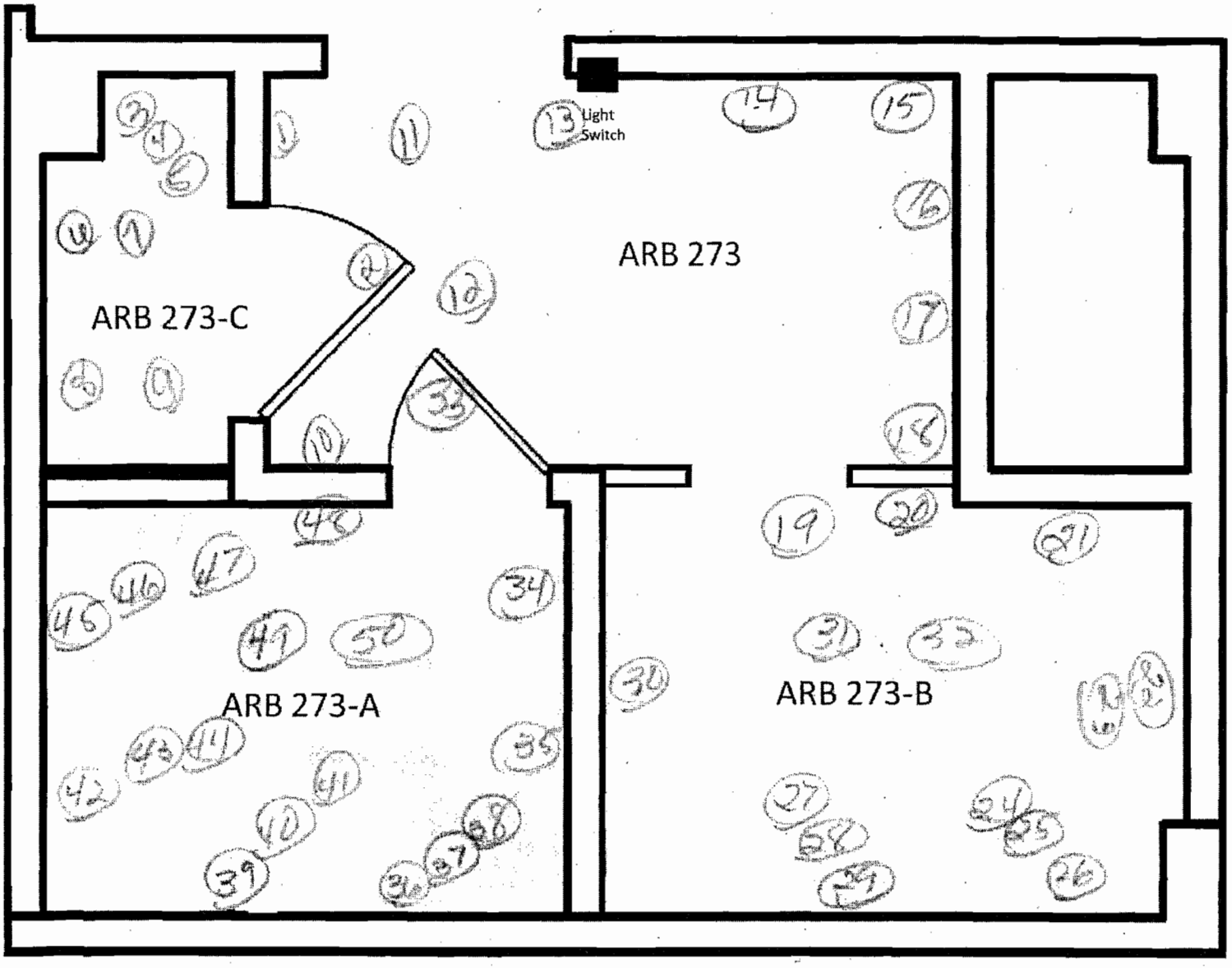
1. Wall
2. Door
3. Shelf
4. Bench
5. Floor
6. Bench
7. Floor
8. Bench
9. Floor
10. Floor
11. Door handle
12. Floor
13. Light switch
14. Wall
15. Floor
16. Wall
17. Floor
18. Wall
19. Floor
20. Floor
21. Floor
22. Bench
23. Floor
24. Shelf
25. Bench
26. Floor
27. Shelf
28. Bench
29. Floor
30. Wall
31. Floor
32. Floor
33. Door handle
34. Wall
35. Wall
36. Shelf
37. Bench
38. Floor
39. Shelf
40. Bench

Wipes ARB273, continued

41. Sink
42. Shelf
43. Bench
44. Floor
45. Shelf
46. Bench
47. Floor
48. Wall
49. Floor
50. floor

Storage ARB 273 A- B -C

4-4-13 Dave



	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	1	**-1	3.00	103.5	**26.00**	22.65	1.23	3.55
2	2	**-2	3.00	104.4	**27.00**	22.22	1.07	7.18
3	3	**-3	3.00	103.0	**25.33**	22.94	1.00	10.81
4	4	**-4	3.00	102.0	**27.67**	21.95	0.84	14.45
5	5	**-5	3.00	102.0	**29.00**	21.44	1.02	18.08
6	6	**-6	3.00	104.5	**21.67**	24.81	1.12	21.82
7	7	**-7	3.00	104.4	**17.00**	28.01	1.97	25.45
8	8	**-8	3.00	103.6	**26.67**	22.36	1.01	29.19
9	9	**-9	3.00	103.3	**24.00**	23.57	1.01	32.81
10	10	**-10	3.00	105.3	**24.33**	23.41	0.69	36.46
11	11	**-11	3.00	104.7	**18.00**	27.22	1.83	40.20
12	12	**-12	3.00	105.4	**18.33**	26.97	1.63	43.85
13	13	**-13	3.00	104.5	**31.67**	20.52	0.79	47.48
14	14	**-14	3.00	103.5	**28.67**	21.57	0.88	51.13
15	15	**-15	3.00	105.8	**32.00**	20.41	0.60	54.87
16	16	**-16	3.00	104.0	**28.00**	21.82	0.82	58.51
17	17	**-17	3.00	103.8	**26.67**	22.36	0.92	62.15
18	18	**-18	3.00	105.1	**24.67**	23.25	0.89	65.79

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
19	1	**-1	3.00	104.2	**25.67**	22.79	0.89	3.55
20	2	**-2	3.00	106.1	**25.33**	22.94	0.96	7.18
21	3	**-3	3.00	104.1	**24.33**	23.41	0.97	10.92
22	4	**-4	3.00	103.5	**23.67**	23.74	0.87	14.65
23	5	**-5	3.00	104.7	**25.33**	22.94	1.07	18.28
24	6	**-6	3.00	103.0	**23.67**	23.74	1.14	21.91
25	7	**-7	3.00	108.7	**24.33**	23.41	0.61	25.65
26	8	**-8	3.00	105.8	**22.00**	24.62	1.35	29.39
27	9	**-9	3.00	106.0	**33.33**	20.00	0.88	33.01
28	10	**-10	3.00	103.5	**25.00**	23.09	1.05	36.75
29	11	**-11	3.00	102.0	**22.00**	24.62	1.06	40.50
30	12	**-12	3.00	107.7	**26.33**	22.50	1.01	44.25
31	13	**-13	3.00	105.1	**20.00**	25.82	1.33	47.89

Admin Res. Bldg
ARB 274 -
212 09 ft.

1-31

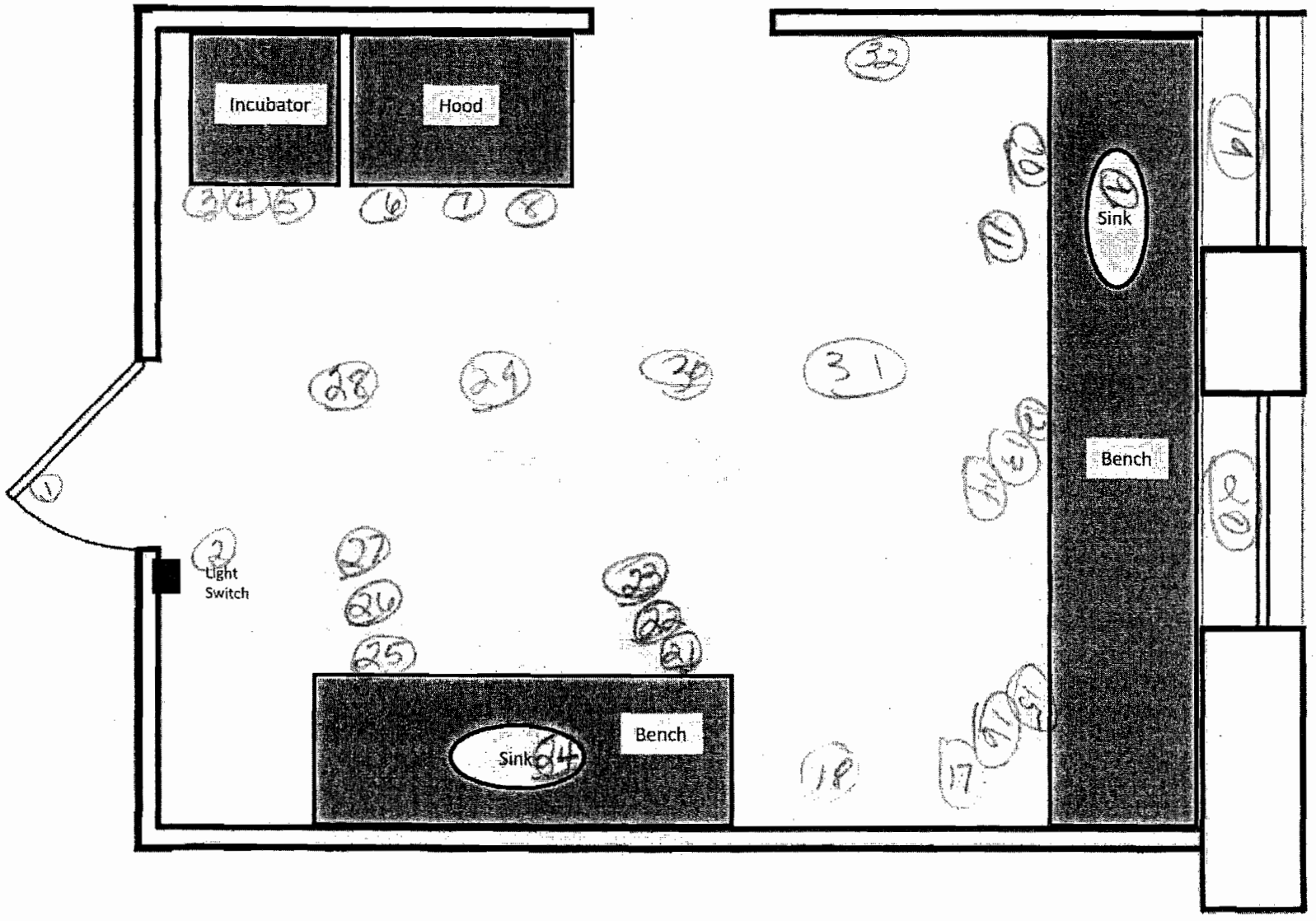
ARB 274 = D
1D - 31D

Wipes ARB 274 1D - 31D

1. Door handle
2. Light switch
3. Outside of incubator
4. Incubator handle
5. Floor
6. Back wall of hood
7. Work surface of hood
8. Floor
9. Sink
10. Cabinet
11. Floor
12. Cabinet
13. Bench
14. Floor
15. Cabinet
16. Bench
17. Floor
18. Floor
19. Window sill
20. Window sill
21. Shelf
22. Bench
23. Floor
24. Sink
25. Shelf
26. Bench
27. Floor
28. Floor
29. Floor
30. Floor
31. Floor

Tissue Culture ARB 274

4-4-13 Dave



Admin Res Bldg
ARB 275-330
1-30 + ~~99~~.
blank

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	1	**-1	3.00	102.7	**29.67**	21.20	0.79	3.65
2	2	**-2	3.00	103.0	**21.00**	25.20	1.21	7.28
3	3	**-3	3.00	102.2	**22.33**	24.43	1.29	10.91
4	4	**-4	3.00	100.2	**24.33**	23.41	1.23	14.65
5	5	**-5	3.00	101.8	**20.33**	25.61	1.29	18.28
6	6	**-6	3.00	103.0	**21.00**	25.20	1.18	22.02
7	7	**-7	3.00	104.7	**19.67**	26.04	1.51	25.65
8	8	**-8	3.00	101.9	**24.00**	23.57	0.95	29.28
9	9	**-9	3.00	104.0	**23.33**	23.90	0.94	33.02
10	10	**-10	3.00	104.0	**22.67**	24.25	1.44	36.65
11	11	**-11	3.00	102.0	**26.33**	22.50	0.91	40.39
12	12	**-12	3.00	103.6	**21.00**	25.20	1.27	44.03
13	13	**-13	3.00	106.7	**24.67**	23.25	0.82	47.68
14	14	**-14	3.00	103.6	**23.00**	24.08	1.63	51.31
15	15	**-15	3.00	103.0	**27.67**	21.95	0.96	54.95
16	16	**-16	3.00	104.7	**22.67**	24.25	1.80	58.60
17	17	**-17	3.00	104.4	**23.33**	23.90	1.17	62.34
18	18	**-18	3.00	101.6	**21.00**	25.20	1.27	65.98

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
19	1	**-1	3.00	106.5	**21.67**	24.81	0.75	3.54
20	2	**-2	3.00	104.1	**26.00**	22.65	1.11	7.29
21	3	**-3	3.00	103.0	**30.00**	21.08	0.88	10.91
22	4	**-4	3.00	104.5	**27.33**	22.09	0.90	14.65
23	5	**-5	3.00	102.8	**23.67**	23.74	1.04	18.28
24	6	**-6	3.00	108.3	**21.67**	24.81	1.32	21.91
25	7	**-7	3.00	105.8	**23.00**	24.08	1.28	25.65
26	8	**-8	3.00	107.3	**27.00**	22.22	0.99	29.39
27	9	**-9	3.00	104.1	**27.00**	22.22	1.02	33.12
28	10	**-10	3.00	105.9	**24.33**	23.41	1.44	36.87
29	11	**-11	3.00	104.6	**25.00**	23.09	1.21	40.51
30	12	**-12	3.00	106.6	**21.33**	25.00	0.97	44.16
blank	13	**-13	3.00	115.0	**19.67**	26.04	1.50	47.90

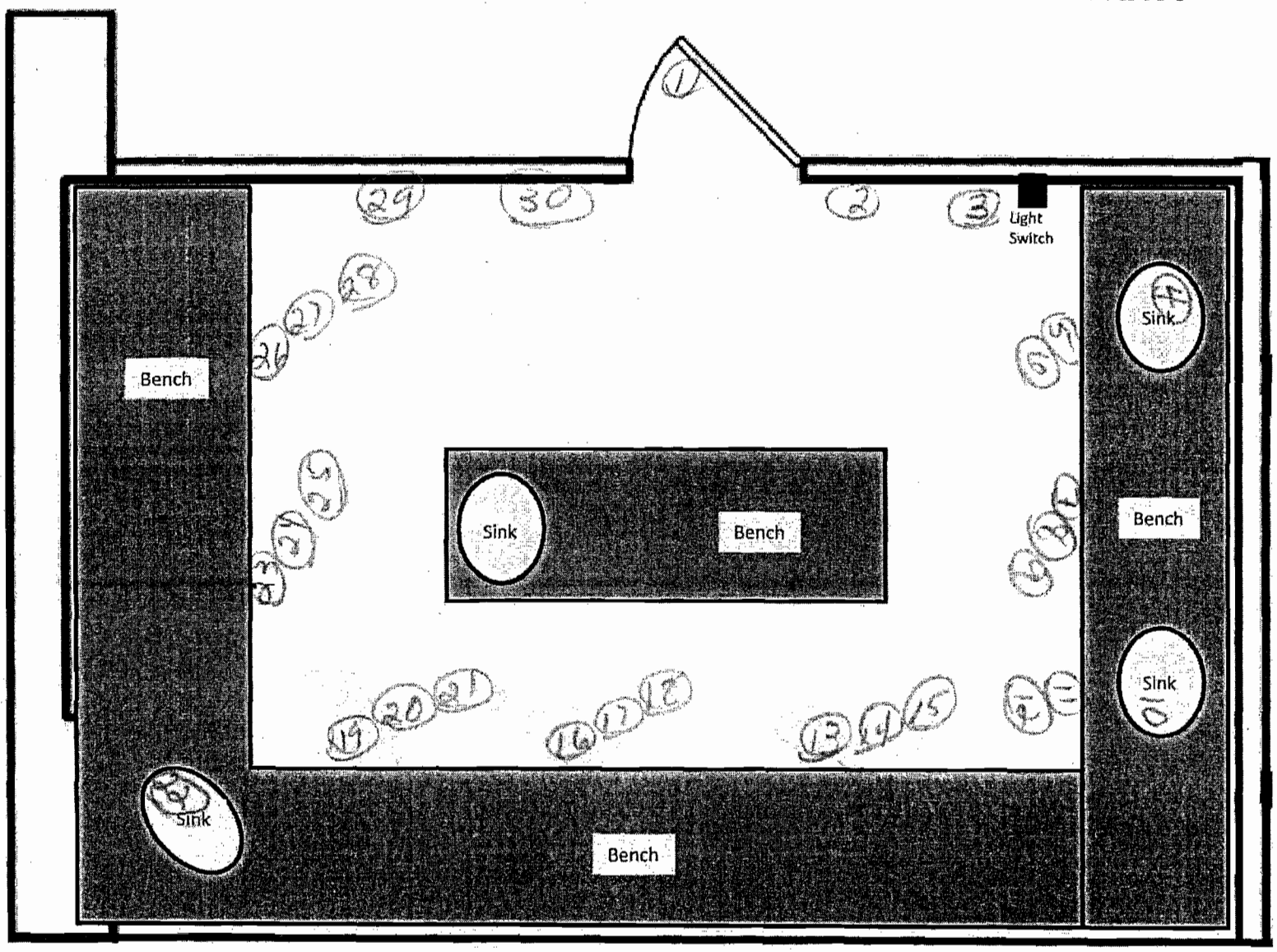
ARB 275 = E
1E - 30E

Wipes ARB 275 1E - 30E

1. Door handle
2. Wall
3. Light switch
4. Sink
5. Cabinet
6. Floor
7. Cabinet
8. Bench
9. Floor
10. Sink
11. Cabinet
12. Floor
13. Cabinet
14. Bench
15. Floor
16. Cabinet
17. Bench
18. Floor
19. Cabinet
20. Bench
21. Floor
22. Sink
23. Cabinet
24. Bench
25. Floor
26. Cabinet
27. Bench
28. Floor
29. Wall
30. floor

Lab ARB 275

4-4-13 Dave



Admin Res Bldg

ARB
278
1 - 40
+ blank

207 sq ft.

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	1	**-1	3.00	332.1	22.67	24.25	1.49	3.70
2	2	**-2	3.00	333.9	21.00	25.20	1.77	7.45
3	3	**-3	3.00	334.5	21.67	24.81	1.71	11.19
4	4	**-4	3.00	333.3	21.33	25.00	1.72	14.94
5	5	**-5	3.00	335.0	19.33	26.26	1.96	18.67
6	6	**-6	3.00	338.8	20.33	25.61	1.75	22.30
7	7	**-7	3.00	333.4	19.00	26.49	1.76	26.03
8	8	**-8	3.00	333.5	18.33	26.97	1.83	29.77
9	9	**-9	3.00	334.9	25.00	23.09	1.68	33.52
10	10	**-10	3.00	334.8	23.33	23.90	1.45	37.25
11	11	**-11	3.00	333.7	23.67	23.74	1.77	41.00
12	12	**-12	3.00	333.9	14.33	30.50	2.48	44.74
13	13	**-13	3.00	335.1	22.67	24.25	1.62	48.49
14	14	**-14	3.00	333.5	19.00	26.49	1.90	52.24
15	15	**-15	3.00	333.9	22.00	24.62	1.94	55.99
16	16	**-16	3.00	333.5	20.67	25.40	1.60	59.74
17	17	**-17	3.00	334.8	16.33	28.57	2.05	63.49
18	18	**-18	3.00	335.4	18.00	27.22	2.22	67.24

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
19	1	**-1	3.00	337.7	20.67	25.40	2.17	3.67
20	2	**-2	3.00	335.8	18.00	27.22	1.97	7.40
21	3	**-3	3.00	336.4	26.33	22.50	1.36	11.16
22	4	**-4	3.00	337.5	20.33	25.61	2.48	14.89
23	5	**-5	3.00	335.5	18.33	26.97	2.66	18.64
24	6	**-6	3.00	334.7	22.67	24.25	2.37	22.38
25	7	**-7	3.00	334.2	19.33	26.26	2.14	26.12
26	8	**-8	3.00	338.7	23.33	23.90	1.69	29.86
27	9	**-9	3.00	334.4	19.67	26.04	2.25	33.60
28	10	**-10	3.00	339.7	22.33	24.43	2.38	37.36
29	11	**-11	3.00	338.7	22.00	24.62	1.74	41.10
30	12	**-12	3.00	334.5	25.00	23.09	2.14	44.86
31	13	**-13	3.00	334.7	23.33	23.90	1.75	48.60
32	14	**-14	3.00	335.5	18.33	26.97	2.20	52.34
33	15	**-15	3.00	338.2	19.33	26.26	2.92	56.09
34	16	**-16	3.00	336.0	22.00	24.62	2.31	59.84
35	17	**-17	3.00	334.4	24.33	23.41	2.31	63.48
36	18	**-18	3.00	334.8	22.00	24.62	2.13	67.24

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
37	1	**-1	3.00	335.3	16.67	28.28	2.52	3.66
38	2	**-2	3.00	335.1	16.67	28.28	2.92	7.40
39	3	**-3	3.00	338.6	25.00	23.09	2.90	11.14
40	4	**-4	3.00	337.4	21.00	25.20	2.30	14.89
blank	5	**-5	3.00	333.3	15.67	29.17	3.00	18.62

ARB 278 = F
1F – 40F

Wipes ARB 278 1F – 40F

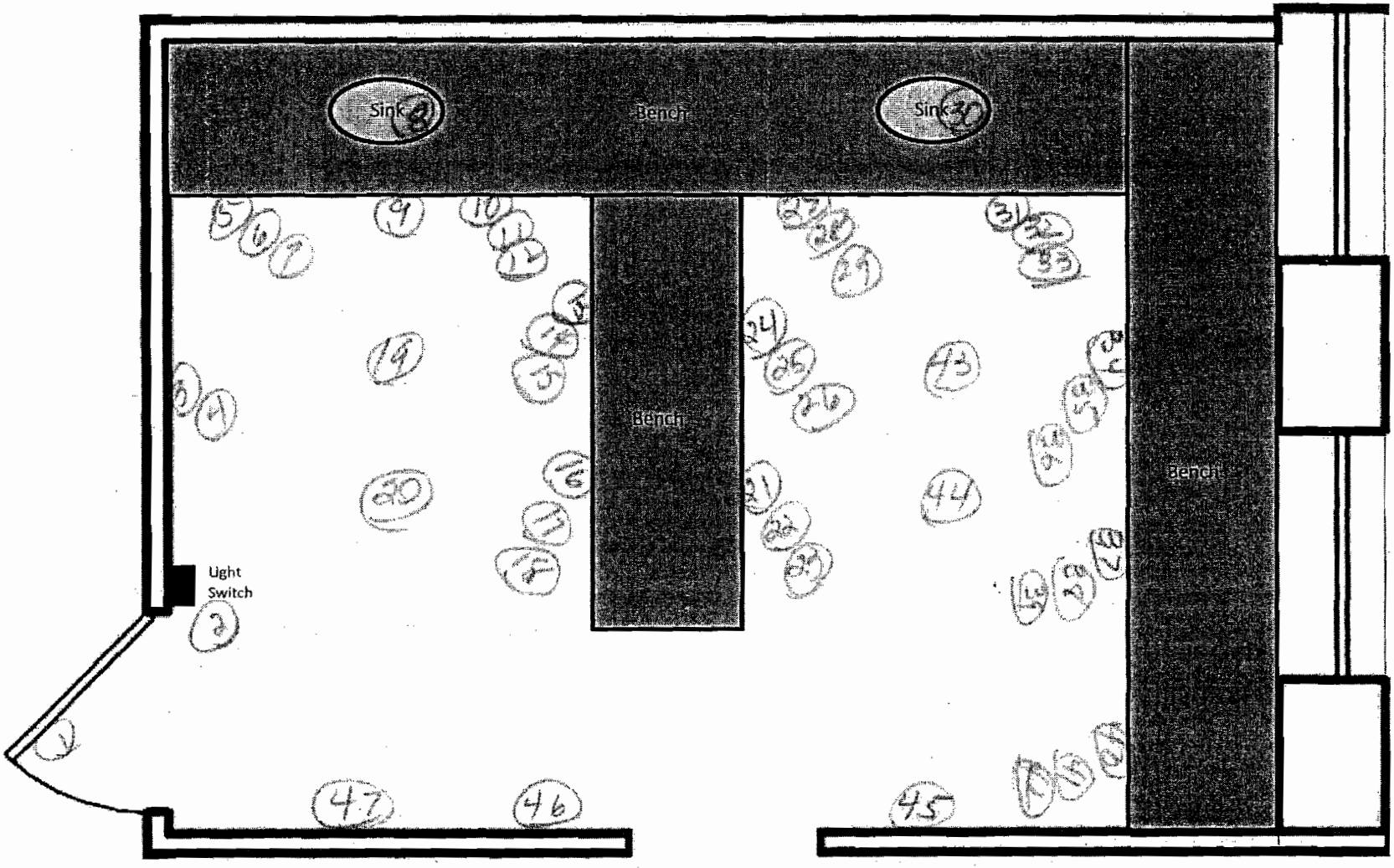
1. Door handle
2. Light switch
3. Wall
4. Floor
5. Cabinet
6. Bench
7. Floor
8. Sink
9. Floor
10. Cabinet
11. Bench
12. Floor
13. Shelf
14. Bench
15. Floor
16. Shelf
17. Bench
18. Floor
19. Floor
20. Floor
21. Shelf
22. Bench
23. Floor
24. Shelf
25. Bench
26. Floor
27. Shelf
28. Bench
29. Floor
30. Sink
31. Shelf
32. Bench
33. Floor
34. Cabinet
35. Bench
36. Floor
37. Cabinet
38. Bench
39. Floor
40. Cabinet

Wipes ARB278, continued

41. bench
42. Floor
43. Floor
44. Floor
45. Wall
46. Wall
47. Wall

Lab ARB 278

4-4-13 Dave



ARB
282
Admin Res Bldg
617 sq ft.

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	1	**-1	3.00	332.1	29.67	21.20	4.41	3.71
2	2	**-2	3.00	330.8	22.00	24.62	2.89	7.45
3	3	**-3	3.00	334.4	18.67	26.73	3.13	11.20
4	4	**-4	3.00	335.0	22.00	24.62	3.23	14.94
5	5	**-5	3.00	334.9	20.33	25.61	4.96	18.69
6	6	**-6	3.00	331.4	21.67	24.81	2.45	22.42
7	7	**-7	3.00	334.1	17.33	27.74	3.17	26.17
8	8	**-8	3.00	334.4	20.33	25.61	2.29	29.90
9	9	**-9	3.00	333.7	21.00	25.20	3.48	33.64
10	10	**-10	3.00	334.0	20.33	25.61	3.60	37.39
11	11	**-11	3.00	334.5	18.67	26.73	2.87	41.14
12	12	**-12	3.00	334.2	26.33	22.50	1.66	44.89
13	13	**-13	3.00	337.8	19.00	26.49	2.78	48.64
14	14	**-14	3.00	336.0	24.00	23.57	1.93	52.39
15	15	**-15	3.00	334.5	17.67	27.47	3.47	56.14
16	16	**-16	3.00	335.2	20.00	25.82	2.42	59.89
17	17	**-17	3.00	333.0	25.00	23.09	1.91	63.64
18	18	**-18	3.00	334.9	20.00	25.82	2.01	67.39

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
19	1	**-1	3.00	336.1	22.33	24.43	1.97	3.70
20	2	**-2	3.00	335.3	20.33	25.61	3.24	7.44
21	3	**-3	3.00	330.8	20.00	25.82	3.30	11.17
22	4	**-4	3.00	337.1	26.67	22.36	2.52	14.93
23	5	**-5	3.00	334.5	21.33	25.00	2.61	18.65
24	6	**-6	3.00	335.7	21.67	24.81	3.51	22.39
25	7	**-7	3.00	337.0	23.00	24.08	3.48	26.12
26	8	**-8	3.00	336.0	21.00	25.20	2.49	29.87
27	9	**-9	3.00	336.6	25.00	23.09	1.64	33.60
28	10	**-10	3.00	337.4	23.33	23.90	2.13	37.36
29	11	**-11	3.00	335.3	26.00	22.65	2.02	41.11
30	12	**-12	3.00	335.0	19.00	26.49	2.72	44.86
31	13	**-13	3.00	335.6	22.33	24.43	2.20	48.60
32	14	**-14	3.00	337.4	21.67	24.81	2.17	52.35
33	15	**-15	3.00	336.7	17.67	27.47	2.83	56.09
34	16	**-16	3.00	337.6	21.67	24.81	2.46	59.83
35	17	**-17	3.00	337.4	18.67	26.73	2.61	63.59
36	18	**-18	3.00	334.1	18.67	26.73	2.60	67.33

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
37	1	**-1	3.00	336.0	18.67	26.73	2.68	3.67
38	2	**-2	3.00	335.7	16.67	28.28	2.51	7.40
39	3	**-3	3.00	337.5	22.00	24.62	2.77	11.14
40	4	**-4	3.00	333.3	26.33	22.50	2.08	14.87
41	5	**-5	3.00	334.2	21.67	24.81	2.61	18.62
42	6	**-6	3.00	334.3	23.00	24.08	2.35	22.35
43	7	**-7	3.00	335.7	21.33	25.00	2.31	26.21
44	8	**-8	3.00	334.7	19.33	26.26	3.25	29.94
45	9	**-9	3.00	335.5	24.67	23.25	2.52	33.69
46	10	**-10	3.00	334.8	19.00	26.49	3.17	37.44
47	11	**-11	3.00	336.0	18.00	27.22	3.75	41.27
48	12	**-12	3.00	336.2	20.33	25.61	3.99	45.03
49	13	**-13	3.00	333.4	17.67	27.47	4.49	48.77
50	14	**-14	3.00	338.1	25.67	22.79	2.71	52.52
51	15	**-15	3.00	332.8	23.67	23.74	3.29	56.27
52	16	**-16	3.00	335.3	25.33	22.94	3.31	60.02
53	17	**-17	3.00	334.8	21.00	25.20	3.62	63.78
54	18	**-18	3.00	335.8	16.67	28.28	4.23	67.52

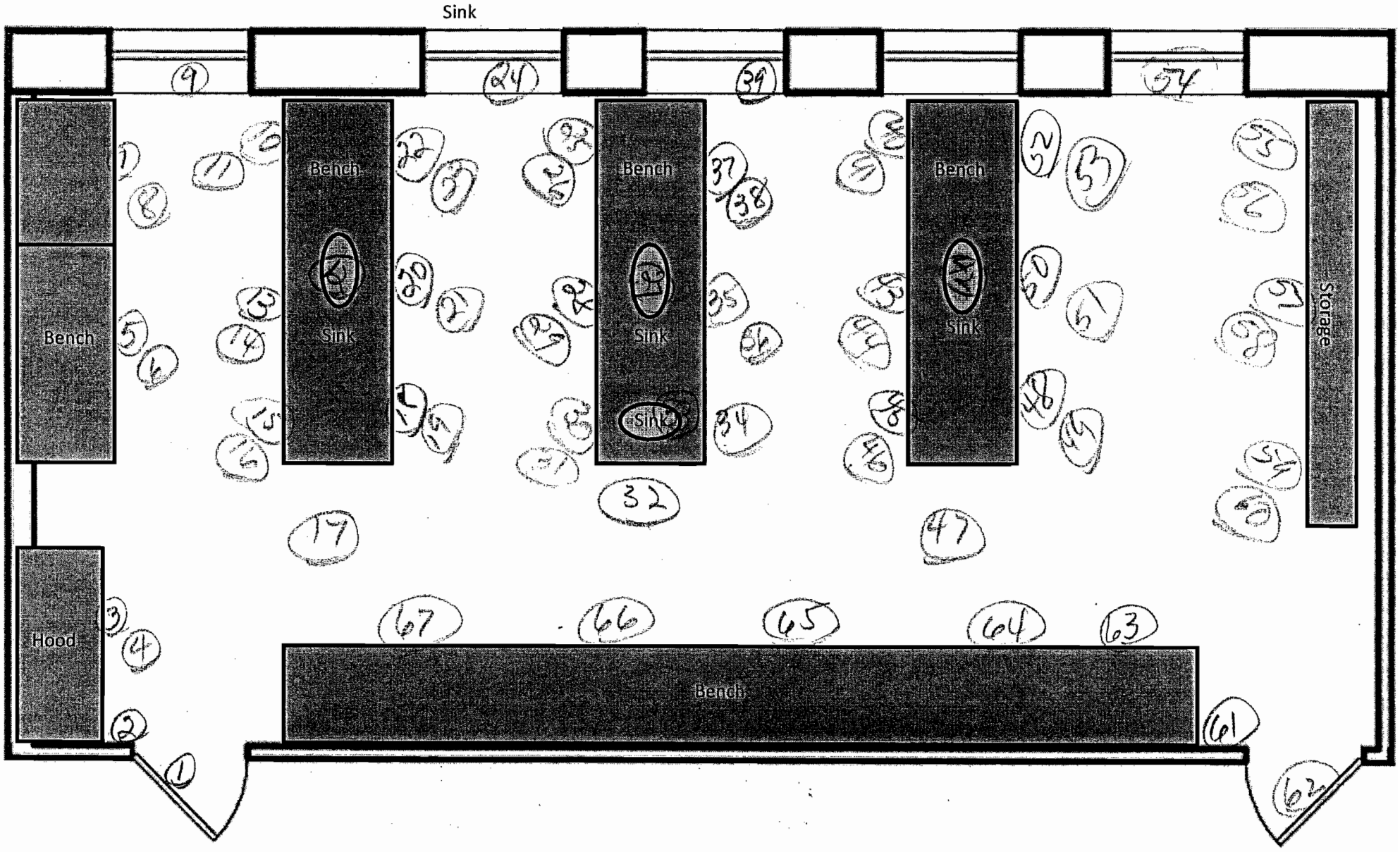
	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
55	1	**-1	3.00	336.4	**20.67**	25.40	3.35	3.67
56	2	**-2	3.00	334.6	**24.00**	23.57	2.12	7.40
57	3	**-3	3.00	336.3	**19.00**	26.49	3.37	11.14
58	4	**-4	3.00	331.6	**21.67**	24.81	2.36	14.89
59	5	**-5	3.00	334.7	**22.00**	24.62	2.54	18.62
60	6	**-6	3.00	335.9	**16.67**	28.28	3.86	22.37
61	7	**-7	3.00	335.8	**22.67**	24.25	3.04	26.11
62	8	**-8	3.00	332.6	**18.33**	26.97	3.60	29.85
63	9	**-9	3.00	335.1	**22.33**	24.43	3.68	33.59
64	10	**-10	3.00	337.9	**21.67**	24.81	3.03	37.34
65	11	**-11	3.00	334.8	**20.67**	25.40	3.27	41.09
66	12	**-12	3.00	336.3	**25.67**	22.79	2.53	44.84
67	13	**-13	3.00	338.1	**20.00**	25.82	3.32	48.59

Wipes ARB 282

1. Door handle
2. Light switch
3. Work surface of hood
4. Floor
5. Bench
6. Floor
7. Bench
8. Floor
9. Window sill
10. Bench
11. Floor
12. Sink
13. Shelf
14. Floor
15. Shelf
16. Bench
17. Floor
18. Bench
19. Floor
20. Shelf
21. Floor
22. Shelf
23. Floor
24. Window sill
25. Bench
26. Floor
27. Sink
28. Bench
29. Floor
30. Bench
31. Floor
32. Floor
33. Sink
34. Floor
35. Bench
36. Floor
37. Shelf
38. Floor
39. Window sill
40. Bench
41. Floor
42. Sink
43. Bench
44. Floor
45. Shelf
46. Floor
47. Floor
48. Bench
49. Floor
50. Shelf
51. Floor
52. Bench
53. Floor
54. Window sill
55. Shelf
56. Floor
57. Shelf
58. Floor
59. Shelf
60. Floor
61. Light switch
62. Door handle
63. Bench
64. Floor
65. Bench
66. Cabinet
67. Floor

Lab ARB 282B FG

4-4-13 Dave



Admin Res Bk

ARB 286
1-42
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186 sgl.

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	1	**-1	3.00	333.7	19.33	26.26	2.67	3.66
2	2	**-2	3.00	331.8	19.33	26.26	2.64	7.39
3	3	**-3	3.00	331.9	17.33	27.74	3.19	11.14
4	4	**-4	3.00	334.0	21.67	24.81	3.45	14.87
5	5	**-5	3.00	329.9	21.33	25.00	3.73	18.63
6	6	**-6	3.00	332.4	22.00	24.62	2.27	22.36
7	7	**-7	3.00	333.9	14.33	30.50	4.83	26.09
8	8	**-8	3.00	332.1	21.33	25.00	2.49	29.73
9	9	**-9	3.00	333.9	20.67	25.40	2.72	33.47
10	10	**-10	3.00	331.7	23.00	24.08	2.20	37.22
11	11	**-11	3.00	332.7	18.33	26.97	3.91	40.98
12	12	**-12	3.00	337.3	25.00	23.09	2.00	44.72
13	13	**-13	3.00	334.9	19.00	26.49	2.40	48.47
14	14	**-14	3.00	334.8	21.00	25.20	2.21	52.22
15	15	**-15	3.00	334.7	21.33	25.00	1.90	55.97
16	16	**-16	3.00	335.5	18.67	26.73	3.05	59.72
17	17	**-17	3.00	335.9	22.67	24.25	2.99	63.47
18	18	**-18	3.00	336.4	20.67	25.40	2.41	67.22

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
19	1	**-1	3.00	334.4	21.67	24.81	1.81	3.65
20	2	**-2	3.00	337.1	25.33	22.94	1.99	7.40
21	3	**-3	3.00	334.3	21.67	24.81	2.30	11.14
22	4	**-4	3.00	336.3	22.67	24.25	3.11	14.89
23	5	**-5	3.00	335.5	21.33	25.00	3.36	18.62
24	6	**-6	3.00	335.0	19.33	26.26	2.59	22.37
25	7	**-7	3.00	335.0	22.67	24.25	2.22	26.11
26	8	**-8	3.00	338.3	17.67	27.47	3.78	29.86
27	9	**-9	3.00	333.5	24.67	23.25	1.82	33.59
28	10	**-10	3.00	338.2	16.00	28.87	2.85	37.34
29	11	**-11	3.00	338.2	25.67	22.79	3.44	40.99
30	12	**-12	3.00	336.0	23.00	24.08	3.46	44.72
31	13	**-13	3.00	334.6	25.33	22.94	2.51	48.47
32	14	**-14	3.00	334.5	22.33	24.43	2.64	52.22
33	15	**-15	3.00	337.9	22.67	24.25	2.05	55.97
34	16	**-16	3.00	335.9	23.00	24.08	2.12	59.72
35	17	**-17	3.00	334.2	20.67	25.40	1.99	63.47
36	18	**-18	3.00	338.0	19.33	26.26	2.52	67.22

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
37	1	**-1	3.00	333.7	20.33	25.61	2.30	3.55
38	2	**-2	3.00	335.3	19.67	26.04	1.34	7.28
39	3	**-3	3.00	334.0	22.67	24.25	2.62	11.02
40	4	**-4	3.00	332.8	18.00	27.22	2.23	14.75
41	5	**-5	3.00	335.1	22.00	24.62	3.41	18.49
42	6	**-6	3.00	335.0	18.33	26.97	2.50	22.24
blank	7	**-7	3.00	331.2	18.33	26.97	12.50	25.98

ARB 286 = G
1G - 42G

Wipes ARB ~~278~~ 286 = G

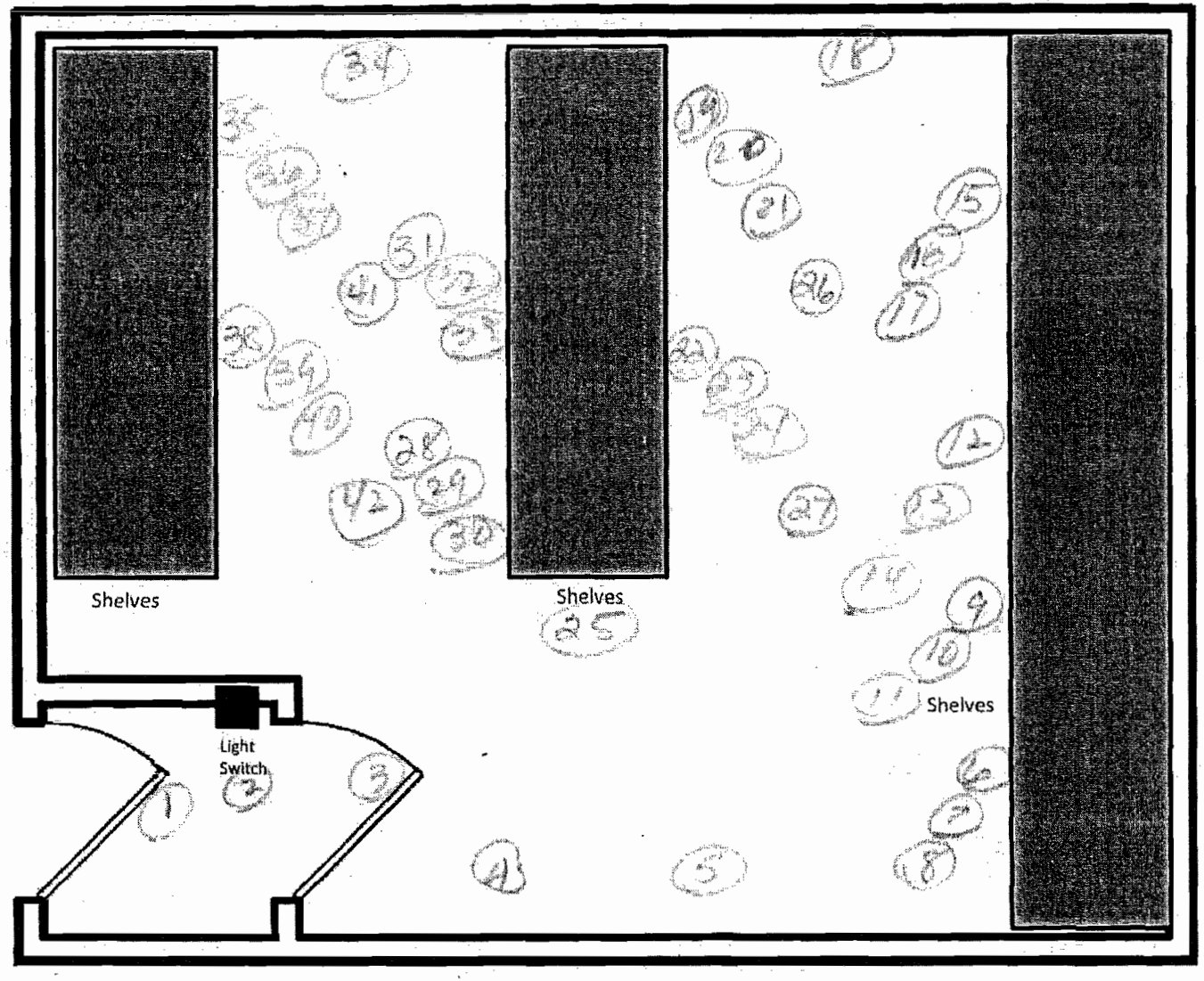
1. Door handle
2. Light switch
3. Door handle
4. Wall
5. Floor
6. Shelf
7. Shelf
8. Floor
9. Shelf
10. Shelf
11. Floor
12. Shelf
13. Shelf
14. Floor
15. Shelf
16. Shelf
17. Floor
18. Wall
19. Shelf
20. Shelf
21. Floor
22. Shelf
23. Shelf
24. Floor
25. Floor
26. Floor
27. Floor
28. Shelf
29. Shelf
30. Floor
31. Shelf
32. Shelf
33. Floor
34. Wall
35. Shelf
36. Shelf
37. Floor
38. Shelf
39. Shelf
40. Floor

Wipes ARB ~~278~~ 286, continued

41. Floor
42. Floor

Admin. Records ARB 286

4-4-13 Dave



ARB 295

1-43 + blank

216 sq ft.

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	1	**-1	3.00	331.8	21.00	25.20	3.12	3.70
2	2	**-2	3.00	332.9	18.00	27.22	2.98	7.45
3	3	**-3	3.00	331.4	22.00	24.62	1.89	11.19
4	4	**-4	3.00	333.4	18.67	26.73	2.95	14.92
5	5	**-5	3.00	334.4	22.00	24.62	2.54	18.67
6	6	**-6	3.00	334.7	19.33	26.26	2.29	22.40
7	7	**-7	3.00	335.3	19.67	26.04	2.05	26.13
8	8	**-8	3.00	333.7	21.67	24.81	1.99	29.87
9	9	**-9	3.00	338.9	18.33	26.97	3.59	33.60
	10	**-10	SAMPLE TERMINATED: elevator malfunction					

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
	MISSING SAMPLE							
10	10	**-10	3.00	331.8	22.67	24.25	6.40	3.80
11	11	**-11	3.00	332.2	21.33	25.00	4.76	7.53
12	12	**-12	3.00	332.0	20.00	25.82	4.64	11.28
13	13	**-13	3.00	332.7	21.00	25.20	4.42	15.01
14	14	**-14	3.00	334.1	18.67	26.73	5.17	18.76
15	15	**-15	3.00	333.8	23.00	24.08	5.72	22.50
	16	**-16	SAMPLE TERMINATED: elevator malfunction					

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
	MISSING SAMPLE							
15	15	**-15	3.00	332.5	22.33	24.43	5.70	4.31
16	16	**-16	3.00	335.5	18.67	26.73	4.58	8.04
17	17	**-17	3.00	335.7	23.33	23.90	3.20	11.79
18	18	**-18	3.00	333.8	21.33	25.00	3.28	15.54

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
19	1	**-1	3.00	338.8	20.67	25.40	1.23	3.65
20	2	**-2	3.00	336.6	21.00	25.20	2.92	7.39
21	3	**-3	3.00	336.0	23.67	23.74	2.76	11.14
22	4	**-4	3.00	337.8	23.00	24.08	1.35	14.87
23	5	**-5	3.00	335.6	23.67	23.74	1.45	18.60
24	6	**-6	3.00	340.0	18.33	26.97	3.84	22.23
25	7	**-7	3.00	336.6	18.33	26.97	2.98	25.97
26	8	**-8	3.00	339.0	22.67	24.25	2.82	29.71
27	9	**-9	3.00	338.0	21.33	25.00	3.56	33.46
28	10	**-10	3.00	338.0	22.33	24.43	1.46	37.20
	11	**-11	SAMPLE TERMINATED: elevator malfunction					

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
	MISSING SAMPLE							
29	11	**-11	3.00	335.3	22.33	24.43	2.12	4.30
30	12	**-12	3.00	337.2	19.33	26.26	2.40	8.04
31	13	**-13	3.00	333.8	19.00	26.49	2.72	11.77
32	14	**-14	3.00	335.3	19.33	26.26	1.83	15.52
33	15	**-15	3.00	336.6	20.00	25.82	2.34	19.26
34	16	**-16	3.00	338.3	24.00	23.57	1.59	23.00
35	17	**-17	3.00	340.5	22.33	24.43	2.04	26.74
36	18	**-18	3.00	337.6	21.67	24.81	1.47	30.47

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
37	1	**-1	3.00	335.1	20.67	25.40	1.75	3.65
38	2	**-2	3.00	339.7	20.00	25.82	2.83	7.28
39	3	**-3	3.00	336.5	24.67	23.25	1.61	11.02
40	4	**-4	3.00	338.9	22.33	24.43	4.07	14.78
41	5	**-5	3.00	333.4	23.33	23.90	2.27	18.51
42	6	**-6	3.00	337.6	21.00	25.20	2.93	22.26
43	7	**-7	3.00	338.2	19.33	26.26	2.68	25.88
blank	8	**-8	3.00	330.7	22.00	24.62	3.53	29.62

ARB 295 = H
1H – 43H

Wipes ARB ~~282~~ 295 = H

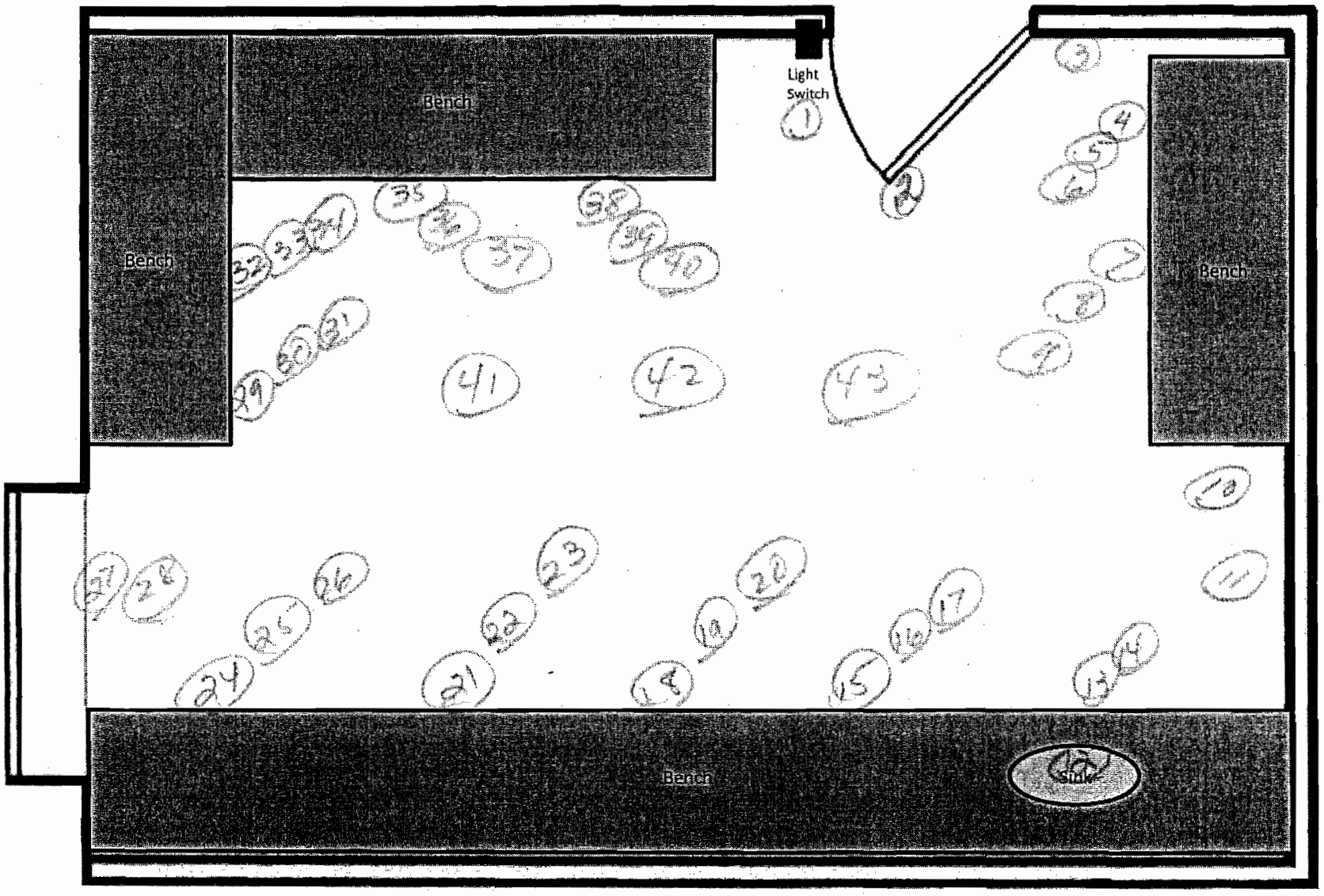
1. Light switch
2. Door handle
3. Wall
4. Cabinet
5. Bench
6. Floor
7. Cabinet
8. Bench
9. Floor
10. Floor
11. Wall
12. Sink
13. Shelf
14. Floor
15. Shelf
16. Bench
17. Floor
18. Shelf
19. Bench
20. Floor
21. Shelf
22. Bench
23. Floor
24. Wall
25. Floor
26. Cabinet
27. Bench
28. Floor
29. Cabinet
30. Bench
31. Floor
32. Cabinet
33. Bench
34. Floor
35. Cabinet
36. Bench
37. Floor
38. Cabinet
39. Bench
40. Floor

Wipes ARB295, continued

41. Floor
42. Floor
43. Floor

Lab ARB 295

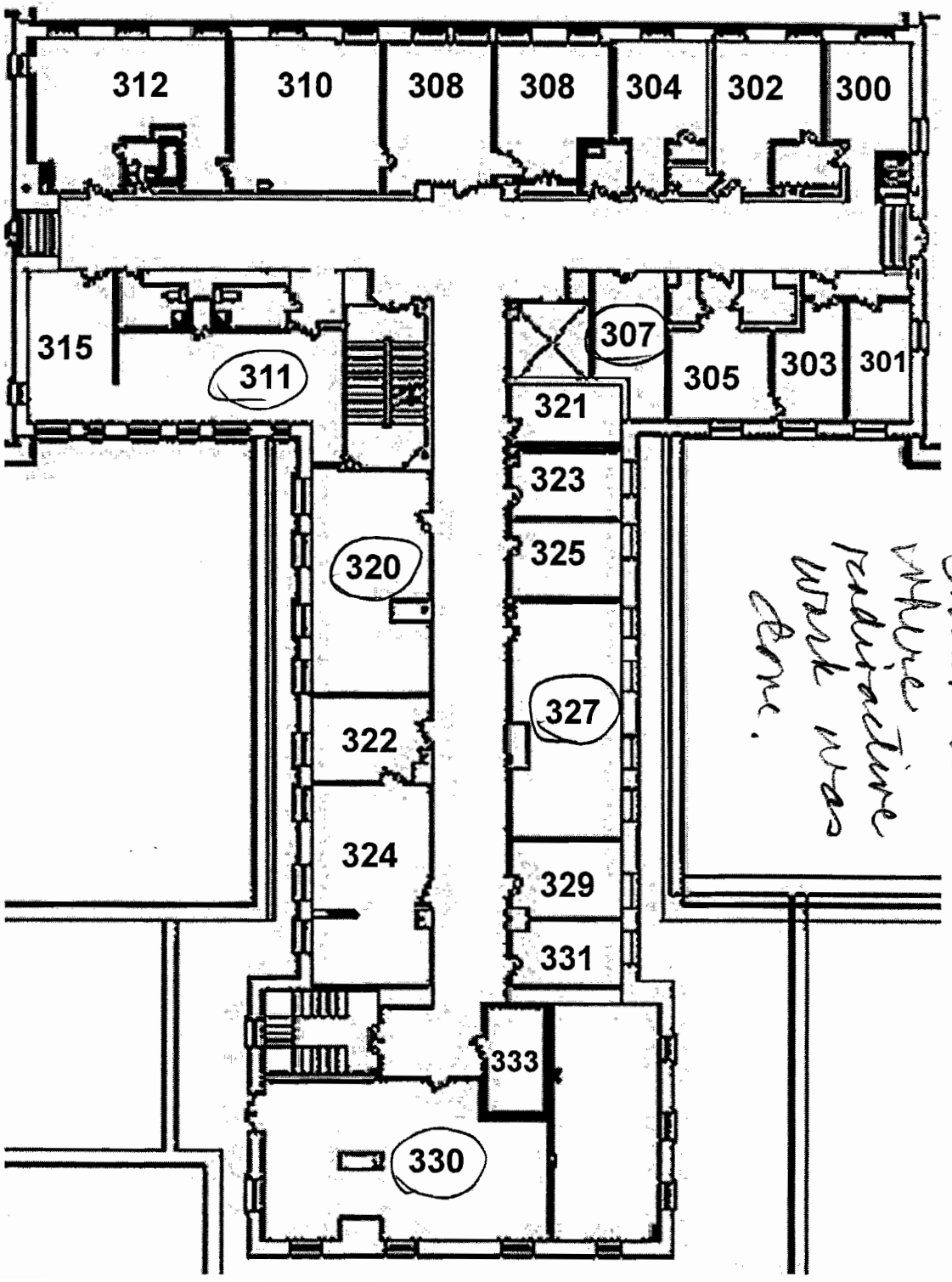
4-4-13 Dave



ARB
Third Floor

Rev. 3-14-12 - Dave

Research Rooms 3rd Floor A/R Building		
OCCUPANT/USE Rev. 3-14-12 - Dave	ROOM#	TOTAL SQ FT
Audrey Maxwell Riddle	300	169
Michelle Stofa	301	122
Thomas Shaffer, PhD	302	224
Dustin Samples	303	107
Research Asst. Group Office	304	200
Kristen Jones - Erico Yasuda	305	168
Core	307	125
Yvonne Edney/Barbara Gray	308	444
Robert Brent, MD, PhD	310	302
Robert Brent, MD, PhD	311	292
Robert Brent, MD, PhD	312	395
Robert Brent, MD, PhD	315	200
Biosafety Level 1 Lab	320	358
Isotope Counting Room	321	95
Core	322	135
Diane Preske	323	111
Tissue Culture	324	199
Martha Fleming	325	124
Shunji Tomatsu	327	382
Instrument Room	329	111
Fawcett Lab	330	596
Shunji Tomatsu	331	122
Cold Room	333	80
Storage Space 1 (above AR-308)	Attic	249
Storage Space 2 (above AR-304)	Attic	136
Total without Hallway		5,446
Hallway		1,607
Total with Hallway		7,053



Admin Res Bldg

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	1	**-1	3.00	331.6	**17.67**	27.47	9.89	3.68
2	2	**-2	3.00	331.8	**23.00**	24.08	8.79	7.44
3	3	**-3	3.00	328.9	**25.67**	22.79	7.63	11.19
4	4	**-4	3.00	329.1	**21.67**	24.81	9.20	14.95
5	5	**-5	3.00	330.5	**20.00**	25.82	9.87	18.70
6	6	**-6	3.00	331.6	**22.33**	24.43	7.79	22.45
7	7	**-7	3.00	330.0	**26.00**	22.65	7.10	26.20
8	8	**-8	3.00	329.4	**21.67**	24.81	7.72	29.95
9	9	**-9	3.00	331.7	**24.67**	23.25	7.60	33.70

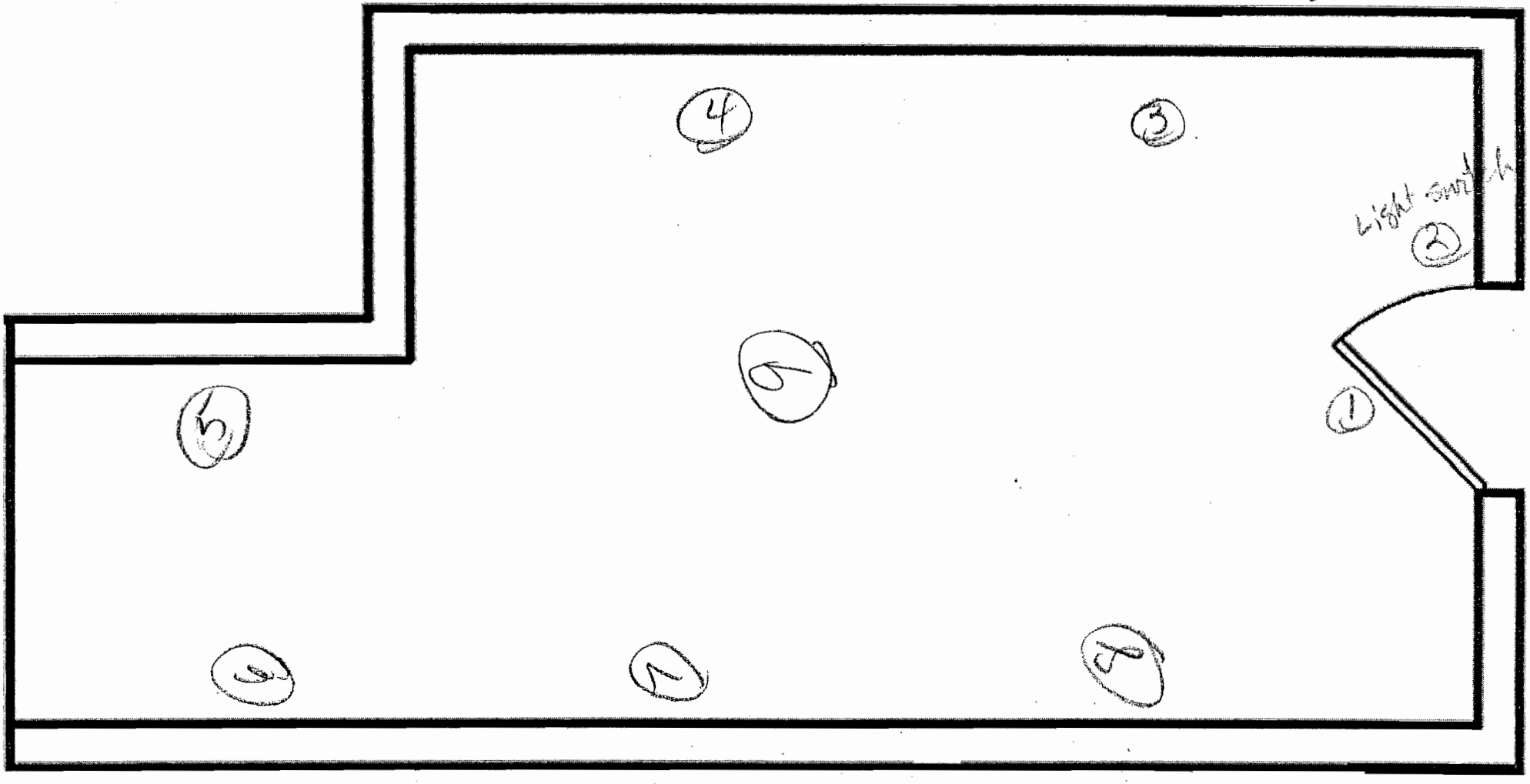
ARB 307

125 ~~8~~ ft.

Info-Systems Closet ARB 307 H-2

4-4-13 Dave

formerly refrigerator freezer room



ARB 311 Admin Research Bldg
Room 311
292 sqft. OK

MAR. 15. 2007

Protocol #:15 Name:H3/C14/P32 13-Feb-2007 14:53
Region A: LL-UL= 0.0-12.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region B: LL-UL=12.0-156. Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region C: LL-UL=156.-1700 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Time = 4.00 QIP = tSIE/AEC ES Terminator = Count
Conventional DPM
Nuclide 1 = 256256 Nuclide 2 = 109200

S#	TIME	CPMA	DPM1	CPMB	DPM2	CPMC	tSIE	FLAG	
1	4.00	9.50	18.45	10.25	11.62	9.50	406.		Blank
2	4.00	18.50	36.36	13.00	13.96	13.75	444.		White nozzled Control bottle
3	4.00	22.00	43.75	13.25	13.88	9.75	448.		Red " " "
4	4.00	20.00	38.55	17.00	18.72	15.00	440.		Area to the right of isotope sink
5	4.00	13.75	24.15	17.75	20.28	13.25	453.		Around sink
6	4.00	26.25	51.98	15.75	16.49	12.25	451.		Behind "
7	4.00	16.00	30.53	13.00	14.22	13.25	453.		Faucet + handles
8	4.00	23.50	45.71	16.00	17.08	12.75	455.		D.I. Faucet + handles
9	4.00	15.50	29.05	14.25	15.80	11.75	453.		In sink
10	4.00	30.25	61.02	15.75	16.06	12.75	447.		Wire Grates
11	4.00	21.25	42.77	13.50	14.30	17.75	434.		Floor in front of isotope sink
12	4.00	18.00	33.69	16.25	17.98	14.00	456.		" " " " " lab bench
13	4.00	45.00	94.13	12.25	10.18	10.25	449.		Lab bench # 4
14	4.00	26.50	52.24	16.00	16.76	14.25	455.		" " # 5
15	4.00	48.50	98.84	16.25	14.69	9.75	462.		Light switch
16	4.00	80.00	167.11	14.00	8.54	13.25	462.		Door handle - outside
17	4.00	34.75	71.05	13.50	12.81	10.75	453.		" " - inside
18	4.00	16.75	32.50	12.25	13.22	13.75	450.		Incubator outside door + handle
19	4.00	13.00	23.72	13.25	14.83	15.00	461.		" inside glass door + handle
20	4.00	33.25	67.49	14.50	14.20	12.25	452.		Incubator rack
21	4.00	32.25	63.91	19.75	20.75	11.50	449.		Repeat #11
22	4.00	33.75	68.23	15.00	14.75	13.00	455.		" #13
23	4.00	25.75	51.63	12.75	12.86	12.50	455.		" #14
24	4.00	16.50	31.07	14.75	16.31	12.50	453.		Area to the right of incubator
25	4.00	19.00	35.98	16.25	17.88	12.25	453.		Repeat #6
26	4.00	18.50	34.35	17.50	19.46	14.00	457.		" #7
27	4.00	18.50	36.16	12.25	13.03	13.25	454.		" #11 + #21
28	4.00	43.50	88.86	16.25	15.23	13.00	455.		" #13 + 22
29	4.00	15.25	27.11	17.50	19.79	13.00	464.		" #15
30	4.00	17.50	32.78	14.00	15.26	11.25	471.		" #16
31	4.00	13.75	24.46	16.50	18.75	12.50	456.		" #17
32	4.00	19.50	36.14	18.50	20.57	13.75	458.		" #11

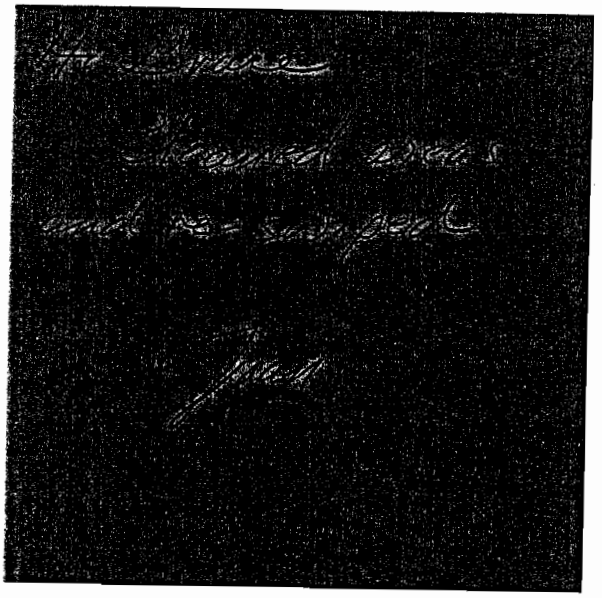
SYSTEM NORMALIZED
C14 IPA DATA PROCESSED
H3 IPA DATA PROCESSED
BKG IPA DATA PROCESSED

Decommissioning of 311/315 CET laboratory
for H3/S35/C14

1

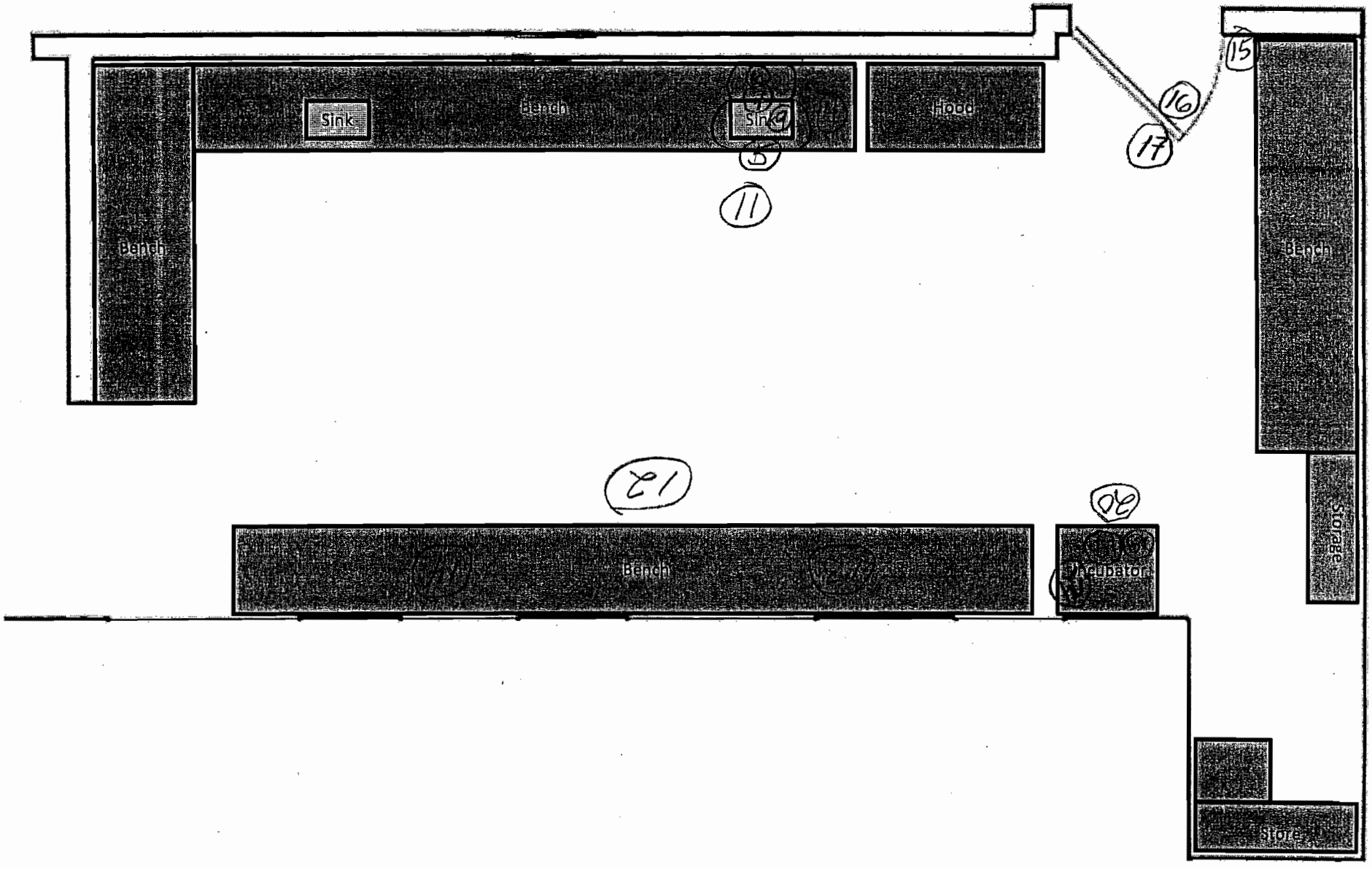
Protocol #:15 Name:HC/C14/P32 27-Mar-2007 13:27
Region A: LL-UL= 0.0-12.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region B: LL-UL=12.0-156. Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region C: LL-UL=156.-1700 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Time = 4.00 DIP = tSIE/AEC ES Terminator = Count
Conventional DPM
Nuclide 1 = 258256 Nuclide 2 = 109200

S#	TIME	CPMA	DPM1	CPME	DPM2	CPMC	tSIE	FLAG	
1	4.00	10.75	30.93	12.00	13.64	7.25	401.	Blank	
2	4.00	10.75	17.68	17.50	20.30	10.00	455.	Lab Bench #4	#13
3	4.00	13.50	25.08	12.75	14.17	14.50	457.	Light Switch	#15
4	4.00	10.75	19.27	14.25	16.28	13.00	476.	Door Handle - Outside	#16



Lab ARB 311

4-16-13 Dave



Admin Res. Bldg

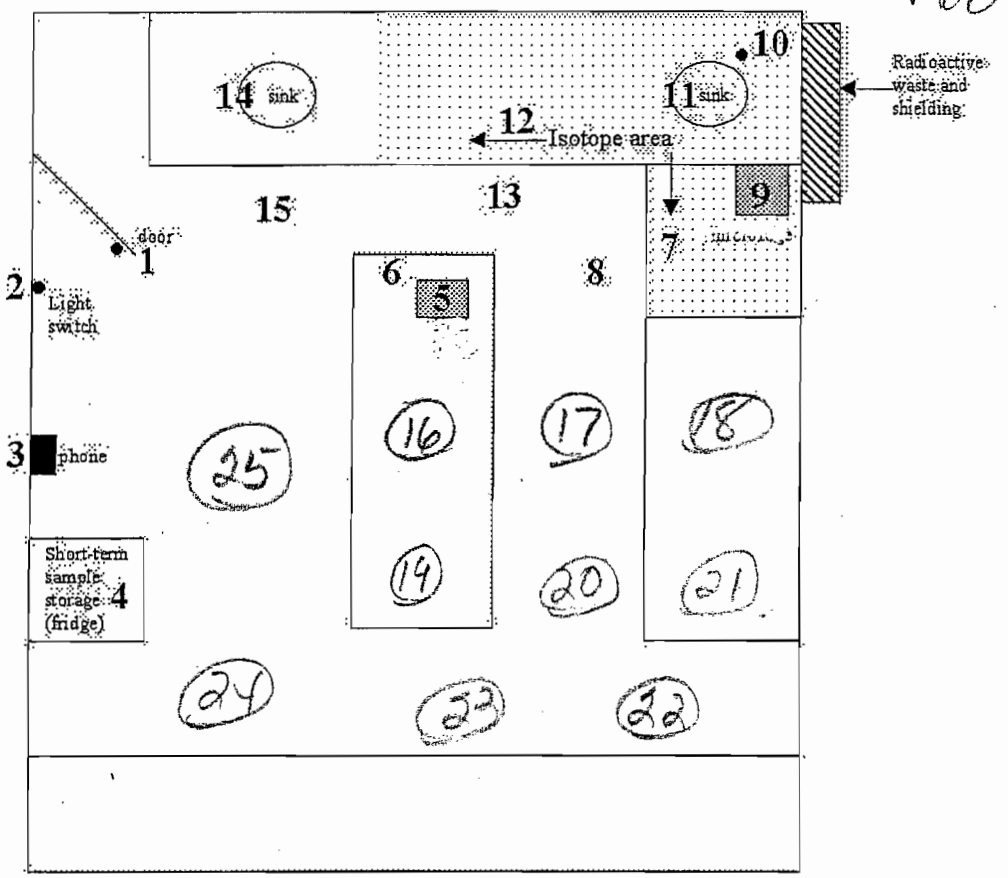
ARB 327

382 sq ft.

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
1	1	**-1	3.00	330.7	26.00	22.65	5.58	3.75
2	2	**-2	3.00	330.5	28.33	21.69	4.17	7.49
3	3	**-3	3.00	333.8	25.00	23.09	4.09	11.23
4	4	**-4	3.00	329.7	27.33	22.09	4.24	14.98
5	5	**-5	3.00	330.5	27.33	22.09	4.89	18.71
6	6	**-6	3.00	331.9	19.67	26.04	6.44	22.46
7	7	**-7	3.00	331.2	21.00	25.20	4.74	26.21
8	8	**-8	3.00	330.1	21.00	25.20	3.72	29.96
9	9	**-9	3.00	331.2	24.67	23.25	3.61	33.69
10	10	**-10	3.00	330.7	21.33	25.00	4.02	37.34
11	11	**-11	3.00	331.2	20.33	25.61	4.47	41.09
12	12	**-12	3.00	331.3	19.00	26.49	5.30	44.84
13	13	**-13	3.00	332.6	19.67	26.04	4.54	48.59
14	14	**-14	3.00	332.2	25.00	23.09	3.37	52.34
15	15	**-15	3.00	332.5	18.00	27.22	4.80	56.09
16	16	**-16	3.00	331.0	19.33	26.26	5.63	59.85
17	17	**-17	3.00	332.6	17.67	27.47	5.17	63.59
18	18	**-18	3.00	331.9	25.00	23.09	2.87	67.34

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
19	1	**-1	3.00	331.5	16.00	28.87	7.46	3.72
20	2	**-2	3.00	330.9	24.00	23.57	5.75	7.47
21	3	**-3	3.00	328.8	23.67	23.74	6.08	11.22
22	4	**-4	3.00	331.8	23.33	23.90	8.17	14.97
23	5	**-5	3.00	330.8	17.00	28.01	8.76	18.72
24	6	**-6	3.00	331.1	22.67	24.25	5.40	22.46
25	7	**-7	3.00	331.3	21.00	25.20	5.00	26.21

Room 327I



Type of flooring	Vinyl tile
Type of walls and ceiling	Plaster, ceiling tile
Bench top material	Epoxy

Admin Res. Bldg
ARB 330
596 sq. ft.

Final
All Wipes of room #330

```
Protocol #:28         Name:H-3/C-14 DPM               02-Jul-2009 10:10
Region A: LL-UL= 0.0-12.0  Lcr=    0  Bkg= 0.00  %2 Sigma=0.00
Region B: LL-UL=12.0-156.  Lcr=    0  Bkg= 0.00  %2 Sigma=0.00
Region C: LL-UL= 0.0- 0.0  Lcr=    0  Bkg= 0.00  %2 Sigma=0.00
Time =  1.00      QIP = tSIE/AEC      ES Terminator = Count
Conventional DPM
Nuclide 1 = 258256      Nuclide 2 = 109200
```

Wipes	S#	TIME	CPMA	CPMB	DPM1	DPM2	SIS	tSIE	FLAG
Blanks	1	1.00	10.00	9.00	19.18	9.98	51.190	437.	Blank Old
	2	1.00	14.00	18.00	25.18	20.61	59.720	435.	" New
2	3	1.00	8.00	15.00	12.76	17.56	57.080	441.	Outside door + handle Revco
3	4	1.00	10.00	12.00	18.10	13.65	42.670	442.	Inside door glass upper
4	5	1.00	11.00	18.00	19.56	21.06	54.670	396.	Top shelf
5	6	1.00	9.00	15.00	15.41	17.50	47.820	418.	2nd shelf
6	7	1.00	16.00	16.00	31.99	18.05	42.410	396.	~~Bottom~~ 3rd shelf
7	8	1.00	7.00	12.00	11.84	14.02	60.220	420.	~~Inside glass door~~ Bottom shelf
8	9	1.00	16.00	12.00	31.64	13.02	33.240	433.	Inside glass door Bottom
9	10	1.00	5.00	16.00	6.34	19.32	77.550	376.	Bench in front of Revco
10	11	1.00	8.00	17.00	13.20	20.23	54.180	378.	Rt side of sink
11	12	1.00	11.00	13.00	20.86	14.84	55.300	410.	Front of sink
12	13	1.00	11.00	14.00	21.59	16.19	36.970	376.	Left side of sink
13	14	1.00	72.00	23.00	167.58	20.80	21.490	371.	— Back of Sink
14	15	1.00	132.00	14.00	299.40	2.98	11.550	407.	— ~~Inside Sink~~ Faucet & Handle
15	16	1.00	51.00	16.00	122.32	14.45	24.990	355.	— ~~Bottom~~ + Inside Sink
16	17	1.00	28.00	20.00	57.90	21.65	21.560	405.	— Bottom + Drain
17	18	1.00	14.00	19.00	25.38	21.85	45.780	420.	Rotor Outside
18	19	1.00	15.00	10.00	30.36	10.68	42.560	426.	Rotor hole
19	20	1.00	14.00	18.00	25.40	20.63	41.240	428.	Inside rotor lid
20	21	1.00	13.00	19.00	23.01	21.98	36.030	423.	Outside rotor lid
21	22	1.00	17.00	10.00	37.45	10.57	36.550	378.	Lid outside Beckman Centrifuge
22	23	1.00	9.00	18.00	[illegible]	[illegible]	[illegible]	[illegible]	Front of " "

	S#	TIME	CPMA	CPMB	DPM1	DPM2	SIS	tSIE	FLAG
22	23	1.00	9.00	14.00	14.12	22.43	56.280	416.	Face of " "
23	24	1.00	12.00	9.00	25.15	9.83	36.530	392.	Door + Handle Vacuum oven
24	25	1.00	11.00	11.00	21.77	12.39	30.910	403.	Inside " "
25	26	1.00	16.00	10.00	34.56	10.65	31.440	386.	Dessicator outside
26	27	1.00	16.00	14.00	35.08	15.75	35.200	354.	" Inside
27	28	1.00	8.00	11.00	14.71	12.71	38.090	407.	Heat Block
28	29	1.00	11.00	10.00	21.49	11.12	31.940	423.	Bench Coat
29	30	1.00	12.00	14.00	23.67	16.05	48.140	385.	Plastic Shield
30	31	1.00	17.00	19.00	33.35	21.65	37.440	395.	Leucite box - outside + IN
31	32	1.00	11.00	17.00	20.26	19.88	41.670	384.	Ecoscint handle + pump
32	33	1.00	23.00	16.00	50.04	17.38	30.370	375.	TRAY 1
33	34	1.00	11.00	11.00	22.87	12.48	33.980	371.	Chimneys Apparatus
34	35	1.00	4.00	13.00	4.72	15.57	65.230	421.	Chimneys
35	36	1.00	12.00	8.00	24.18	8.54	29.880	429.	chimney
36	37	1.00	12.00	17.00	22.98	19.81	53.510	375.	TRAY Plastic
37	38	1.00	9.00	10.00	16.62	11.31	46.960	439.	Rotor F2402H - outside
38	39	1.00	12.00	15.00	21.31	17.11	42.930	450.	" - Rotor hole #14
39	40	1.00	10.00	11.00	18.74	12.45	47.930	429.	" Inside lid
40	41	1.00	6.00	6.00	11.30	6.72	44.320	439.	" Outside lid
41	42	1.00	9.00	14.00	15.48	16.24	58.680	431.	" Inside Rotor
42	43	1.00	14.00	13.00	27.51	14.50	39.410	416.	Centrifuge - Inside well
43	44	1.00	5.00	11.00	7.53	12.98	56.470	432.	" - Inside top
44	45	1.00	7.00	13.00	11.46	15.24	60.500	423.	" - " Lid
45	46	1.00	9.00	12.00	16.52	13.82	35.740	414.	Petri dish (lid + bottom) - Outside
46	47	1.00	8.00	9.00	14.63	10.18	40.310	444.	" " " " - Inside
47	48	1.00	17.00	14.00	32.83	15.35	45.560	442.	" " Lid - inside + Outside
48	49	1.00	12.00	11.00	23.76	12.26	35.770	412.	RACK
49	50	1.00	10.00	15.00	17.25	17.35	53.020	436.	Gel Dryer Outside lid
50	51	1.00	12.00	14.00	21.81	15.89	45.530	443.	" " Inside "
51	52	1.00	9.00	17.00	14.41	19.92	68.330	435.	" " Inside Surface
52	53	1.00	11.00	13.00	20.05	14.78	49.420	439.	" " Sides
53	54	1.00	7.00	14.00	11.24	16.49	58.390	416.	All sides - SAVANT speed VAC
54	55	1.00	16.00	16.00	30.08	17.92	52.810	440.	Top surface w/o lid
55	56	1.00	11.00	10.00	20.89	11.09	54.260	444.	Outside Lid
56	57	1.00	2.00	10.00	1.17	12.06	69.680	441.	Inside Lid
57	58	1.00	15.00	14.00	28.67	15.58	33.980	436.	Rotor Top
58	59	1.00	12.00	8.00	23.95	8.53	26.320	436.	BLANK - New
59	60	1.00	10.00	14.00	17.84	16.14	38.720	425.	Lid Plastic Dish - outside
60	61	1.00	11.00	26.00	16.01	30.78	79.030	431.	" " " - inside
61	62	1.00	9.00	15.00	15.11	17.47	50.750	433.	Bottom " " - outside
62	63	1.00	12.00	8.00	23.61	8.52	41.650	448.	" " " - inside
63	64	1.00	12.00	11.00	23.14	12.23	42.190	431.	Sm spatula
64	65	1.00	13.00	12.00	25.01	13.35	38.390	432.	" Forceps
65	66	1.00	17.00	14.00	33.09	15.37	48.450	436.	White ring
66	67	1.00	11.00	13.00	20.30	14.80	43.720	429.	Red rubber seal
67	68	1.00	11.00	18.00	17.93	20.87	61.150	461.	Plastic holder outside
68	69	1.00	17.00	18.00	30.46	20.21	48.280	471.	" " inside

Protocol #:15 Name:H3/C14/P32 08-Jul-2009 09:06
Region A: LL-UL= 0.0-12.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region B: LL-UL=12.0-156. Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region C: LL-UL=156.-1700 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Time = 1.00 QIP = tSIE/AEC ES Terminator = Count
Conventional DPM
Nuclide 1 = 258256 Nuclide 2 = 109200

S#	Time	CPMA	DPM1	CPMB	DPM2	CPMC	tSIE	FLAG
1	1.00	10.00	19.02	10.00	[illegible].21	5.00	43[illegible]	Blank
2	1.00	10.00	16.48	18.00	21.06	6.00	427.	70 - Left glass (facing hood
3	1.00	19.00	36.07	19.00	21.30	4.00	432.	70A - Metal frame of glass
4	1.00	5.00	5.88	16.00	19.12	4.00	434.	71 - Right glass (facing ho
5	1.00	15.00	30.73	8.00	8.21	8.00	433.	71A - Metal frame of glass
6	1.00	7.00	11.33	13.00	15.23	4.00	432.	72 - Left panel - outside
7	1.00	15.00	29.96	11.00	11.91	6.00	428.	73 - Right "
8	1.00	276.00	621.97	13.00	0.00	6.00	418.	73A - Metal "Bottom" of glass door of h
9	1.00	21.00	42.67	14.00	14.96	5.00	423.	74
10	1.00	12.00	20.19	20.00	23.29	12.00	431.	75
11	1.00	14.00	27.49	13.00	14.50	8.00	416.	76
12	1.00	13.00	24.67	11.00	12.09	4.00	453.	77 - Back panel - left side
13	1.00	35.00	74.81	11.00	9.75	2.00	427.	78 - Back panel - rt. side
14	1.00	21.00	40.95	18.00	19.86	3.00	430.	79 - Counter left front hood
15	1.00	14.00	26.72	15.00	16.96	6.00	419.	80 - Counter " Back
16	1.00	9.00	14.49	17.00	19.93	3.00	431.	81 - Counter right Front
17	1.00	94.00	206.85	13.00	5.83	4.00	425.	82 - Counter Rt. Back hood
18	1.00	18.00	34.66	17.00	18.96	4.00	429.	83 - Lab door handle outside
19	1.00	8.00	13.74	13.00	15.14	1.00	422.	84 - Lab door handle inside
20	1.00	10.00	18.09	13.00	14.91	4.00	428.	85
21	1.00	12.00	20.72	19.00	22.09	9.00	424.	86 - 20 Freezer WAS
22	1.00	10.00	16.95	16.00	18.58	2.00	436.	87 in room 330
23	1.00	9.00	15.17	15.00	17.47	5.00	430.	88
24	1.00	18.00	34.00	21.00	23.93	3.00	415.	89 GONE
25	1.00	12.00	23.70	11.00	12.26	3.00	414.	90
26	1.00	10.00	16.51	18.00	21.06	10.00	426.	91
27	1.00	10.00	19.19	10.00	11.22	2.00	424.	92
28	1.00	10.00	16.00	20.00	23.55	5.00	419.	93
29	1.00	91617.0	208293.	11196.0	3895.95	1.00	404.	
30	1.00	5935.00	12702.7	622.00	122.95	9.00	451.	
31	1.00	4174.00	9697.87	443.00	95.56	8.00	391.	
32	1.00	851.00	1940.29	83.00	10.27	5.00	404.	
33	1.00	162620.	366495.	19829.0	6597.35	6.00	410.	
34	1.00	39445.0	90487.7	4793.00	1651.48	2.00	397.	
35	1.00	9.00	14.19	16.00	18.63	4.00	466.	00
36	1.00	4321.00	9936.36	417.00	46.95	8.00	399.	
37	1.00	33803.0	77703.0	3404.00	542.57	3.00	399.	

1V yuck

Front hedge outside of hood

Tips used to take samples are in plastic bag - H3

Tips disposed in rad waste

75 - Left panel inside
76 - Right " "

Protocol #:28 Name:H-3/C-14 DPM 09-Jul-2009 10:01
Region A: LL-UL= 0.0-12.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region B: LL-UL=12.0-156. Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region C: LL-UL= 0.0- 0.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Time = 1.00 QIP = tSIE/AEC ES Terminator = Count
Conventional DPM
Nuclide 1 = 258256 Nuclide 2 = 109200

S#	TIME	CPMA	CPMB	DPM1	DPM2	SIS	tSIE	FLAG	
1	1.00	9.00	15.00	15.14	17.47	47.610	431.	B	
2	1.00	12.00	6.00	25.35	6.10	25.940	415.	73	
3	1.00	12.00	15.00	21.84	17.15	40.230	431.	73A	
4	1.00	11.00	16.00	19.43	18.50	38.100	425.	74	
5	1.00	10.00	12.00	18.89	13.71	46.610	411.	78	
6	1.00	12.00	19.00	20.47	22.06	63.680	433.	79	
7	1.00	12.00	14.00	22.06	15.91	49.940	434.	82	

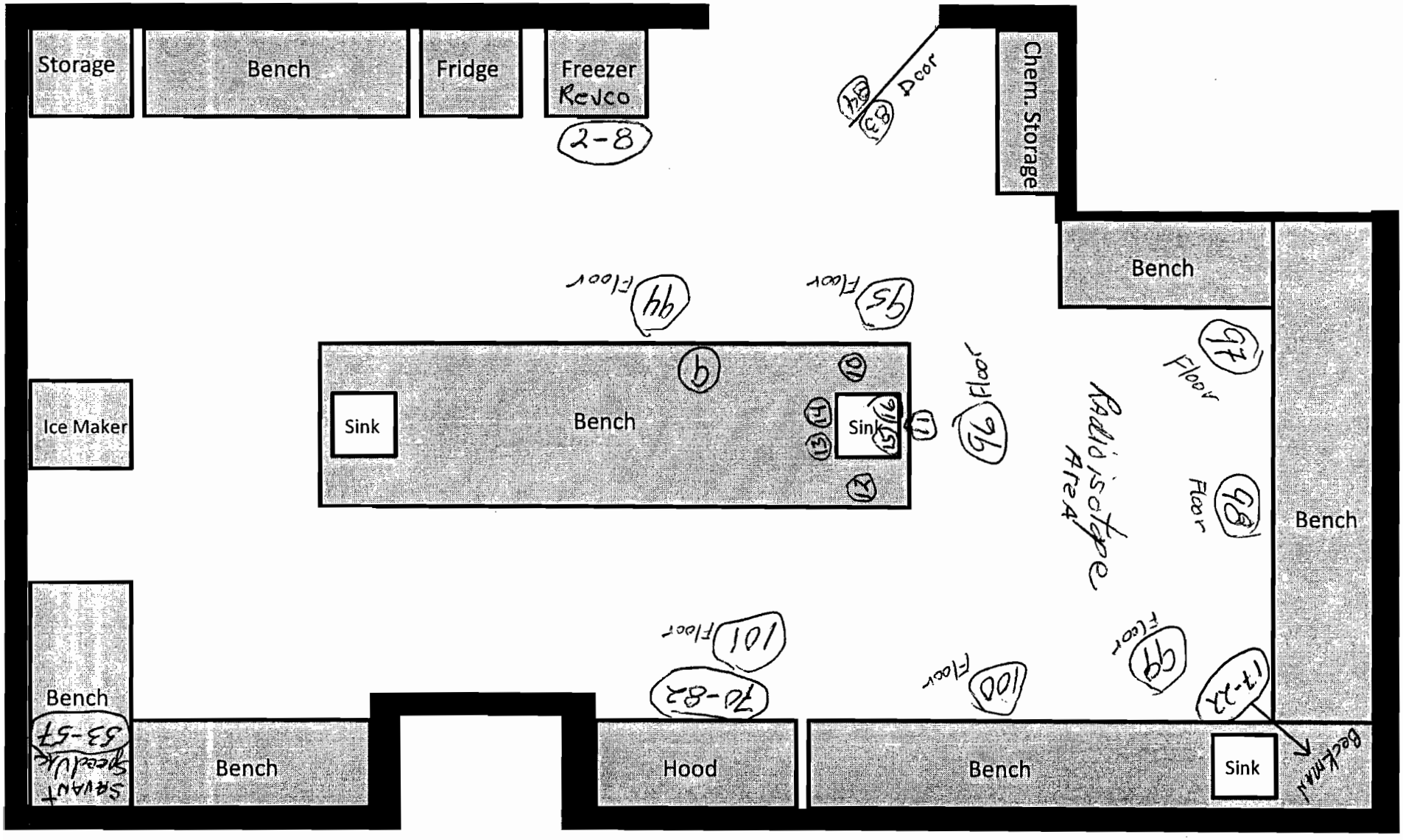
clean and recount

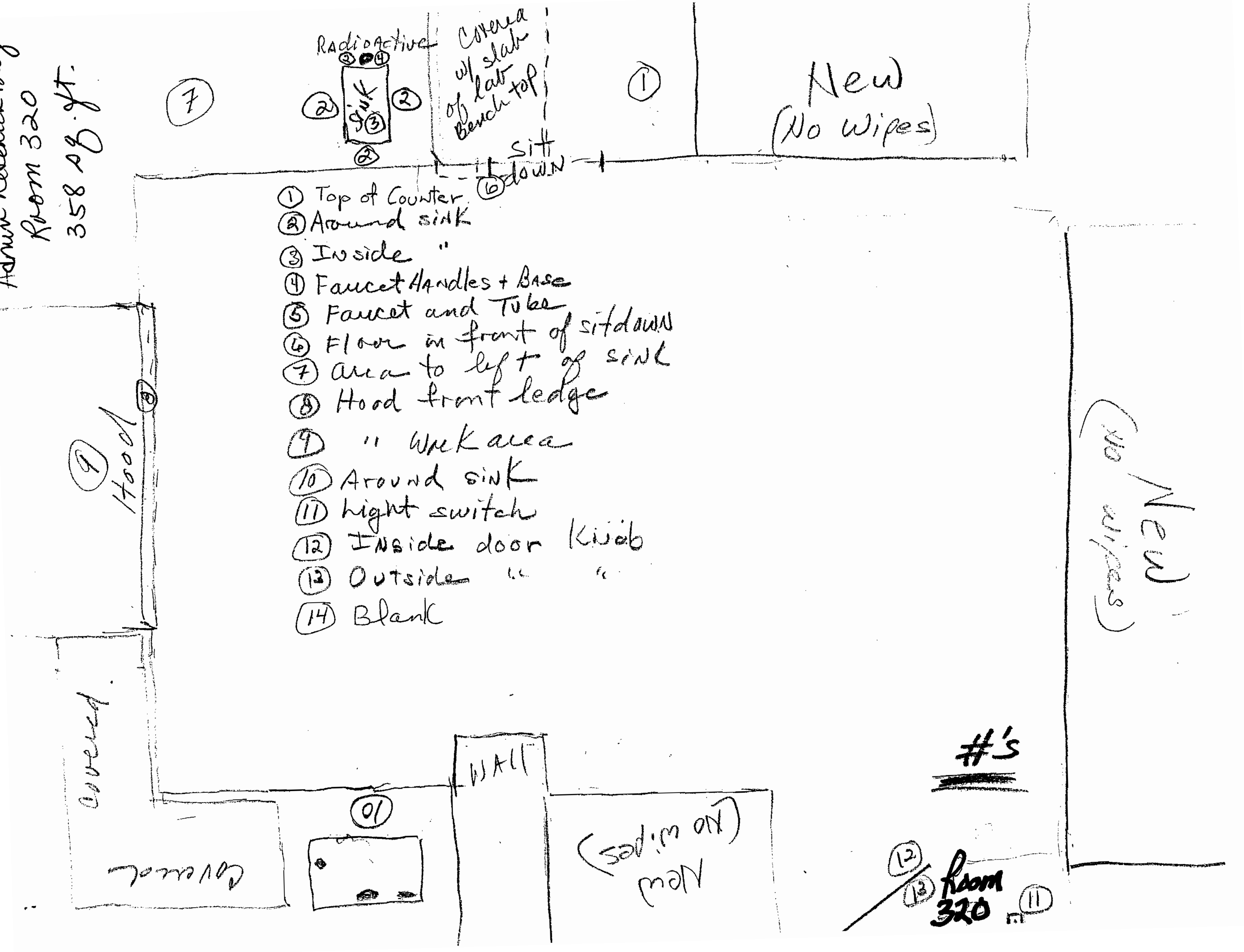
ARB330

	SAM NO	POS	TIME MIN	H#	WIDE CPM	WIDE %ERROR	LUMEX %	ELAPSED TIME
94	1	**-1	3.00	333.4	**25.33**	22.94	10.07	3.76
95	2	**-2	3.00	331.8	**24.67**	23.25	8.29	7.52
96	3	**-3	3.00	334.3	**25.00**	23.09	7.77	11.27
97	4	**-4	3.00	334.5	**20.33**	25.61	9.79	15.02
98	5	**-5	3.00	333.3	**23.33**	23.90	7.19	18.77
99	6	**-6	3.00	334.1	**22.00**	24.62	7.02	22.51
100	7	**-7	3.00	334.7	**23.00**	24.08	7.37	26.26
101	8	**-8	3.00	337.1	**25.33**	22.94	6.77	30.02
blank	9	**-9	3.00	334.5	**25.33**	22.94	4.75	33.76

Lab ARB 330

4-16-13 Dave




Room 320
358 sq. ft.
Radioactive
Covered w/ slab of lab Bench top
Sink
Sit down
New (No Wipes)
① Top of Counter
② Around sink
③ Inside "
④ Faucet Handles + Base
⑤ Faucet and Tube
⑥ Floor in front of sitdown
⑦ area to left of sink
⑧ Hood front ledge
⑨ " Work area
⑩ Around sink
⑪ light switch
⑫ Inside door Knob
⑬ Outside " "
⑭ Blank
Hood
Covered
Covered
WALL
New (No wipes)
New (No wipes)
#'s
Room 320

Protocol #:15 Name:H3/C14/P32 04-Nov-2009 10:28
Region A: LL-UL= 0.0-12.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region B: LL-UL=12.0-156. Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region C: LL-UL=156.-1700 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Time = 3.00 QIP = tSIE/AEC ES Terminator = Count
Conventional DPM
Nuclide 1 = 258256 Nuclide 2 = 109200

Room 320

S#	TIME	CPMA	DPM1	CPMB	DPM2	CPMC	tSIE	FLAG
1	3.00	49.00	105.47	13.67	11.52	79.33	426.	Counter top
2	3.00	24.00	48.83	16.33	17.51	6.00	421.	Around Rad-sink
3	3.00	44.67	95.76	15.33	14.05	7.00	421.	Inside Rad-sink
4	3.00	20.00	40.01	16.33	17.96	4.67	417.	Faucet Handles + Base-Rad
5	3.00	14.33	28.28	11.67	12.80	5.67	427.	Faucet + Tube - Rad
6	3.00	18.00	35.73	15.67	17.36	5.33	416.	Floor in front of sit-down
7	3.00	8.33	13.62	16.00	18.81	4.33	416.	Area to left of Rad-sink
8	3.00	12.00	22.59	15.33	17.63	4.00	403.	Hood-front ledge
9	3.00	13.67	25.65	16.00	18.23	4.33	419.	Hood-work Area
10	3.00	14.33	27.81	13.67	15.27	3.00	422.	Around Non-rad sink
11	3.00	50.00	91.06	64.33	73.75	6.67	425.	Light switch
12	3.00	25.67	51.79	16.67	17.72	5.00	430.	Inside Door Knob
13	3.00	11.67	21.48	15.33	17.63	6.33	414.	Outside " "
14	3.00	15.33	30.76	10.33	11.05	5.67	432.	BLANK (New)

Room ~~327~~ (1 missing vial)

Room 327

16	1	3.00	8.00	14.35	11.00	12.67	3.67	425. Counter Around Still
17	2	3.00	12.33	22.73	14.67	16.70	5.33	430. Still
18	3	3.00	10.33	18.60	14.67	16.95	4.67	416. Around Rad-sink
19	3A	3.00	14.33	30.94	13.00	14.66	9.67	359. Inside Rad-sink
20	4	3.00	13.67	25.77	15.67	17.92	5.33	418. Faucet Handles - Rad-sink
21	5	3.00	23.33	48.65	16.00	17.23	7.33	403. Faucet + Tube - " "
22	6	3.00	13.00	24.21	16.67	19.15	4.33	410. Floor in front of Rad-sink
23	7	3.00	38.67	82.67	24.67	26.33	5.33	391. Area to rt. of Rad-sink
24	8	3.00	12.67	23.54	15.67	17.93	5.00	417. Work Bench A
25	9	3.00	327.67	699.64	144.00	142.01	3.67	414. Floor in front of sit-down
26	10	3.00	13.33	25.19	16.67	19.13	5.33	404. Work Bench B
27	11	3.00	14.67	28.28	13.33	14.81	2.33	432. Floor in front of sit-down
[illegible]	12	[illegible]	12.00	22.56	15.00	17.21	6.00	408. End of Work Bench C
29	13	3.00	28.67	60.49	[illegible]	[illegible]	[illegible]	407. Floor in front of Bench C
30	14	3.00	15.00	29.27	14.33	16.03	6.67	418. Work Bench Center C
31	15	3.00	30.33	64.92	10.00	9.03	6.00	424. Floor in front of Bench C
32	16	3.00	7.33	12.21	13.33	15.63	5.67	417. End of Bench C near door
33	17	3.00	12.00	22.51	12.00	13.44	7.67	441. Light Switch
34	18	3.00	15.00	29.35	14.67	16.46	6.33	413. Door Handle - Inside
35	19	3.00	12.00	22.19	14.33	16.54	4.33	426. " " - Outside
36	20	3.00	18.00	36.22	15.00	16.55	6.67	410. BLANK (Joan)
37	21	3.00	18.33	190.23	15.33	21.50	6.33	84.4 BLANK (Dr. Dodge)

(1 missing vial)

Joan E. Fugarelli
11-09-09

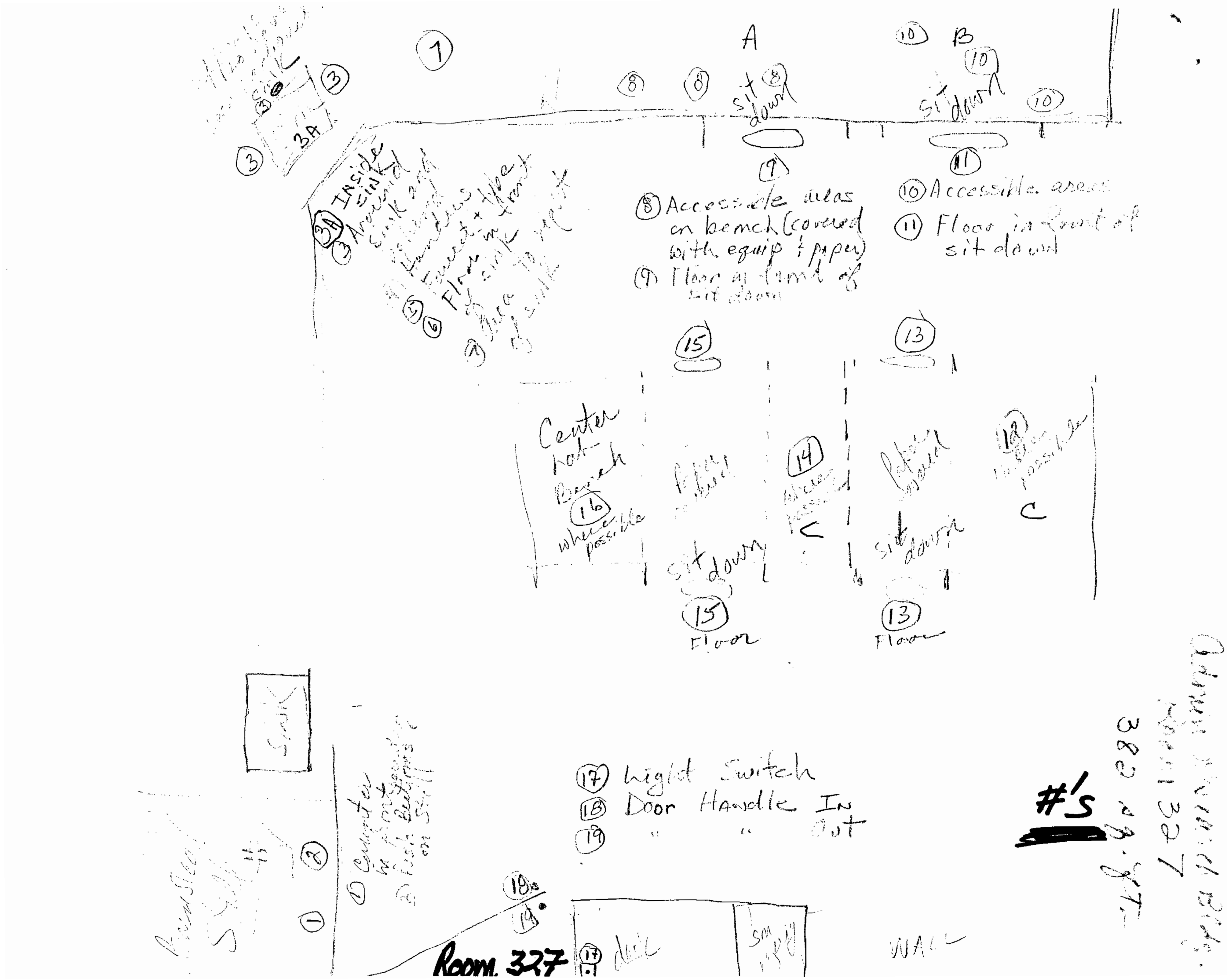
Cleaned Area - Re-counted

Protocol #:15 Name:H3/C14/P32 05-Nov-2009 16:15
Region A: LL-UL= 0.0-12.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region B: LL-UL=12.0-156. Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region C: LL-UL=156.-1700 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Time = 3.00 QIP = tSIE/AEC ES Terminator = Count
Conventional DPM
Nuclide 1 = 258256 Nuclide 2 = 109200

	S#	TIME	CPMA	DPM1	CPMB	DPM2	CPMC	tSIE	FLAG
9	1	3.00	20.00	40.64	14.67	15.91	4.00	415.	
Blank	2	3.00	20.67	42.57	11.67	12.12	7.00	425.	

Re-cleaned area - Floor in front of sit-down A

Joan E. Pugarelli
11-09-09


A
B
7
3
3A
sit down
Inside sink
Around sink and counter
Floor in front of sink
8 Accessible areas on bench (covered with equip & paper)
9 Floor in front of sit down
10 Accessible areas
11 Floor in front of sit down
Center lab Bench
16 where possible
14 where possible
12 where possible
C
15 Floor
13 Floor
Sink
17 Light Switch
18 Door Handle In
19 " " Out
#'s
[redacted]
Room 327
WALL
Counter

Protocol #:15 Name:H3/C14/P32 04-Nov-2009 10:28
Region A: LL-UL= 0.0-12.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region B: LL-UL=12.0-156. Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Region C: LL-UL=156.-1700 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00
Time = 3.00 QIP = tSIE/AEC ES Terminator = Count
Conventional DPM
Nuclide 1 = 258256 Nuclide 2 = 109200

Room 320

S#		TIME	CPMA	DPM1	CPMB	DPM2	CPMC	tSIE	FLAG	Room 320
1		3.00	49.00	105.47	13.67	11.52	79.33	426.		Counter top
2		3.00	24.00	48.83	16.33	17.51	6.00	421.		Around Rad-sink
3		3.00	44.67	95.76	15.33	14.05	7.00	421.		Inside Rad-sink
4		3.00	20.00	40.01	16.33	17.96	4.67	417.		Faucet Handles + Base-Rad
5		3.00	14.33	28.28	11.67	12.80	5.67	427.		Faucet + Tube - Rad
6		3.00	18.00	35.73	15.67	17.36	5.33	416.		Floor in front of sit-down
7		3.00	8.33	13.62	16.00	18.81	4.33	416.		Area to left of Rad-sink
8		3.00	12.00	22.59	15.33	17.63	4.00	403.		Hood-front ledge
9		3.00	13.67	25.65	16.00	18.23	4.33	419.		Hood- work Area
10		3.00	14.33	27.81	13.67	15.27	3.00	422.		Around Non-rad sink
11		3.00	50.00	91.06	64.33	73.75	6.67	425.		Light switch
12		3.00	25.67	51.79	16.67	17.72	5.00	430.		Inside Door Knob
13		3.00	11.67	21.48	15.33	17.63	6.33	414.		Outside " "
14		3.00	15.33	30.76	10.33	11.05	5.67	432.		BLANK (New)

Room ~~327~~ 321)

Room 327

16	1	3.00	8.00	14.35	11.00	12.67	3.67	425.		Counter Around Still
17	2	3.00	12.33	22.73	14.67	16.70	5.33	430.		Still
18	3	3.00	10.33	18.60	14.67	16.95	4.67	416.		Around Rad-sink
19	3A	3.00	14.33	30.94	13.00	14.66	9.67	359.		Inside Rad-Sink
20	4	3.00	13.67	25.77	15.67	17.82	5.33	418.		Faucet Handles - Rad-sink
21	5	3.00	23.33	48.65	16.00	17.23	7.33	403.		Faucet + Tube - " "
22	6	3.00	13.00	24.21	16.67	19.15	4.33	410.		Floor in front of Rad-sink
23	7	3.00	38.67	82.67	24.67	26.33	5.33	391.		Area to rt. of Rad-sink
24	8	3.00	12.67	23.54	15.67	17.93	5.00	417.		Work Bench A
25	9	3.00	327.67	699.64	144.00	142.01	3.67	414.		Floor in front of sit-down
26	10	3.00	13.33	25.19	16.67	19.13	5.33	404.		Work Bench B
27	11	3.00	14.67	28.28	13.33	14.81	2.33	432.		Floor in front of sit-down
	12				15.00	17.21	6.00	408.		End of work Bench C
29	13	3.00	28.67							Floor in front of Bench
30	14	3.00	15.00	29.27	14.33	16.03	6.67	418.		Work Bench Center C
31	15	3.00	30.33	64.92	10.00	9.03	6.00	424.		Floor in front of Bench
32	16	3.00	7.33	12.21	13.33	15.63	5.67	417.		End of Bench C Near doo
33	17	3.00	12.00	22.51	12.00	13.44	7.67	441.		Light Switch
34	18	3.00	15.00	29.35	14.67	16.46	6.33	413.		Door Handle - Inside
35	19	3.00	12.00	22.19	14.33	16.34	4.33	426.		" " - Outside
36	20	3.00	18.00	36.22	15.00	16.55	6.67	410.		BLANK (JOAN)
37	21	3.00	18.33	190.23	15.33	21.50	6.33	84.4		BLANK (Dr. Dodge)

(1 missing vial)

Joan E. Fugarelli
11-09-09

Vendor disposal records from 1976 to present. I believe this to be all of the vendor disposals.

Grace M Hobson, RSO

FORM 540 — **Duratek, Inc. - Commercial Processing**

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER *(Include Area Code)*: 855-347-8197

ORGANIZATION: ECOLOGY SERVICES, INC

2. IS THIS AN "EXCLUSIVE USE" SHIPMENT? ☐ YES ☑ NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST =====> 2

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? ☐ YES ☑ NO
If "Yes," provide Manifest Number =====>

EPA MANIFEST NUMBER

5. SHIPPER – NAME AND FACILITY
Alfred I. duPont Hospital for Children
Nemours Biomedical Reseach
1701 Rockland Road
Wilmington, DE 19803

SHIPPER I.D. NUMBER: NA
☐ COLLECTOR
☐ PROCESSOR

USER PERMIT NUMBER: NA

SHIPMENT NUMBER: 110725

☑ GENERATOR TYPE *(Specify)* M

CONTACT: Grace Hobson

TELEPHONE NUMBER (Include Area Code): 302-838-1771

6. CARRIER – Name and Address
1. ESI, Columbia, MD (301) 362-6700
2. Bedrock, dba, Tri-State Motor Transit
P.O. Box 113
Joplin, MO 64802

Truck #:
Trailer #:

EPA I.D. NUMBER: MOD 095 038 998

SHIPPING DATE: 07/26/2011

CONTACT: Cassie Gardner

TELEPHONE (Include Area Code): 800-234-8768

SIGNATURE – *Authorized carrier acknowledging waste receipt*

DATE: 7/26/11

7. FORM 540 AND 540A — PAGE 1 OF 1 PAGE(S)
FORM 541 AND 541A — 1 PAGE(S)
FORM 542 AND 542A — None PAGE(S)
ADDITIONAL INFORMATION — None PAGE(S)

8. MANIFEST NUMBER (Use this number on all continuation pages): AID 110725-08

9. CONSIGNEE - Name and Facility
Energy Solutions Bear Creek Operations
Operated by Energy Solutions
1560 Bear Creek Road
Oak Ridge, TN 37831

CONTACT: Donnie Brackett

TELEPHONE (Include Area Code): (865) 220-1628

SIGNATURE – *Authorized consignee acknowledging waste receipt*

DATE

10. CERTIFICATION

This is to certify that the herein-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, marked, and labeled and are in proper condition for transportation and disposal as described in accordance with the requirements of 10 CFR Parts 20 and 61, or equivalent state regulations.

AUTHORIZED SIGNATURE: Grace Hobson

TITLE: RSO

DATE: 7/29/11

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (Including proper shipping name, hazard class, UN ID number, and any additional information)	12. DOT LABEL "RADIOACTIVE"	13. TRANSPORT INDEX	14. PHYSICAL AND CHEMICAL FORM	15. INDIVIDUAL RADIONUCLIDES			16. TOTAL PACKAGE ACTIVITY MBq	mCi	17. LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
UN 2910, Radioactive material, excepted package-limited quantity of material, 7	NA	NA	SOLID: Salts & Proteins / DAW COMPACT	C-14	H-3	U-238	3.3504E+01	(9.0550E-01)	NA	10 ~~90~~ LBS; 7.5 FT3	AID 110726-01
UN 2910, Radioactive material, excepted package-limited quantity of material, 7	NA	NA	SOLID: Salts & Proteins / DAW COMPACT	C-14	H-3		3.1450E+01	(8.5000E-01)	NA	108 ~~90~~ LBS; 7.5 FT3	AID 110726-02

FOR CONSIGNEE USE ONLY

TENNESSEE "LICENSE FOR DELIVERY" NO _____

SOUTH CAROLINA TRANSPORT PERMIT NO _____

US ECOLOGY GENERATOR NO _____

US ECOLOGY PERMIT NO _____

20. GENERATOR CERTIFICATION STATEMENT

A) Radioactive Materials. Certification is hereby made to Duratek, Inc. that this shipment of low-level radioactive material/waste has been prepared in accordance with radioactive waste management program which has been approved by the Nuclear Regulatory Commission or an Agreement State regulatory agency and with the current revision of the Duratek Material Acceptance Criteria.

B) Hazardous Materials. Generator hereby certifies that this material does not contain a hazardous waste as defined in 40 CFR 261.

C) Data. Generator hereby represents and warrants that all data set forth in this (UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST) are true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and Duratek, Inc. State of Tennessee Radioactive Material Licenses.

Print Name _____ Signature _____ Date _____

FORM 540 (10-96)

RM 541 | Duratek, Inc. - Commercial Processing

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST

CONTAINER AND WASTE DESCRIPTION

Additional Nuclear Regulatory Commission (NRC) Requirements for Control, Transfer and Disposal of Radioactive Waste

1. MANIFEST TOTALS

NUMBER OF PACKAGES/ DISPOSAL CONTAINERS	NET WASTE VOLUME	NET WASTE WEIGHT	SPECIAL NUCLEAR MATERIAL (grams) U-233	U-235	Pu	Total
2	m3 0.4248	kg 97 ~~84.8468~~	NP	NP	NP	NP
	ft3 15.0000	lb 214 ~~180.0000~~				

ACTIVITY	ALL NUCLIDES	TRITIUM	C-14	Tc-99	I-129	SOURCE (kg)	
MBq	6.4954E+01	1.1100E+01	5.1800E+01	NP	NP	(kg)	8.3000E-02
mCi	1.7555E+00	3.0000E-01	1.4000E+00	NP	NP	(lbs)	1.8298E-01

2. MANIFEST NUMBER: AID 110725-08

3. PAGE 1 OF 1 PAGE(S)

4. SHIPPER NAME: Alfred I. duPont Hospital for Children

SHIPMENT ID NUMBER: NA

DISPOSAL CONTAINER DESCRIPTION

5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR ID NUMBER	6. CONTAINER DESCRIPTION (See Note 1) PROCESS REQUESTED (See Note 1A) BURIAL/DISPOSITION (See Note 2A)	7. VOLUME (m3) / (ft3)	8. WASTE AND CONTAINER WEIGHT (kg) / (lb)	9. SURFACE RADIATION LEVEL (mSv/hr) / (mrem/hr)	10. SURFACE CONTAMINATION (MBq/100 cm2) / (dpm/100cm2) ALPHA	BETA-GAMMA
AID 110726-01/AID	4	0.2124	48 ~~40.6323~~	<5.0000E-03	<3.6740E-07	<3.6740E-06
		7.5000	106 ~~80.0000~~	<5.0000E-01	<2.2000E+01	<2.2000E+02
AID 110726-02/AID	4	0.2124	49 ~~40.9845~~	<5.0000E-03	<3.6740E-07	<3.6740E-06
		7.5000	108 ~~80.0000~~	<5.0000E-01	<2.2000E+01	<2.2000E+02
Shipment Totals		0.4248	97 ~~84.8468~~			
		15.0000	214 ~~180.0000~~			

WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER

PHYSICAL DESCRIPTION 11. WASTE DESCRIPTOR (See Note 2)	12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER (m3) / (FT3)	13. SOLIDIFICATION OR STABILIZATION MEDIA (See Note 3)	14. CHEMICAL DESCRIPTION CHEMICAL FORM/ CHELATING AGENT	WEIGHT % CHELATING AGENT IF > 0.1%	15. RADIOLOGICAL DESCRIPTION INDIVIDUAL RADIONUCLIDES AND ACTIVITY (MBq) AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT RADIONUCLIDES	MBq	mCi	16. WASTE CLASSIFICATION AS-Class A Stable AU-Class A Unstable B-Class B C-Class C
39	0.2124	100	Salts & Proteins / DAW COMPACT/NP	NP	C-14	2.5900E+01	7.0000E-01	AU
					H-3	5.5500E+00	1.5000E-01	
					U-238 [8.3000E-02 kg]	2.0535E+00	5.5500E-02	
					Subtotal	3.3504E+01	9.0550E-01	
					Total	3.3504E+01	9.0550E-01	
					Source [8.3000E-02 kg]			
39	0.2124	100	Salts & Proteins / DAW COMPACT/NP	NP	C-14	2.5900E+01	7.0000E-01	AU
					H-3	5.5500E+00	1.5000E-01	
					Subtotal	3.1450E+01	8.5000E-01	
					Total	3.1450E+01	8.5000E-01	
	7.5000				Source [8.3000E-02 kg]	6.4954E+01	1.7555E+00	

Note 1: Container Description Codes. For containers/ waste requiring disposal in approved structural overpacks the numerical code must be followed by "-OP."

1. Wooden Box or Crate
2. Metal Box
3. Plastic Drum or Pail
4. Metal Drum or Pail
5. Metal Tank or Liner
6. Concrete Tank or Liner
7. Polyethlene Tank or Liner
8. Fiberglass Tank or Liner
9. Demineralizer
10. Gas Cylinder
11. Bulk, Unpackaged Waste
12. Unpackaged Components
13. High Integrity Container
19. Other. Describe in Item 6, or additional page

Note 1A: Process Requested

C	Compaction
SR	Steam Reforming
DI	Direct Incineration
SI	Sort & Incinerate
D	Decon
G	Green is Clean
M	Metal Melt
T	Trans-Ship
LI	Liquid for Incineration
OI	Oil for Incineration
O	Other (describe)

NOTE 2: Waste Descriptor Codes. (Choose up to three which predominate by volume.)

20. Charcoal
21. Incinerator Ash
22. Soil
23. Gas
24. Oil
25. Aqueous Liquid
26. Filter Media
27. Mechanical Filter
28. EPA or State Hazardous
29. Demolition Rubble
30. Cation Ion-exchange Media
31. Anion Ion-exchange Media
32. Mixed Bed Ion-exchange Media
33. Contaminated Equipment
34. Organic Liquid (except oil)
35. Glassware or Labware
36. Sealed Source/Device
37. Paint or Plating
38. Evaporator Bottoms/Sludges/ Concentrates
39. Compactible Trash
40. Noncompactible Trash
41. Animal Carcass
42. Biological Material (except animal carcass)
43. Activated Material
59. Other. Describe in item 11, or additional page

NOTE 2A: Burial/Disposition Site

B	Barnwell Waste Management
E	Envirocare
R	Richland, WA
PR	Process and Return
O	Other

Note3: Solidification and Stabilization Media Codes. (Choose up to three which predominate by volume. For media meeting disposal site structural stability requirements, the numerical code must be followed by "-S." and the media vendor and brand name must also be identified in Item 13. Code 100=NONE REQUIRED

Solidification

90. Cement
91. Concrete (encapsulation)
92. Bitumen
93. Vinyl Chloride
94. Vinyl Ester Styrene
99. Other. Describe in item 13, or additional page
100. None Required.

FORM 541 (10-96)

SCIENTIFIC ECOLOGY GROUP, INC.

SPECIALIZED GENERATOR SERVICES RADIOACTIVE MATERIAL SHIPMENT MANIFEST

Our Vision *To be the safest, highest performing, innovative waste management company in the world, accomplished by combining teamwork, exceptional customer service, the application of advanced technologies, and a commitment to excellence.*

P.O. Box 2530
1560 Bear Creek Road
Oak Ridge, TN 37830
(615) 481-0222

Generator Name ALFRED I DuPont Inst.
Generator No. [ ]-[ ]-[ ]-[ ]
Address 1600 Rockland Road
City Wilmington State DE Zip 19899
Contact ____ Phone # ____
TN. Shipper Lic.# ____
User Permit # ____
~~Bill Disposal Charges~~ SHIP To ECOMA-FIX
Name ____
Address 1940 NW 67th Place
City Gainsville State FL Purchase Order # ____

Page 1 of 1

GENERATOR MANIFEST NO. 64381

Emergency Contact & Phone ____

SEG Shipment No. ____

Date Shipped 8/18/97

Total For Each Class # of Packages	Total For Each Class Weight (pounds)	"RQ" If Any	PROPER SHIPPING NAME & HAZARDOUS CLASS	Haz. Class	Id Number
			Radioactive material, excepted package-articles manufactured from natural or depleted Uranium or natural Thorium	7	UN2910
			Radioactive material, excepted package-empty packaging	7	UN2910
			Radioactive material, excepted package-instruments or articles	7	UN2910
			Radioactive material, excepted package-limited quantity of material	7	UN2910
			Radioactive material, fissile, n.o.s.	7	UN2918
2	445		Radioactive material, low specific activity *LSA*, n.o.s. II	7	UN2912
			Radioactive material, n.o.s.	7	UN2982
			Radioactive material, special form, n.o.s.	7	UN2974

Item No.	Process Requested	Radio-Nuclide Each Container	mCi Of Each Nuclide	Total mCi Activity Each Container	Physical Form	Chem Form & Waste Description Chelating agents < .1%	Waste Form Class	Special Nuclear Material (grams)	Source Material (pounds)	Container Weight (pounds)	Container Volume (Cu. Ft.)	Container Type	Container Surface ☐mR/HR ☐R/HR	(T.I.) 1 Meter mR/HR	Fissile Class	Labels Markings Used
132353	INCIN	C14	0.5	0.5		ABSORBED LSA SCINT. FLUID ON U-LIKE	—	—	—	205	7.5	DRUM	<0.5	0	—	Radioactive - CSA II
132354	INCIN	H3	0.5	1.2		LIQ SCINT VIALS	—	—	—	245	7.5	DRUM	<0.5	0	—	Radioactive - CSA II
		C14	0.7													Radioactive -
																Radioactive -
																Radioactive -
																Radioactive -
																Radioactive -
2				1.7		◄ PAGE TOTALS ►				445	15.0					

SHIPMENT TOTALS

Volume Cu. Ft.	Total # of Packages	Source Material (lbs.)	Special Nuclear Material (grams) U-233	U-235	Plutonium	TOTAL
15	2					

ACTIVITY

Activity Totals: ☐ Curies ☒ Millicuries	Tritium	C-14	Tc-99	I-129	All Isotopes
	0.5	1.2			

Shipper represents and warrants that data set forth in this Radioactive Waste Shipment & Disposal Manifest is true and correct in all respects.

Bruce M Hobson

Shipper Signature

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

THIS VEHICLE IS CONSIGNED EXCLUSIVE USE. LOADING AND UNLOADING MUST BE ACCOMPLISHED BY CONSIGNOR OR CONSIGNEE OR HIS DESIGNATED AGENT.

( ) YES (X) NO

RWSD No. ___ _____

RADIAC RESEARCH CORP.

261 KENT AVENUE
BROOKLYN, NEW YORK 11211
718 - 963-2233
FAX 718 - 388-5107

No. 64381

DATE 8/15/97

BLDG. NO. _____

ROOM NO. _____

DEPT. NO. _____

RADIOACTIVE WASTE DISPOSAL RECORD

COMPANY/INSTITUTION ALFRED I. DUPONT INSTITUTE/DUPONT HOSP. FOR CHILDREN

CONTAINERS NUMBER				
132353				
132354				

I hereby certify that the above listed radioactive wastes are properly described, packaged marked and labeled, in accordance with D.O.T. Regulations and RADIAC'S General Terms and Conditions.

CUSTOMER REP Grace M Hobson R.R.C. REP

ISOTOPE	ACTIVITY	ISOTOPE	ACTIVITY

TYPE	P/U	DEL
5 Gallon Dry		
30 Gallon Dry		
30 Gallon A/P		
30 Gallon S/P		
30 Gallon LSV		
55 Gallon Dry		
55 Gallon LSV		4
De Reg LSV	1(1)	$
Cases 1 Gallon		ABSORBED LSV.
5 Gallon Liners		
55 Gallon Liners		
Security Seals		
Labels (Roll)		
Preservative		
Absorbent Material		
Miscellaneous		

ID # _____ Site # _____ Expiration Date _____ Instrument _____

CUSTOMER COPY

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
HAZARDOUS WASTE MANAGEMENT BRANCH, 89 KINGS HIGHWAY
P.O. BOX 1401, DOVER, DELAWARE 19903

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. D E D 9 8 4 0 6 6 5 6 3 6 4 3 8 1 — Manifest Document No.

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: ALFRED I. DUPONT INSTITUTE, DUPONT HOSPITAL FOR CHILDREN, 1600 ROCKLAND ROAD, WILMINGTON, DE 19899

A. State Manifest Document Number: **DE-A- 44476**

B. State Generator's ID: SAME

4. Generator's Phone: (302) 651-6829

5. Transporter 1 Company Name: RADIAC RESEARCH CORP.

6. US EPA ID Number: N Y D 0 4 9 1 7 8 2 9 6

C. State Transporter's ID: HW476

D. Transporter's Phone: (718) 963-2233

7. Transporter 2 Company Name: RADIAC RESEARCH CORP.

8. US EPA ID Number: N Y D 0 4 9 1 7 8 2 9 6

E. State Transporter's ID:

F. Transporter's Phone: (718) 963-2233

9. Designated Facility Name and Site Address: PERMA-FIX, 1940 NW 67TH PLACE, GAINSVILLE, FL

10. US EPA ID Number: F L D 9 8 0 7 1 1 0 7 1

G. State Facility's ID: FLD980711071

33 So 1st St., Brooklyn, NY

H. Facility's Phone: (904) 373-6066

11. US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. (RQ) WASTE FLAMMABLE LIQUID, NOS,3, UN 1993, II CONTAINS: Toluene + Xylene D001 F003 F005	001	D M	00245	P	D001 F003 F005
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above: Liquid Scintillation Vials

K. Handling Codes for Wastes Listed Above: a. B S01, M141, M061 b. c. d.

15. Special Handling Instructions and Additional Information
IN AN EMERGENCY CONTACT: CHEMTREC 1-800-424-9300
A) ERG# 128

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Grace M Hobson — Signature: Grace M Hobson — Month Day Year: 08 18 97

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed Typed Name: Ted Mykun — Signature: — Month Day Year: 08 18 97

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed Typed Name: — Signature: — Month Day Year:

19 Discrepancy Indication Space

20 Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed Typed Name: Thomas A Hamish — Signature: — Month Day Year: 8 21 97

EPA Form 8700-22(Rev. 9-88) Previous editions are obsolete.

COPY 3: MUST BE COMPLETED AND RETURNED BY THE TSD FACILITY TO THE GENERATOR.

GENERATOR | TRANSPORTER | FACILITY

IN CASE OF EMERGENCY OR SPILL IMMEDIATELY CALL THE DELAWARE EMERGENCY RESPONSE (800) 662-8802 AND THE NATIONAL RESPONSE CENTER (800) 424-8802

4444 / b

2

TELEDYNE ISOTOPES

50 VAN BUREN AVENUE
WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

HAZARDOUS MATERIAL

RADIOACTIVE WASTE DISPOSAL RECORD NO.
9034

O. NUMBER _____

PAGE 1 OF 1 PAGES.

OMPANY/INSTITUTION: A. I DuPont Institute

JLL ADDRESS: Wilmington DEL

MATERIAL DESCRIPTION: **RADIOACTIVE MATERIAL** LSA nos
(See CFR 49: 172.101)

ARTICLE NO. (PER IATA) UN 2912

HAZARD CLASS: **RADIOACTIVE MATERIAL**

(1) CONTAINER NUMBER	(2) DRUM	(3) CRATE	(4) CUBIC FEET	(5) * DESCRIPTION	(6) * CHEMICAL FORM	(7) EXTERNAL CONTAMINATION dpm/100cm²	(8) EXTERNAL(mR/hr) @ Surface	(8) EXTERNAL(mR/hr) @ 1 Meter	(9) ISOTOPES	(10) TRANSPORT GROUPS	(11) * PHYSICAL STATE	(12) ACTIVITY (mCi)	(13) SOURCE MAT. (Pounds)	(14) SNM (Grams)	(15) LABEL USED
9034A	X		7.5	SVL	Tol Pls Gls/ V-Lite	<1000	<.5	<.1	C^{14}	IV	SC/NT U/ALS	0.138	N/A	N/A	RADIOACTIVE LSA
9034 B	X		7.5	SVL					C^{14}	IV		0.1			
									H^3			0.02			
9034 C	X		7.5	SVL					C^{14}			0.12			
									H^3			0.06			
9034 D	X		7.5	SVL					C^{14}			0.7			
									H^3			0.3			
(16) TOTALS	4		30.0	* SEE BACK OF FORM FOR A COMPLETE DESCRIPTION OF ALL ABBREVIATIONS USED.						(16) TOTALS	1	1.438	—	—	

(17) REPLACEMENTS		
	5	
	30	
	55	4

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION, AND ARE PACKAGED ACCORDING TO THE APPLICABLE REGULATIONS OF THE BURIAL SITE.

NRC OR AGREEMENT STATE LICENSE NO. _____ AUTHORIZED SIGNATURE Charles R. Hatfield

DATE 1/12/82 CARRIER RL PRINT NAME CHARLES R. HATFIELD

CUSTOMER'S COPY

numbered paragraphs below refer to the numbered blocks on the fac[e]

"Container Number" - These are determined by suffixing the Radio[active] letter (e.g. on R.W.D.R. No. 0001 with three drums, the containers a[re]

[2] & 3) "Drum" and "Crate" - place an "X" in the appropriate column.

"Cubic Ft." - Enter 0.85 for a 5-gallon, 4.01 for a 30-gallon, and 7 crates.

(4) "Description" - Enter DSM for Dry Solid Material, SVL for Sm[all] Liquids, and DWAC for Double Walled Animal Carcasses.

(5) "Chemical Forms" - The following list is of routinely used listed below, it must be spelled out completely on the face

(6)

Chemical Forms	Abbreviations
Paper	Ppr.
Plastic	Pls.
Scrap Metal	S. Mtl.
Glass	Gls.
Water	H_2O
Toluene	Tol.

(e.g. Toluene base scintillation vials packed in ver[miculite]

(7) "External Contamination dpm/100cm²" - Enter numbers obtained of the surface of the drum.

(8) "External mR/hr." - Enter ≤ 1, <0.5 respectively.

(9) "Isotopes" - Enter each isotope within con[tainer]

(10) "Transport Group" - Enter each isotope transport group

(11) "Physical State" - Enter either solid, via[ls] and abs. liq.

(12) "Activity" - Enter activity for each isot[ope] to left; if curies are given, move decim[al]

(13) "Source lbs." - If thorium or uraniu[m] total weight of the waste.

(14) "SNM" - If plutonium, U^{233} or U^{235}

(15) "Label Used" - Enter White-I, Ye[llow]

(16) "Totals" - Total each column i[n]

(17) "Replacements" - Enter the

DRUM II 7

RADIOACTIVE WASTE DISPOSAL RECORD

Nº

ISOTOPE	APPROXIMATE AMOUNT	DATE
14C	50 uCi	12/16/81
14C	20 uCi	" "
14C	30 uCi	12/16/81
14C	3 uCi	12/22/81
14C	5 uCi	12/24/81
14C	20 uCi	" "
14C	10 uCi	1/6/82

COMPANY OR INSTITUTE ALFRED I. duPONT INSTITUTE

MR/HR at surface ....

MR/HR at one meter ....

Nº

TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

Drum #4 — 1981

RADIOACTIVE WASTE DISPOSAL RECORD

N°

ISOTOPE	APPROXIMATE AMOUNT	DATE
^{14}C	~700μC	10/21/81
^{3}H	~300μC	

COMPANY OR INSTITUTE ALFRED I. duPONT INSTITUTE

MR/HR at surface .....

MR/HR at one meter .....

N°

TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

(7) "External Contamination - Enter dpm/100cm² of the surface of the drum.

(8) "External mR/hr." - Enter numbers obtained within cont enter <1, <0.5 respectively.

(9) "Isotopes" - Enter each isotope in transport group

(10) "Transport Group" - Enter either solid, vial

(11) "Physical State" - Enter activity for each isotc and abs. liq.

(12) "Activity" - Enter activity for each isotope if thorium or uranium are given, move decim to left; if curies are given, move decim

(13) "Source lbs." - If thorium or uranium, U^{233} or U^{235}, e total weight of the waste.

(14) "SNM" - If plutonium, U^{233} or U^{235}, Enter White-I, Yell

(15) "Totals" - Total each column in

(16) "Replacements" - Enter the to

Drum #5 — 1981

RADIOACTIVE
WASTE DISPOSAL RECORD

Nº

ISOTOPE	APPROXIMATE AMOUNT	DATE
^{14}C —	105 µC	10-21-81
^{3}H —	60 µC	10-21-81.
^{14}C	15 µC	10/30/81

COMPANY
OR
INSTITUTE ALFRED I. duPONT INSTITUTE

MR/HR at surface ....
MR/HR at one meter ....

Nº

TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

(7) "External Contamination dpm/100cm - Ente
of the surface of the drum.
(8) "External mR/hr." - Enter numbers obtained i
enter ≤1, <0.5 respectively.
(9) "Isotopes" - Enter each isotope within conta
(10) "Transport Group" - Enter transport group
(11) "Physical State" - Enter either solid, vials
and abs. liq.
(12) "Activity" - Enter activity for each isoto
to left; if curies are given, move decima
(13) "Source lbs." - If thorium or uranium
total weight of the waste.
(14) "SNM" - If plutonium, U^{233} or U^{235}, e
(15) "Label Used" - Enter White-I, Yello
(16) "Totals" - Total each column inc
(17) "Replacements" - Enter the tot

(7) "External Contamination dpm/100cm ... Enter "
of the surface of the drum.

(8) "External mR/hr." - Enter numbers obtained if g
enter <1, <0.5 respectively.

(9) "Isotopes" - Enter each isotope within contain
enter transport group for

(10) "Transport Group" - Enter either solid, vials, s

(11) "Physical State" - Enter activity for each isotope i
and abs. liq.

(12) "Activity" - Enter activity for each isotope pc
to left; if curies are given, move decimal pc

(13) "Source lbs." - If thorium or uranium but
total weight of the waste.

(14) "SNM" - If plutonium, U^{233} or U^{235}, enter
total weight of the waste.

(15) "Label Used" - Enter White-I, Yellow-II,

(16) "Totals" - Total each column includin

(17) "Replacements" - Enter the total am

DRUM # 6

RADIOACTIVE WASTE DISPOSAL RECORD

No.

ISOTOPE	APPROXIMATE AMOUNT	DATE
^{3}H	20 u C	11/9/87
^{3}H ^{14}C	20 u C ^{14}	11/23/87
^{14}C	10 u uC	11/25/87
^{14}C	50 u uC	11/25/87
^{14}C	20 u C	11/30/87

COMPANY OR INSTITUTE ALFRED I. duPONT INSTITUTE

TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

MR/HR at surface .....

MR/HR at one meter .....

No.

TELEDYNE ISOTOPES

50 VAN BUREN AVENUE
WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

HAZARDOUS MATERIAL

RADIOACTIVE WASTE DISPOSAL RECORD NO.
9402

O. NUMBER _____

PAGE 1 OF 1 PAGES.

OMPANY/INSTITUTION: DuPont Inst. #1075

ULL ADDRESS: Wilmington Del.

MATERIAL DESCRIPTION: **RADIOACTIVE MATERIAL** (See CFR 49: 172.101) LSA nos

ARTICLE NO. (PER IATA) UN 2912

HAZARD CLASS: **RADIOACTIVE MATERIAL**

(1) CONTAINER NUMBER	(2) DRUM	(3) CRATE	(4) CUBIC FEET	(5) * DESCRIP-TION	(6) * CHEMICAL FORM	(7) EXTERNAL CONTAMINATION dpm/100cm²	(8) EXTERNAL(mR/hr) @ Surface	(8) @ 1 Meter	(9) ISOTOPES	(10) TRANS-PORT GROUPS	(11) * PHYSICAL STATE	(12) ACTIVITY (mCi)	(13) SOURCE MAT. (Pounds)	(14) SNM (Grams)	(15) LABEL USED
9402A	X		7.5	SVL	Tol. Gls Pb/ V-lite	<1500	<.5	<.5	C14	IV	SCINT VIALS	15.4	N/A	N/A	RADIOACTIVE LSA
9402B	X								C14			0.266			
									H3			0.02			
9402C	X								C14			0.504			
									H3			0.46			
(16) TOTALS	3		22.5									16.65	—	—	

* SEE BACK OF FORM FOR A COMPLETE DESCRIPTION OF ALL ABBREVIATIONS USED.

(17) REPLACEMENTS		
	5	
	30	
	55	4

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION, AND ARE PACKAGED ACCORDING TO THE APPLICABLE REGULATIONS OF THE BURIAL SITE.

NRC OR AGREEMENT STATE LICENSE NO. _____ AUTHORIZED SIGNATURE X C C Hartzell

DATE 9/10/81 CARRIER _____ PRINT NAME _____

CUSTOMER'S COPY

Scint Vial Liquid #2 -

RADIOACTIVE WASTE DISPOSAL RECORD

No: 1981-2 SVL

ISOTOPE	APPROXIMATE AMOUNT	DATE
^{14}C	50 µCi	6-15-81
^{3}H	4600	6-15-81
5-5-81		
to		
5-27-81		

COMPANY OR INSTITUTE ALFRED I. duPONT INSTITUTE

TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

MR/HR at surface _____
MR/HR at one meter _____

No

Scint. Vial Liquid #1

RADIOACTIVE WASTE DISPOSAL RECORD

No: 1981-1 SVL

ISOTOPE	APPROXIMATE AMOUNT	DATE
See T. Ward's Records - Record here -		9-15-80 ↓
		2-15-81
^{14}C	266 µCi	
^{3}H	200 µCi	

COMPANY OR INSTITUTE ALFRED I. duPONT INSTITUTE

TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

MR/HR at surface _____
MR/HR at one meter _____

No

SCINT. VIAL LIQUID #3

RADIOACTIVE
WASTE DISPOSAL RECORD

No 1981-3
SVL

ISOTOPE	APPROXIMATE AMOUNT	DATE
^{14}C	~~5~~ 270 μC	6-15
^{14}C	15,095	~~6-7~~-13-81
See Trip record	15,365 μC	
	Or 15.4 mCi	
from 6-4-81 to 7/13/81		

COMPANY
OR
INSTITUTE ALFRED I. duPONT INSTITUTE

TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

MR/HR at surface .....
MR/HR at one meter .....

No

TELEDYNE ISOTOPES

50 VAN BUREN AVENUE
WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

HAZARDOUS MATERIAL

RADIOACTIVE WASTE DISPOSAL RECORD NO.: 05872

P.O. NUMBER _____ PAGE 1 OF 1 PAGES.

COMPANY/INSTITUTION: A. I. Dupont

FULL ADDRESS: Wilmington, Del Research

MATERIAL DESCRIPTION: **RADIOACTIVE MATERIAL** LSA nos
(See CFR 49: 172.101)

HAZARD CLASS: **RADIOACTIVE MATERIAL**

(1) CONTAINER NUMBER	(2) CONTAINER TYPE 5 GAL.	30 GAL.	30/55 GAL. A/C	55 S/P	55 GAL.	OTHER	(3) CUBIC FT.	(4) * DESCRIPTION	(5) EXTERNAL CONTAMINATION dpm/100cm²	(6) EXTERNAL(mR/hr) @ Surface	@ 1Meter	(7) ISOTOPES	(8) TRANS-PORT GROUPS	(9) PHYSICAL STATE	(10) ACTIVITY (mCi)	(11) SOURCE MAT. (Pounds)	(12) SNM (Grams)	(13) LABEL USED
5872A					X		7.5	SVL	<1000	<.5	<.1	C^{14}	IV	SCINT VIALS	0.05	N/A	N/A	RADIOACTIVE LSA
												H^3		SCINT	0.001			
5872B					X		7.5	SVL				C^{14}		Vials	0.027			
5872C					X		7.5	SVL				H^3		SCINT VIALS	0.037			
												C^{14}			0.069			
(14) TOTALS					3		22.5								(16) TOTALS 0.184	—	—	
(15) REPLACEMENTS					4													

*IF ANIMAL CARCASSES, MARK AC; IF SCINTILLATION VIALS, MARK SV; IF 55 S/P, MARK DW.

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION, AND ARE PACKAGED ACCORDING TO THE APPLICABLE REGULATIONS OF THE BURIAL SITE.

NRC OR AGREEMENT STATE LICENSE NO. _____ AUTHORIZED SIGNATURE X Jim Lee

DATE 2/23/81 CARRIER Paul Lieb PRINT NAME _____

CUSTOMER'S COPY

Scint. Vial Liquid #2

RADIOACTIVE WASTE DISPOSAL RECORD

Nº 1980-4

ISOTOPE	APPROXIMATE AMOUNT	DATE
^{14}C	15 μCi	9-5-80 R.C.
^{14}C	15 μCi	9-8-80
^{3}H	1 μCi	9-8-80
^{14}C	20 μC	9-15-80

COMPANY OR INSTITUTE ALFRED I. duPONT INSTITUTE

TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

MR/HR at surface .....
MR/HR at one meter .....

Nº

Scint. Vial Liquid #1

RADIOACTIVE WASTE DISPOSAL RECORD

Nº 1980-3

ISOTOPE	APPROXIMATE AMOUNT	DATE
^{14}C	18 μC	July 1
$^{3}H + ^{14}C$	25 μC	|
^{3}H	8 μC	|
^{14}C	15 μC	| 1980
$^{3}H + ^{14}C$	30 μC	|
^{14}C	8 μC	↓
$^{3}H + ^{14}C$	17 μC	Aug 31

COMPANY OR INSTITUTE ALFRED I. duPONT INSTITUTE

TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

MR/HR at surface .....
MR/HR at one meter .....

Nº

Sm Vol. Liquid on
Solid materials —

RADIOACTIVE
WASTE DISPOSAL RECORD

N°

ISOTOPE	APPROXIMATE AMOUNT	DATE
^{14}C	2 μc	6-12-80.
$C^{14}Cl$	25 mc	9/22/80

COMPANY
OR
INSTITUTE ALFRED I. duPONT INSTITUTE
TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

MR/HR at surface .....
MR/HR at one meter .....

N°

TELEDYNE ISOTOPES

50 VAN BUREN AVENUE
WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

HAZARDOUS MATERIAL

RADIOACTIVE WASTE DISPOSAL RECORD NO. 06849

P.O. NUMBER 12623

PAGE 1 OF 1 PAGES.

COMPANY/INSTITUTION: A I Dupont Inst

FULL ADDRESS: Wilmington Del

MATERIAL DESCRIPTION: **RADIOACTIVE MATERIAL** LSA nos
(See CFR 49: 172.101)

HAZARD CLASS: **RADIOACTIVE MATERIAL**

(1) CONTAINER NUMBER	(2) CONTAINER TYPE 5 GAL.	30 GAL.	30/55 GAL. A/C	55 S/P	55 GAL.	OTHER	(3) CUBIC FT.	(4) DESCRIPTION*	(5) EXTERNAL CONTAMINATION dpm/100cm^2	(6) EXTERNAL (mR/hr) @ Surface	@ 1 Meter	(7) ISOTOPES	(8) TRANSPORT GROUPS	(9) PHYSICAL STATE	(10) ACTIVITY (mCi)	(11) SOURCE MAT. (Pounds)	(12) SNM (Grams)	(13) LABEL USED
6849A					X		7.5	DSM	<1000	<.5	<.1	C14	IV	Sld	0.013	N/A	N/A	RADIOACTIVE LSA
												H3	IV		0.005			
6849B					X		7.5	SVL				C14		SCINT VIAL	0.062			
												H3			0.002			
6849C					X		7.5	SVL				C14		SCINT VIAL	0.074			
												H3			0.045			
(14) TOTALS					3		22.5						(16) TOTALS		0.201	—	—	
(15) REPLACEMENTS					3													

*IF ANIMAL CARCASSES, MARK AC; IF SCINTILLATION VIALS, MARK SV; IF 55 S/P, MARK DW.

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION, AND ARE PACKAGED ACCORDING TO THE APPLICABLE REGULATIONS OF THE BURIAL SITE.

NRC OR AGREEMENT STATE LICENSE NO. ______ AUTHORIZED SIGNATURE [signature]

DATE 9/1/80 CARRIER [signature] PRINT NAME ______

CUSTOMER'S COPY

Dry Solid Waste (#1)

RADIOACTIVE
WASTE DISPOSAL RECORD

No

ISOTOPE	APPROXIMATE AMOUNT	DATE
^{14}C	2 mC	1-18-80
"	1 mC	2-3-80
"	3 mC	3-21-80
"	1 mC	5-9
^{3}H	2 mC	5-9
^{14}C	2 mC	6-6
^{14}C & ^{3}H	1 mC	6-25
^{14}C	1 mC	7-5
^{14}C & ^{3}H	2 mC	7-29
^{14}C	1 mC.	8-4

COMPANY
OR
INSTITUTE ALFRED I. duPONT INSTITUTE

TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

MR/HR at surface .....
MR/HR at one meter .....

No

SVL (#2)

SVL (#1)

RADIOACTIVE WASTE DISPOSAL RECORD

No.

ISOTOPE	APPROXIMATE AMOUNT	DATE
^{14}C	12 μC	3-9-80
^{14}C & ^{3}H	8 μC	5-28-80
^{14}C	15 μC	6-25-80
^{14}C + ^{3}H	10 μC	7-5-80
^{14}C + ^{3}H	12 μC "	7-29-80
^{14}C & ^{3}H	30 mC	8-13-80
^{14}C + ^{3}H	Full. 30 mCi	8-25-80

COMPANY OR INSTITUTE ALFRED I. duPONT INSTITUTE

TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

MR/HR at surface .....
MR/HR at one meter .....

No.

RADIOACTIVE WASTE DISPOSAL RECORD

ISOTOPE	APPR AI
^{14}C	1
^{14}C	1
^{14}C	1
^{14}C & ^{3}H	1
^{14}C	1
	62
	Full.

COMPANY OR INSTITUTE ALFRED I. duPONT INSTITUTE

TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

SVL (#1)

RADIOACTIVE WASTE DISPOSAL RECORD

No.

ISOTOPE	APPROXIMATE AMOUNT	DATE
^{14}C	10μC	2-13-80
^{14}C	18μC	2-27-80
^{14}C	10μC	3-21-80 N.
^{14}C & ^{3}H	10μC	5-9-80
^{14}C	15μC	6-6-80
	62	

Full.

COMPANY OR INSTITUTE ALFRED I. duPONT INSTITUTE

TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

MR/HR at surface .....
MR/HR at one meter .....

No.

TELEDYNE ISOTOPES

50 VAN BUREN AVENUE
WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

HAZARDOUS MATERIAL

RADIOACTIVE WASTE DISPOSAL RECORD NO.: 04423

P.O. NUMBER _____

PAGE 1 OF 1 PAGES.

COMPANY/INSTITUTION: A I Dupont Institute

FULL ADDRESS: Willmington Del.
Gary Butcher

MATERIAL DESCRIPTION: **RADIOACTIVE MATERIAL** LSA nos
(See CFR 49: 172.101)

HAZARD CLASS: **RADIOACTIVE MATERIAL** _____

(1) CONTAINER NUMBER	(2) CONTAINER TYPE: 5 GAL.	30 GAL.	30/55 GAL. A/C	55 S/P	55 GAL.	OTHER	(3) CUBIC FT.	(4) * DESCRIPTION	(5) EXTERNAL CONTAMINATION dpm/100cm²	(6) EXTERNAL (mR/hr) @ Surface	@ 1 Meter	(7) ISOTOPES	(8) TRANSPORT GROUPS	(9) PHYSICAL STATE	(10) ACTIVITY (mCi)	(11) SOURCE MAT. (Pounds)	(12) SNM (Grams)	(13) LABEL USED
4423A					X		7.5	DSM	< 1000	< .5	< .1	C^{14}	TV	Solid	0.002	N/A	N/A	RADIOACTIVE LSA
4423B				X			7.5	DWLVL	< 1000	< .5	< .1	C^{14}	TV	ABS. LIQUID	0.825	N/A	N/A	"
(14) TOTALS				1	1		15.0								(16) TOTALS 0.827	—	—	
(15) REPLACEMENTS				1	2													

*IF ANIMAL CARCASSES, MARK AC; IF SCINTILLATION VIALS, MARK SV; IF 55 S/P, MARK DW.

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION, AND ARE PACKAGED ACCORDING TO THE APPLICABLE REGULATIONS OF THE BURIAL SITE.

NRC OR AGREEMENT STATE LICENSE NO. _____ AUTHORIZED SIGNATURE _____

DATE 3/27/80 CARRIER Rich _____ PRINT NAME _____

CUSTOMER'S COPY

TELEDYNE ISOTOPES

ATTACHMENT A

Radioactive Waste Certification Statement

Certification is hereby made that the containers identified in the Radioactive Waste Disposal Record forms listed below have been packaged and labeled in accordance with Teledyne Isotopes' Radioactive Waste Disposal Agreement (2/80) and Teledyne Isotopes' instructions dated _____

(CUSTOMER NAME)

By DR. T. Timothy NYODA

Title Radiation Protection Officer

Date 3/27/80

Radioactive Waste Disposal Record(s)	Proper Shipping Name(s) (49 CFR 172.101)
4423A-B	RADIOACTIVE LSA

TELEDYNE ISOTOPES

50 VAN BUREN AVENUE
WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

HAZARDOUS MATERIAL

RADIOACTIVE WASTE DISPOSAL RECORD NO.: 03332

P.O. NUMBER _____

PAGE 1 OF 1 PAGES.

COMPANY/INSTITUTION: A.I Dupont Institute

FULL ADDRESS: Wilmington, Del.
Gary Butcher

MATERIAL DESCRIPTION: **RADIOACTIVE MATERIAL** LSA nos
(See CFR 49: 172.101)

HAZARD CLASS: **RADIOACTIVE MATERIAL** _____

(1) CONTAINER NUMBER	(2) CONTAINER TYPE: 5 GAL.	30 GAL.	30/55 GAL. A/C	55 S/P	55 GAL.	OTHER	(3) CUBIC FT.	(4) * DESCRIPTION	(5) EXTERNAL CONTAMINATION dpm/100cm²	(6) EXTERNAL(mR/hr) @ Surface	@ 1Meter	(7) ISOTOPES	(8) TRANS-PORT GROUPS	(9) PHYSICAL STATE	(10) ACTIVITY (mCi)	(11) SOURCE MAT. (Pounds)	(12) SNM (Grams)	(13) LABEL USED
3332A					X		7.5	SVL	<1000	<.5	<.1	C^{14}	III	Vials	0.155	N/A	N/A	RADIOACTIVE LSA
												H^3	↓	"	0.502	↓	↓	↓
3332B					X		7.5	DSW	<1000	<.5	<.1	C^{14}	↓	Solid	0.012	↓	↓	↓
(14) TOTALS					2		15.0								(16) TOTALS 0.669	—	—	
(15) REPLACEMENTS					2													

*IF ANIMAL CARCASSES, MARK AC; IF SCINTILLATION VIALS, MARK SV; IF 55 S/P, MARK DW.

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION, AND ARE PACKAGED ACCORDING TO THE APPLICABLE REGULATIONS OF THE BURIAL SITE.

NRC OR AGREEMENT STATE LICENSE NO. 07-16199-01 AUTHORIZED SIGNATURE Gary Butcher

DATE 12/11/79 CARRIER R Lil PRINT NAME GARY Butcher

CUSTOMER'S COPY

10-11-79 [illegible]

Solid Waste

RADIOACTIVE
WASTE DISPOSAL RECORD

№ 44440

ISOTOPE	APPROXIMATE AMOUNT	DATE
^{14}C	2 μCi	11-5-79 R.C.
^{14}C	10 μC	12-6-79 [illegible]
The above was picked up 12-11-79 [illegible]		

COMPANY
OR
INSTITUTE

MR/HR at surface
MR/HR at one meter

TELEDYNE ISOTOPES
WESTWOOD, NEW JERSEY

№ 44440

Please Replace Lid

TELEDYNE ISOTOPES

50 VAN BUREN AVENUE
WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

HAZARDOUS MATERIAL

RADIOACTIVE WASTE DISPOSAL RECORD NO.
03856

P.O. NUMBER _____ PAGE _____ OF _____ PAGES.

COMPANY/INSTITUTION: A.I. Dupont Inst.

MATERIAL DESCRIPTION: **RADIOACTIVE MATERIAL** N.O.S. (See CFR 49: 172.101)

FULL ADDRESS: Wilmington, Del

HAZARD CLASS: **RADIOACTIVE MATERIAL** _____

(1) CONTAINER NUMBER	(2) CONTAINER TYPE: 5 GAL.	30 GAL.	30/55 GAL. A/C	55 S/P	55 GAL.	OTHER	(3) CUBIC FT.	(4) * DESCRIPTION	(5) EXTERNAL CONTAMINATION dpm/100cm²	(6) EXTERNAL(mR/hr) @ Surface	@ 1 Meter	(7) ISOTOPES	(8) TRANS-PORT GROUPS	(9) PHYSICAL STATE	(10) ACTIVITY (mCi)	(11) SOURCE MAT. (Pounds)	(12) SNM (Grams)	(13) LABEL USED
3856A					X	-	7.5	SVL	1/000	1.5	1.1	C^{14}	IV.	VIALS	.006	N/A	n/a	RADIOACTIVE
(14) TOTALS	-	-	-	-	1	-	7.5								.006	-	-	
(15) REPLACEMENTS	-	-	-		2													

*IF ANIMAL CARCASSES, MARK AC; IF SCINTILLATION VIALS, MARK SV; IF 55 S/P, MARK DW.

(16) TOTALS

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION, AND ARE PACKAGED ACCORDING TO THE APPLICABLE REGULATIONS OF THE BURIAL SITE.

NRC OR AGREEMENT STATE LICENSE NO. 07-16199-01 AUTHORIZED SIGNATURE _____

1/17/80 CARRIER Teledyne Isotopes H. M. PRINT NAME T. T. MYODA, PH.D. R.P.O.

CUSTOMER'S COPY

TELEDYNE ISOTOPES

50 VAN BUREN AVENUE
WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

HAZARDOUS MATERIAL

RADIOACTIVE WASTE DISPOSAL RECORD NO. 03332

P.O. NUMBER _____

PAGE 1 OF 1 PAGES.

COMPANY/INSTITUTION: A.I Dupont Institute

FULL ADDRESS: Wilmington, Del.
Gary Butcher

MATERIAL DESCRIPTION: RADIOACTIVE MATERIAL LSA nos
(See CFR 49: 172.101)

HAZARD CLASS: RADIOACTIVE MATERIAL _____

(1) CONTAINER NUMBER	(2) CONTAINER TYPE: 5 GAL.	30 GAL.	30/55 GAL. A/C	55 S/P	55 GAL.	OTHER	(3) CUBIC FT.	(4) * DESCRIPTION	(5) EXTERNAL CONTAMINATION dpm/100cm²	(6) EXTERNAL(mR/hr) @ Surface	@ 1 Meter	(7) ISOTOPES	(8) TRANS-PORT GROUPS	(9) PHYSICAL STATE	(10) ACTIVITY (mCi)	(11) SOURCE MAT. (Pounds)	(12) SNM (Grams)	(13) LABEL USED
3332A					X		7.5	SVL	<1000	<.5	<.1	C^{14}	II	Vials	0.155	N/A	N/A	RADIOACTIVE LSA
												H^3		"	0.502			
3332B					X		7.5	DSW	<1000	<.5	<.1	C^{14}		Solid	0.012			
(14) TOTALS					2		15.0								(16) TOTALS 0.669	—	—	
(15) REPLACEMENTS					2													

*IF ANIMAL CARCASSES, MARK AC; IF SCINTILLATION VIALS, MARK SV; IF 55 S/P, MARK DW.

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION, AND ARE PACKAGED ACCORDING TO THE APPLICABLE REGULATIONS OF THE BURIAL SITE.

NRC OR AGREEMENT STATE LICENSE NO. 07-16199-01 AUTHORIZED SIGNATURE Gary Butcher

DATE 12/11/99 CARRIER R Tid PRINT NAME GARY Butcher

TELEDYNE ISOTOPES

50 VAN BUREN AVENUE WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

RADIOACTIVE WASTE DISPOSAL RECORD NO.

2470

O. NUMBER

PAGE 1 OF PAGES

OMPANY/INSTITUTION E. I. Dupont. Inst

,DDRESS Wilmington Del

MATERIAL DESCRIPTION Radioactive · Material N.O.S.
(See CFR 49: 172.101) Regd. Class: Radioactive Material

(1) CONTAINER NUMBER	(2) CONTAINER TYPE 5 GAL.	30 GAL.	55 S/P	55 GAL.	OTHER	(3) CUBIC FT.	(4) * DESCRIPTION	(5) EXTERNAL CONTAMINATION dpm/100cm²	(6) EXTERNAL(mR/hr) @ Surface	@ 1Meter	(7) ISOTOPES	(8) TRANS-PORT GROUPS	(9) PHYSICAL STATE	(10) ACTIVITY (mCi)	(11) SOURCE (Pounds)	(12) SNM (Grams)	(13) LABEL USED
2470A	-	-	-	X	-	7.5	-	<1000	<.5	<.1	C^{14}	TU	Solid	.0020	N/A	N/A	RAD
											H^3	TU	↓	.0001	↓	↓	↓
2470B	-	-	-	X	-	7.5	SV	<1000	<.5	<.1	C^{14}	TU	↓	.0501	↓	↓	↓
(14) TOTALS	-	-	-	2	-	15.0	*IF ANIMAL CARCASSES, MARK AC; IF SCINTILLATION VIALS, MARK SV; IF 55 S/P, MARK DW.					(16) TOTALS		.0522	-	-	
(15) REPLACEMENTS	-	-	-	0													

THIS IS TO CERTIFY THAT THE ABOVE NAMED ARTICLES ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.

ISOTOPES REP. Hector A. Martos CUSTOMER REP. Gary L. Butcher DATE 8/15/79

TELEDYNE ISOTOPES

50 VAN BUREN AVENUE WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

RADIOACTIVE WASTE DISPOSAL RECORD NO. 2470

P.O. NUMBER ______

PAGE 1 OF ___ PAGES

COMPANY/INSTITUTION A. I. Dupont Inst

MATERIAL DESCRIPTION Radioactive Material LSA N.O.S.
(See CFR 49: 172.101)
Hazard Class: Radioactive Material

ADDRESS Wilmington Del.

(1) CONTAINER NUMBER	(2) CONTAINER TYPE 5 GAL.	30 GAL.	55 S/P	55 GAL.	OTHER	(3) CUBIC FT.	(4) DESCRIPTION*	(5) EXTERNAL CONTAMINATION dpm/100cm²	(6) EXTERNAL (mR/hr) @ Surface	@ 1 Meter	(7) ISOTOPES	(8) TRANS-PORT GROUPS	(9) PHYSICAL STATE	(10) ACTIVITY (mCi)	(11) SOURCE (Pounds)	(12) SNM (Grams)	(13) LABEL USED
2470A	-	-	-	X	-	7.5	-	<1000	<.5	<.1	C14	IV	Solid	.0020	N/A	N/A	RAD LSA
											H3	IV	↓	.0001	↓	↓	↓
2470B	-	-	-	X		7.5	SV	<1000	<.5	<.1	C14	IV	↓	.0501	↓	↓	↓

	5 GAL.	30 GAL.	55 S/P	55 GAL.	OTHER	CUBIC FT.
(14) TOTALS	-	-	-	2	-	15.0
(15) REPLACEMENTS	-	-	-	0		

*IF ANIMAL CARCASSES, MARK AC; IF SCINTILLATION VIALS, MARK SV; IF 55 S/P, MARK DW.

(16) TOTALS	ACTIVITY	SOURCE	SNM
	.0522	-	-

THIS IS TO CERTIFY THAT THE ABOVE NAMED ARTICLES ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.

ISOTOPES REP. Hector A. Martos CUSTOMER REP. Gary L. Butcher DATE 8/15/79

TELEDYNE ISOTOPES
50 VAN BUREN AVENUE WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

RADIOACTIVE WASTE DISPOSAL RECORD NO. 1972

NUMBER 3018 PAGE 1 OF 1 PAGES.

COMPANY/INSTITUTION A.I. DUPONT CHILDRENS HOSP.
ADDRESS ROCKLAND RD.
WILMINGTON, DEL.

MATERIAL DESCRIPTION RADIOACTIVE MATERIAL LSA NOS
(See CFR 49: 172.101) RADIOACTIVE MATERIAL

(1) CONTAINER NUMBER	(2) CONTAINER TYPE 5 GAL.	30 GAL.	55 S/P	55 GAL.	OTHER	(3) CUBIC FT.	(4) * DESCRIPTION	(5) EXTERNAL CONTAMINATION dpm/100cm²	(6) EXTERNAL (mR/hr) @ Surface	@ 1 Meter	(7) ISOTOPES	(8) TRANSPORT GROUPS	(9) PHYSICAL STATE	(10) ACTIVITY (mCi)	(11) SOURCE (Pounds)	(12) SNM (Grams)	(13) LABEL USED
72-A				✓		7.5	-	<1060	<.1	<.5	C 14	IV	S	.021	NA	NA	6 SA
											H 3	IV	S	.008			
B				✓		75	-	<1000	<.1	<.5	C 14	IV	S	.098			
											H 3	IV	S	.075	↓	↓	↓
S							*IF ANIMAL CARCASSES, MARK AC; IF SCINTILLATION VIALS, MARK SV; IF 55 S/P, MARK DW.					(16) TOTALS		0.391		
NTS																	

S TO CERTIFY THAT THE ABOVE NAMED ARTICLES ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR SPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.

ES REP. T D Brewton CUSTOMER REP. Gary Butcher DATE 5-31-79

TELEDYNE ISOTOPES

50 VAN BUREN AVENUE WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

RADIOACTIVE WASTE DISPOSAL RECORD NO.
0688

O. NUMBER

PAGE 1 OF ____ PAGES.

OMPANY/INSTITUTION A.I. Dupont & Co.

DDRESS Wilmington Del.

MATERIAL DESCRIPTION Rad. U.S.A. N.O.S.
(See CFR 49: 172.101)

(1) CONTAINER NUMBER	(2) CONTAINER TYPE 5 GAL.	30 GAL.	55 S/P	55 GAL.	OTHER	(3) CUBIC FT.	(4) * DESCRIPTION	(5) EXTERNAL CONTAMINATION dpm/100cm²	(6) EXTERNAL(mR/hr) @ Surface	@ 1Meter	(7) ISOTOPES	(8) TRANS-PORT GROUPS	(9) PHYSICAL STATE	(10) ACTIVITY (mCi)	(11) SOURCE (Pounds)	(12) SNM (Grams)	(13) LABEL USED
588A	—	—	X	—	—	2.5	DW	<1000	2.5	2.1	H3	IL	S	125	N/A	N/A	25A
											C14	↓	↓	25	↓	↓	↓
588B	—	—	—	X	—	2.5	—	<1000	2.5	2.1	H3			252			
											C14	↓	↓	.08	↓	↓	↓
(14) TOTALS	—	—	1	2	—	15.0	*IF ANIMAL CARCASSES, MARK AC; IF SCINTILLATION VIALS, MARK SV; IF 55 S/P, MARK DW.					(16) TOTALS		.782	—	—	
(15) REPLACEMENTS	—	—	—	2													

THIS IS TO CERTIFY THAT THE ABOVE NAMED ARTICLES ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.

SOTOPES REP. Hector Matos CUSTOMER REP. [signature] R.S.O. DATE 3/15/79

TELEDYNE ISOTOPES

50 VAN BUREN AVENUE • WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

No. 16421
1-6

CUSTOMER NUMBER ☐☐☐☐☐ (7 8 9 10 11)

DATE 7 / 12 / 78 (MO. 12-13, DAY 14-15, YEAR 16-17)

COMPANY/INSTITUTION A. I. Dupont Inst.

CONTAINER NUMBER		CONTAINER 5 GAL.	30 GAL.	30 S/P	55 GAL.	CRATE	LEAK TEST	INSTR. CAL.		OTHER	IF CRATE, CU. FT. IF OTHER, DESCRIBE
0212	18	1	2	~~3~~ X	4	5	6	7	8	9	
	19	1	2	3	4	5	6	7	8	9	
	20	1	2	3	4	5	6	7	8	9	
	21	1	2	3	4	5	6	7	8	9	
	22	1	2	3	4	5	6	7	8	9	
	23	1	2	3	4	5	6	7	8	9	
	24	1	2	3	4	5	6	7	8	9	
	25	1	2	3	4	5	6	7	8	9	
	26	1	2	3	4	5	6	7	8	9	
	27	1	2	3	4	5	6	7	8	9	
	28	1	2	3	4	5	6	7	8	9	
	29	1	2	3	4	5	6	7	8	9	
DELIVERED		30	32	1 (34)	36	38			40	42	

Regardless what I was told
This container was [illegible]
They made a new trailer
This can was almost
a 42 gallon [illegible]
non-isotope
Full Container Solvents

ISOTOPES REP. Hector A. Martos

CUSTOMER REP. E. C. Willis

ISOTOPE	AMOUNT	ISOTOPE	AMOUNT	ISOTOPE	AMOUNT	ISOTOPE	AMOUNT
C^{14}	.75 mCi						
H^3	.75 mCi						

INSTRUMENT C-130-6

THIS IS A RADIOACTIVE WASTE DISPOSAL RECORD

TELEDYNE ISOTOPES
50 VAN BUREN AVENUE • WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

No. 16219
1-6

CUSTOMER NUMBER ____ (7 8 9 10 11)

DATE 6 / 14 / 78 (MO. 12-13, DAY 14-15, YEAR 16-17)

COMPANY/INSTITUTION A.I. Dupont Inst.

CONTAINER NUMBER		CONTAINER 5 GAL.	30 GAL.	30 S/P	55 GAL.	CRATE	LEAK TEST	INSTR. CAL.		OTHER	IF CRATE, CU. FT. IF OTHER, DESCRIBE
9455	18	1	2	3	X	5	6	7	8	9	
	19	1	2	3	4	5	6	7	8	9	
	20	1	2	3	4	5	6	7	8	9	
	21	1	2	3	4	5	6	7	8	9	
	22	1	2	3	4	5	6	7	8	9	
	23	1	2	3	4	5	6	7	8	9	
	24	1	2	3	4	5	6	7	8	9	
	25	1	2	3	4	5	6	7	8	9	
	26	1	2	3	4	5	6	7	8	9	
	27	1	2	3	4	5	6	7	8	9	
	28	1	2	3	4	5	6	7	8	9	
	29	1	2	3	4	5	6	7	8	9	
DELIVERED		30	32	34	1 (36)	38			40	42	

ISOTOPES REP. Hector Martos

CUSTOMER REP. [illegible]

ISOTOPE	AMOUNT	ISOTOPE	AMOUNT	ISOTOPE	AMOUNT	ISOTOPE	AMOUNT
C14	.01 mCi						
H3	.01 mCi						

INSTRUMENT C-130-6

THIS IS A RADIOACTIVE WASTE DISPOSAL RECORD

TELEDYNE ISOTOPES

50 VAN BUREN AVENUE • WESTWOOD, NEW JERSEY 07675
TELEPHONE 201-664-7070

No. 18920
1-6

CUSTOMER NUMBER 0505 (7-11)

DATE 11 (MO. 12-13) 8 (DAY 14-15) 76 (YEAR 16-17)

COMPANY/ INSTITUTION Alfred I. Dupont Institute

CONTAINER NUMBER	CONTAINER 5 GAL.	30 GAL.	30 S/P	55 GAL.	CRATE	LEAK TEST	INSTR. CAL.		OTHER	IF CRATE, CU. FT. IF OTHER, DESCRIBE
0272	18 1	2	X	4	5	6	7	8	9	
	19 1	2	3	4	5	6	7	8	9	
	20 1	2	3	4	5	6	7	8	9	
	21 1	2	3	4	5	6	7	8	9	
	22 1	2	3	4	5	6	7	8	9	
	23 1	2	3	4	5	6	7	8	9	
	24 1	2	3	4	5	6	7	8	9	
	25 1	2	3	4	5	6	7	8	9	
	26 1	2	3	4	5	6	7	8	9	
	27 1	2	3	4	5	6	7	8	9	
	28 1	2	3	4	5	6	7	8	9	
	29 1	2	3	4	5	6	7	8	9	
DELIVERED	30	32	34	36 /	38			40	42	

ISOTOPES REP. Charles Edwards

CUSTOMER REP. [signature]

ISOTOPE	AMOUNT	ISOTOPE	AMOUNT	ISOTOPE	AMOUNT	ISOTOPE	AMOUNT
C^{14}	100 mCi	I^{125}	2 mCi				
H^3	200 mCi						

INSTRUMENT E-120

THIS IS A RADIOACTIVE WASTE DISPOSAL RECORD

Drain records for Administration Research Building for the years 1990 to the present.

The records from before 1990 were not given to me.

Grace M Hobson, RSO

I certify that no radioactive materials were disposed via sanitary sewer in the Administration Research Building in 2011, 2012 and 2013.

Grace M Hobson, PhD, RSO

Alfred I. duPont Hospital for Children
Nemours Biomedical Research

Original (made .pdf)

ARB DRAIN REPORT 2010

Isotope	Control Number	Amount in mCi	
H-3	01H002	0.84600	Hobson
	83H001	0.00100	Hobson
	08H002	0.70000	McGeady
C-14	83C001	0.00100	Hobson
	83C002	0.00100	Hobson
	97C007	0.02400	Hobson
	05C001	0.04420	Twiss/Schanen

Total **0.84600 mCi**

I certify that this total is less than the maximum allowable annual limit of 1 Ci

Alfred I. duPont Hospital for Children
Nemours Biomedical Research

DRAIN REPORT 2009 (Revised July, 2010)

Administration Research Building (ARB)

Isotope	Control Number	Amount in mCi
H-3	07H002	0.25000
H-3	08H001	0.99800
	Total	**1.24800 mCi**

Rockland Center 1

~~None~~

Mary E. Moore

I certify that this total is less than the maximum allowable annual limit of 1 Ci

Alfred I. duPont Hospital for Children
Nemours Biomedical Research

DRAIN REPORT 2008

Isotope	Control Number	Amount in mCi
H-3	07H002	0.25000
H-3	08H001	0.99800
	Total	**1.24800 mCi**

Mary E. Moore 5-29-09

I certify that this total is less than the maximum allowable annual limit of 1 Ci

Alfred I. duPont Hospital for Children
Nemours Biomedical Research

DRAIN REPORT 2007

Isotope	Control Number	Amount in mCi
H-3	07H001	1.000
	07H002	0.750
	Total	**1.750 mCi**

Mary E. Moore

I certify that this total is less than the maximum allowable annual limit of 1 Ci

Alfred I. duPont Hospital for Children
Nemours Biomedical Research

DRAIN REPORT 2006

Isotope	Control Number	Amount in mCi
H-3	06H001	0.99800
	05H002	0.70000
	99H005	0.07800
I-125	05I005	0.00078
	05I007	0.00050
	05I008	0.00067
	06I002	0.00012
	Total	**1.77807 mCi**

5-4-07

I certify that this total is less than the maximum allowable annual limit of 1 Ci

A. I. du Pont Hospital for Children
Nemours Biomedical Research

DRAIN REPORT 2005

Isotope	Control Number	Amount in mCi
C-14		0.03920
	03C001	0.10000
S-35	05S005	0.08000
H-3	04H001	0.15000
	05H001	0.99800
		0.04150
	05H002	0.30000
I-125	05I001	0.00015
	04I011	0.00124
	04I010	0.00087
	04I009	0.00116
	Total	**1.71212 mCi**

Mary E Moore, 6/23/06

I certify that this total is less than the maximum allowable annual limit of 1 Ci

DRAIN REPORT 2004

Isotope	Control Number	Amount in mCi
C-14	04C001	0.0640
	99C006	0.0250
	03C001	0.1000
	02C002	0.0860
H-3	98H007	0.2500
	00H002	0.0860
	04H002	0.1520
	04H001	1.0000
I-125	04I012	0.0116
	04I002	0.0007
	04I003	0.0007
	04I004	0.0005
	04I005	0.0060
	04I006	0.0010
	04I007	0.0015
	04I008	0.0015
	Total	**1.7865 mCi**

Mary E Moore 9-23-05

I certify that this total is less than the maximum allowable annual limit of 1 Ci

DRAIN REPORT 2003

Isotope	Control Number	Amount in mCi
C-14	02C001	0.0025
	02C002	0.05
	99C007	0.001
	03C001	0.1
H-3	00H002	0.05
	03H002	1
	03H003	0.9
	03H001	0.25
	Total	**2.3535 mCi**

Mary E. Moore 3/24/04

I certify that this total is less than the maximum allowable annual limit of 1 Ci

Consultant Radiological Physicist

DRAIN REPORT 2003

Isotope	Control Number	Amount in mCi
C-14	02C001	0.0025
	02C002	0.05
	99C007	0.001
	03C001	0.1
H-3	00H002	0.05
	03H002	1
	03H003	0.9
	03H001	0.25
	Total	**2.3535 mCi**

Mary E. Moore 3/24/04

I certify that this total is less than the maximum allowable annual limit of 1 Ci

Consultant Radiological Physicist

Drain Report
2002

Isotope	Number	mCi
H-3	98H012	0.344
	99H005	0.172
	00H002	0.020
	00H005	0.100
	01H004	1.996
	02H001	0.010
C-14	99C005	0.245
	99C007	0.004
	02C001	0.002
	02C002	0.010
S-35	99S004	0.278
	Total	3.181 mCi

2002 Sewer bills: 104,836,000 gal

I certify that this total is less than the maximum allowable annual limit of 1 Ci

Mary E. Moore

Mary Moore, Health Physicist

Drain 2001

Isotope	Control number	Amount uCi
H-3	01H001	980
	01H002	154
	01H004	2000

Drain 2000

Isotope	Control number	Amount uCi
H-3	00H001	997
	00H002	245
	00H003	995
	00H004	250
	00H005	249

Drain 1999

Isotope	Control number	Amount uCi
C-14	99C004	245
	99C005	245
	99C006	90
	99C007	45
H-3	99H001	245
	99H002	950
	99H003	100
	99H004	245
	99H005	250
	99H006	950

Drain 1998

Isotope	Control number	Amount uCi
C-14	98C001	33.5
	98C002	245
	98C003	148
	98C004	247.5
	98C008	10
	98C010	140
H-3	98H006	990
	98H012	613.5
	98H014	995

Drain Report - 1997

Isotope	Number	From Date	To Date	mCi
C-14				
	96C004	12/1/96	5/8/97	.095
	97C005	4/1/97	4/29/97	.049
				.144
H-3				
	94H001	2/12/97	2/13/97	1.000
	97H008	3/31/97	4/22/97	.249
				1.249
I-125				
	96I006	5/12/97	8/27/97	4.950
	96I008	9/10/96	6/11/97	4.900
	96I009	10/31/96	3/19/97	4.950
	97I001	5/27/97	9/10/97	2.950
	97I002	3/10/97	6/11/97	.003
	97I003	3/19/97	5/12/97	4.950
	97I004	6/4/97	6/16/97	.002
	97I006	10/2/97	6/10/97	4.850
	97I007	6/11/97	7/21/97	.003
	97I008	8/10/97	9/1/97	4.900
	97I009	6/19/97	7/2/97	.002
	97I010	7/30/97	9/29/97	.003
	97I011	8/1/97	8/1/97	.002
	97I012	8/27/97	11/21/97	4.950
	97I013	9/29/97	10/28/97	.003
				37.417
P-32				
	97P047	6/13/97	6/21/97	.200
	97P061	8/7/97	9/5/97	.200
	97P062	8/24/97	8/30/97	.200
	97P068	9/20/97	9/27/97	.200
	97P070	10/2/97	10/11/97	.200
	97P076	10/22/97	10/30/97	.150
	97P078	10/28/97	10/28/97	.010
	97P087	11/11/97	11/12/97	.000
	97P096	11/21/97	11/26/97	.200
	97P104	12/11/97	12/15/97	.150
				1.510
S-35				
	96S006	11/13/96	12/19/97	.845
				.845

For 1996

Drain Report

13-Feb-97

1/1/96 3:30:22 PM 409

Isotope	Number	From Date	To Date	mCi	Avg Daily
Fe-59					
	95Fe003	10/31/96	11/1/96	.200	
	95Fe004	10/31/96	11/1/96	.200	
	95Fe005	10/31/96	11/1/96	.200	
	96Fe001	5/22/96	6/12/96	.010	
	96Fe002	6/14/96	8/30/96	.100	
				.710	**.002**
H-3					
	96H001	2/13/96	3/6/96	.250	
				.250	**.001**
I-125					
	95I003	4/5/95	1/2/96	4.700	
	95I007	8/25/95	6/20/96	3.870	
	95I010	9/7/95	1/2/96	4.850	
	95I012	11/3/95	1/24/96	.500	
	95I013	12/30/95	5/8/96	5.000	
	96I001	1/3/96	5/1/96	4.950	
	96I002	4/10/96	4/29/96	.700	
	96I003	3/15/96	6/3/96	4.850	
	96I004	5/1/96	5/28/96	4.950	
	96I005	6/3/96	7/30/96	4.950	
	96I007	8/9/96	11/8/96	4.950	
				44.270	**.108**
P-32					
	96P068	11/12/96	11/19/96	.031	
	96P076	12/10/96	12/11/96	.010	
				.041	**.000**
S-35					
	95S022	12/13/95	1/16/96	.208	
	96S001	1/24/96	2/26/96	.990	
	96S002	2/29/96	5/7/96	.212	
	96S003	5/13/96	5/14/96	.018	
	96S004	5/16/96	5/22/96	.800	
	96S005	11/11/96	11/12/96	.044	
				2.272	**.006**

^{3}H ISOTOPE 1995 YEAR

DRAIN	LSV	SVLW	LW	DW	AIR	DATE
250 uCi						1-26-95
250 uCi						1-26-95
93H006 ~~XXXX~~ 500 uCi						~~3/94~~ 8/95
93H004 700 uCi						4/94 - 6/94

^{14}C ISOTOPE 1995 YEAR

	DRAIN	LSV	SVLW	LW	DW	AIR	DATE
89-007	50 uCi						2-14-95
Aug 87	250 uCi						12-18-95

^{3}H ISOTOPE 1994 YEAR

DRAIN	LSV	SVLW	LW	DW	AIR	DATE
1 mCi						6-8-94
25 uCi						6-22-94
~~5700~~						12-94
250 uCi						12-94
250 uCi						3/94
90H002 45 uCi						3-94
93 H006 500 uCi						11/21/94 to 9/21/9
94H002 5000 uCi						

^{14}C ISOTOPE 1994 YEAR

	DRAIN	LSV	SVLW	LW	DW	AIR	DATE
	25 uCi						3-17-94
93C001	21 uCi						6-13-94
90C003	21 uCi						6-13-94
	50 uCi						12-15-94

^{3}H ISOTOPE 1993 YEAR

	DRAIN	LSV	SVLW	LW	DW	AIR	DATE
	1000 uCi						7/93
	1000 uCi						7/93
	1000 uCi						4/93
	1000 uCi						10/93
	1000 uCi						6/93
	1000 uCi						8/93
	250 uCi						11/93
90H002	30 uCi						12/93
	5 uCi						4/93
93H003	1000 uCi						9/93 - 12/93
93H004	300 uCi						10/93 - 12/93

^{14}C ISOTOPE 1993 YEAR

DRAIN	LSV	SVLW	LW	DW	AIR	DATE
25 uCi						7-93
25 uCi						7-93
50 uCi						7-93
0.5 uCi						7-93
50 uCi						7-93
50 uCi						7-93
5 uCi						2-18-93
100 uCi						12-14-93
5 uCi						8-17-93 ~~9-23-94~~

^{3}H ISOTOPE 1992 YEAR

DRAIN	LSV	SVLW	LW	DW	AIR	DATE
1000uCi						5/92
250uCi						5/92
250 uCi						5/92
250 uCi						5/92
250 uCi						5/92
250 uCi						5/92
250 uCi						5/92
~~1000 uCi~~						5/92
1000 uCi						2/92
1000 uCi						3/92
1000 uCi						4/92
1000 uCi						4/92
1000 uCi						8/92
1000 uCi						9/92
1000 uCi						12/92
~~100 uCi~~						~~2/25/4~~

^{14}C ISOTOPE 1992 YEAR

DRAIN	LSV	SVLW	LW	DW	AIR	DATE
100 mCi						2-25-92
250 mCi						12/92
5 mCi						3/24/92 – 2/10/93

3H ISOTOPE 1991 YEAR

DRAIN	LSV	SVLW	LW	DW	AIR	DATE
1000 uCi						11/91
1000 uCi						12/91
5 uCi						3/91

^3H ISOTOPE 1990 YEAR

	DRAIN	LSV	SVLW	LW	DW	AIR	DATE
~~[illegible]~~	5uC						7/6/90
	500uCi						2/90
	100 uCi						
	100 uCi						3/90
	100 uCi						12/90
	~~150 uCi~~						3/90
	50 uCi						~~8/9/90~~
	250uCi						6/7/90
	~~0.5 uCi~~						8/11/90
	~~500 uCi~~						~~4/4/90~~
	800 uCi						2/90-7/90
	5? uCi						

^{14}C ISOTOPE 1990 YEAR

DRAIN	LSV	SVLW	LW	DW	AIR	DATE
50 uCi						8-9-90
150 uCi						
~~250 uCi~~						
10 uCi						1/15/90

This is to acknowledge the receipt of your letter/application dated 5/29/13, and to inform you that the initial processing which includes an administrative review has been performed. Renew (07-16199-01)

[X] 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** 581038.
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