

## MATERIALS LICENSE

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

Licensee		In accordance with letter dated March 13, 1997,	
1. Department of Veterans Affairs Northern California Health Care System		3. License Number 04-02956-02 is amended in its entirety to read as follows:	
2. 2300 Contra Costa Blvd., Suite 440 Pleasant Hill, California 94523-3961		4. Expiration Date May 31, 2002	
		5. Docket or Reference No. 030-01223	
6. Byproduct, Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form	8. Maximum Amount that Licensee May Possess at Any One Time Under This License	
A. Any byproduct material identified in 10 CFR 35.100	A. Any radiopharmaceutical identified in 10 CFR 35.100	A. As needed	
B. Any byproduct material identified in 10 CFR 35.200	B. Any radiopharmaceutical identified in 10 CFR 35.200	B. As needed	
C. Any byproduct material identified in 10 CFR 35.300	C. Any radiopharmaceutical identified in 10 CFR 35.300	C. 3.3 curies	
D. Cesium-137	D. Sealed source contained in J. L. Shepherd & Associates model 28-5 single source beam calibrator	D. 100 millicuries	
E. Iodine-131	E. Iodide	E. 20 millicuries	
F. Iodine-125	F. Any	F. 100 millicuries	
G. Rubidium-86	G. Any	G. 10 millicuries	
H. Hydrogen-3	H. Prelabeled organic chemicals	H. 200 millicuries	
I. Carbon-14	I. Any	I. 100 millicuries	
J. Phosphorus-32	J. Any	J. 60 millicuries	

011  
ML40

**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**

License Number

04-02956-02

Docket or Reference Number

030-01223

Amendment No. 75

K. Chromium-51	K. Any	K. 60 millicuries
L. Sulfur-35	L. Any	L. 40 millicuries
M. Technetium-99m	M. Any	M. 200 millicuries
N. Calcium-45	N. Any	N. 40 millicuries
O. Chlorine-36	O. Any	O. 40 millicuries

9. Authorized use

- A. Medical use described in 10 CFR 35.100.
- B. Medical use described in 10 CFR 35.200.
- C. Medical use described in 10 CFR 35.300.
- D. Standard for instrument calibration.
- E. through O. In vitro studies; animal studies.

CONDITIONS

- 10. Licensed material shall be used only at the licensee's facilities located at the Department of Veterans Affairs Northern California System of Clinics, 150 Muir Road, Martinez, California.
- 11. The Radiation Safety Officer for this license is Charles A. Barnett, M.D.

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Amendment No. 75

12. Licensed material listed in Item 6 above is authorized for use by, or under the supervision of, the following individual(s) for the materials and uses indicated:

Authorized UsersMaterial and Use

Mukesh J. Joshi, M.D.

10 CFR 35.100, 35.200, 35.300  
In vitro studies  
animal studies

Albert Weinschelbaum, M.D.

10 CFR 35.100, 35.200, 35.300  
In vitro studies  
animal studies

Charles A. Barnett, M.D.

10 CFR 35.100, 35.200, 35.300  
In vitro studies  
animal studies

Paul A. Farrar, M.D.

10 CFR 35.100, 35.200, 35.300  
In vitro studies  
animal studies

Ildiko Sandford, M.D.

In vitro studies  
animal studies

Robert Noth, M.D.

In vitro studies  
animal studies

Edwin M. Leidholdt, Ph.D.

In vitro studies, Cesium 137 for  
instrument calibration

Ingrid Kwee, M.D.

In vitro studies  
animal studies

Robert J. Liebig, M.D.

10 CFR 35.100 and 35.200

13. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of licensed material to quantities below the minimum limit specified in 10 CFR 30.35(d) for establishing decommissioning financial assurance.

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14. The licensee is authorized to hold radioactive material with a physical half-life of less than 65 days for decay-in-storage before disposal in ordinary trash provided:
- A. Radioactive waste to be disposed of in this manner shall be held for decay a minimum of 10 half-lives.
  - B. Before disposal as ordinary trash, byproduct material shall be surveyed at the container surface with the appropriate survey meter set on its most sensitive scale and with no interposed shielding to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated.
  - C. A record of each disposal permitted under this License Condition shall be retained for three years. The record must include the date of disposal, the date on which the byproduct material was placed in storage, the radionuclides disposed, the survey instrument used, the background dose rate, the dose rate measured at the surface of each waste container, and the name of the individual who performed the disposal.
15. A. Sealed sources and detector cells shall be tested for leakage and/or contamination at intervals not to exceed 6 months or at such other intervals as specified by the certificate of registration referred to in 10 CFR 32.210.
- B. Notwithstanding Paragraph A of this Condition, sealed sources designed to emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed 3 months.
- C. In the absence of a certificate from a transferor indicating that a leak test has been made within 6 months prior to the transfer, a sealed source or detector cell received from another person shall not be put into use until tested.
- D. Sealed sources need not be leak tested if:
- (i) they contain only hydrogen-3; or
  - (ii) they contain only a radioactive gas; or
  - (iii) the half-life of the isotope is 30 days or less; or
  - (iv) they contain not more than 100 microcuries of beta and/or gamma emitting material or not more than 10 microcuries of alpha emitting material; or



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15. (Continued)

(v) they are not designed to emit alpha particles, are in storage, and are not being used. However, when they are removed from storage for use or transferred to another person, and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source or detector cell shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.

E. The leak test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 30(b)(2), and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. The report shall be filed within 5 days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011, ATTN: Director, Division of Nuclear Materials Safety. The report shall specify the source involved, the test results, and corrective action taken.

F. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically licensed by the Commission or an Agreement State to Perform such services.

16. The licensee shall conduct a physical inventory every three (3) months to account for all sources and/or devices received and possessed pursuant to 10 CFR 35.57, and every six (6) months for all other sources and or devices.

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

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

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19. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below, except for minor changes in the medical use radiation safety procedures as provided in 10 CFR 35.31. The Nuclear Regulatory Commission's regulations shall govern, unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.

- A. Application dated March 5, 1991
- B. Letter dated January 30, 1992
- C. Letter dated February 26, 1992, except Item 10.16
- D. Letter dated March 10, 1992
- E. Letter dated March 23, 1992
- F. Letter dated April 29, 1992
- G. Letter dated May 7, 1992
- H. Letter dated May 29, 1992
- I. Letter dated June 12, 1992
- J. Letter received September 2, 1992
- K. Letter dated November 24, 1992
- L. Letter dated July 12, 1993
- M. Letter dated January 10, 1994
- N. Letter dated October 18, 1993
- O. Letter dated February 28, 1994
- P. Letter dated October 14, 1994
- Q. Letter dated March 6, 1995
- R. Letter dated August 1, 1995
- S. Letter dated February 14, 1996
- T. Letter dated September 30, 1996
- U. Letter dated March 28, 1997
- V. Letter dated April 28, 1997

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date MAY 28 1997

By

*James I. Montgomery*  
Materials Branch  
Region IV, WCFO  
Walnut Creek, California 94596

(FOR LFMS USE)  
INFORMATION FROM LTS

BETWEEN:

License Fee Management Branch, ARM  
and  
Regional Licensing Sections

Program Code: 02120  
Status Code: 0  
Fee Category: EX 7C  
Exp. Date: 20020531  
Fee Comments:  
Decom Fin Assur Req'd: Y

LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED

Applicant/Licensee: V. A. DEPARTMENT OF  
Received Date: 970313  
Docket No.: 3001223  
Control No.: 572471  
License No.: 04-02956-02  
Action Type: Amendment

2. FEE ATTACHED

Amount: \_\_\_\_\_  
Check No.: \_\_\_\_\_

3. COMMENTS

Signed \_\_\_\_\_  
Date \_\_\_\_\_

B. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered /\_\_/) )

1. Fee Category and Amount: \_\_\_\_\_

2. Correct Fee Paid. Application may be processed for:

Amendment \_\_\_\_\_  
Renewal \_\_\_\_\_  
License \_\_\_\_\_

3. OTHER \_\_\_\_\_

Signed \_\_\_\_\_  
Date \_\_\_\_\_



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV

Walnut Creek Field Office  
1450 Maria Lane  
Walnut Creek, California 94596-5368

MAY 28 1997

Department of Veterans Affairs  
Northern California Health Care System  
ATTN: John E. Hempel  
Acting Director  
2300 Contra Costa Blvd., Suite 440  
Pleasant Hill, California 94523-3961

SUBJECT: LICENSE AMENDMENT

Please find enclosed License No. 04-02956-02. You should review this license carefully and be sure that you understand all conditions.

The purpose of this license amendment is to release Rooms 110, 119, and 120 of Building 5 (the Research Building) for unrestricted use. A confirmatory survey was performed on May 8, 1997. A review of the results of your surveys and those of the confirmatory survey indicated that current NRC release criteria are satisfied. If you have any questions, you may contact the reviewer who signed your license at (510) 975-0250.

NRC expects licensees to conduct their programs with meticulous attention to detail and a high standard of compliance. Because of the serious consequences to employees and the public which can result from failure to comply with NRC requirements, you must conduct your program involving radioactive materials in accordance with the conditions of your NRC license, representations made in your license application, and NRC regulations. In particular, note that you must:

1. Operate in accordance with NRC regulations 10 CFR Part 19, "Notices, Instructions and Reports to Workers: Inspection and Investigations," 10 CFR Part 20, "Standards for Protection Against Radiation," and other applicable regulations.
2. Possess radioactive material only in the quantity and form indicated in your license.
3. Use radioactive material only for the purpose(s) indicated in your license.
4. Notify NRC in writing of any change in mailing address (no fee required if the location of radioactive material remains the same).
5. Request and obtain written NRC consent before transferring your license or any right thereunder, either voluntarily or involuntarily, directly or indirectly, through transfer of control of your license to any person or entity. A transfer of control of your license includes not only a total change of ownership, but also a change in the controlling interest in your company whether it is a corporation, partnership, or other entity. In addition, appropriate license amendments must be requested and obtained for any other planned changes in your facility or program that are contrary



to your license or contrary to representations made in your license application, as well as supplemental correspondence thereto, which are incorporated into your license. A license fee may be charged for the amendments if you are not in a fee-exempt category.

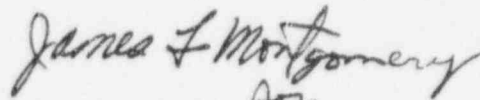
6. Maintain in a single document decommissioning records that have been certified for completeness and accuracy listing all the following items applicable to the license:
  - Onsite areas designated or formerly designated as restricted areas as defined in 10 CFR 20.3(a)(14) or 20.1003.
  - Onsite areas, other than restricted areas, where radioactive materials in quantities greater than amounts listed in Appendix C to 10 CFR 20.1001-20.2401 have been used, possessed, or stored.
  - Onsite areas, other than restricted areas, where spills or other unusual occurrences involving the spread of contamination in and around the facility, equipment, or site have occurred that required reporting pursuant to 10 CFR 30.50(b)(1) or (b)(4), including areas where subsequent cleanup procedures have removed the contamination.
  - Specific locations and radionuclide contents of previous and current burial areas within the site, excluding radioactive material with half-lives of 10 days or less, depleted uranium used only for shielding or as penetrators in unused munitions, or sealed sources authorized for use at temporary job sites.
  - Location and description of all contaminated equipment involved in licensed operations that is to remain onsite after license termination.
7. Submit a complete renewal application with proper fee, or termination request at least 30 days before the expiration date on your license. You will receive a reminder notice approximately 90 days before the expiration date. Possession of radioactive material after your license expires is a violation of NRC regulations.
8. Request termination of your license if you plan to permanently discontinue activities involving radioactive material.



You will be periodically inspected by NRC. Failure to conduct your program in accordance with NRC regulations, license conditions, and representations made in your license application and supplemental correspondence with NRC will result in enforcement action against you. This could include issuance of a notice of violation; imposition of a civil penalty; or an order suspending, modifying, or revoking your license as specified in the "General Statement of Policy and Procedure for NRC Enforcement Actions" (Enforcement Policy), 60 FR 34381, June 30, 1995.

Thank you for your cooperation.

Sincerely,

A handwritten signature in cursive script that reads "James I. Montgomery".

Beth A. Prange  
Sr. Health Physicist (Licensing)  
Materials Branch

Docket: 030-01223  
License: 04-02956-02  
Control: 572471

Enclosures: As stated

Department of Veterans Affairs  
Northern California Health Care System

-4-

bcc:

F. Herbig, Director, V.A.

E. Liedholdt, Western Region Program Manager, V.A.

Docket File

WCFO Inspection File

LFARB, T-9 E10

State of CA (License Only)

DOCUMENT NAME: G:\BETH\572471

To receive copy of document, indicate in box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

RIV:MB		RIV:MB		RIV:MB				
K Prendergast		BPrange		JMontgomer				
/ /97		5/28/97		5/28/97				

OFFICIAL RECORD COPYOFFICIAL RECORD COPY



DEPARTMENT OF VETERANS AFFAIRS  
Medical Center  
St Louis MO 63125

*other correspondence*

May 7, 1997

In Reply Refer To:

U.S. Nuclear Regulatory Commission  
Region IV  
Attn: Beth Prange  
Walnut Creek Field Office  
1450 Maria Lane  
Walnut Creek, CA 94596-5396

SUBJECT: NRC License No. 04-02956-02

Per your conversation with my assistant on May 6, 1997: Our office has not received correspondence in the form of requested responses dated 3/28/97 and 4/28/97 from the Martinez, California VA Medical Center referencing their decommissioning project. Please act upon their amendment request as you see fit. Mr. Leidholdt and Ms. Bukowsky have spoken with the facility with regard to routing future correspondence through our St. Louis office with intentions of keeping abreast of happenings as well as being of better assistance to the NRC. If there are questions, please contact the facility.

Please provide a copy of any correspondence relative to licensing actions for this Medical Center to:

Department of Veterans Affairs  
Health Physics Programs (115HP)  
915 North Grand Blvd.  
St. Louis, MO 63106

Sincerely,

*Cindy Bukowsky*

*for* Francis K. Herbig  
Health Physics Programs

572471

Dept. of Veterans Affairs  
Natl. Health Physics Program (115HP)  
915 N. Grand Blvd.  
St. Louis, MO 63106  
314-289-6519  
fax: 314-289-7058

## facsimile transmittal

To: Beth Prange Fax: 310-975-0381

From: Cindy Bukowsky Date: 5/7/97

Re: Pages: 1

CC:

☐ Urgent ☒ For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

Notes: Hi Beth - Sorry it took so long to get this to you. If you need anything else, don't hesitate to call.

Hope this is suitable as an approval letter.

This transmission is intended only for the use of the person or office to whom it is addressed and may contain information that is privileged, confidential or protected by law. All others are hereby notified that receipt of this message does not waive any applicable privilege or exemption from disclosure and that any dissemination, distribution, or copying of this communications is prohibited. If you have received this communication in error, please notify us immediately at the telephone number shown above. Thank you.

CONFIDENTIAL



Department of Veterans Affairs  
Northern California Health Care System  
Administrative Offices  
2300 Contra Costa Boulevard, Suite 440  
Pleasant Hill, CA 94523-3961

VA Outpatient Clinics  
2221 Martin Luther King Jr. Way, Oakland, CA 94612  
150 Main Road, Martinez, CA 94553  
4600 Broadway, Sacramento, CA 95820  
2787 Eureka Way, Redding, CA 96001

Substance Abuse Program  
841 Folger Ave., Berkeley, CA 94710

APR 28 1997

Beth Prange  
Sr. Health Physicist  
USNRC  
1450 Maria Lane  
Walnut Creek, CA 94596-5368

In Reply Refer To:

Subject: Response to questions relating to license amendment  
RML # 04-02956-02

Dear Ms. Prange,

We have reviewed your letter dated April 7, 1997 requesting additional information pertaining to our license amendment request for release of three restricted areas. Our responses pertain to our request dated March 28, 1997 and your letter.

1. Section 1 is revised as follows,

Personnel

The Decommission survey was conducted by ABR certified radiological physicists - John T. Stalp, M.S. and Bernard Tatera, Ph.D. Their combined medical health physics experience is over 40 years. Their last decommissioning project was the VA Hospital (Building 1) on the Martinez campus in 1993. A confirmatory survey of Building 1 was conducted by Oak Ridge Institute for Science and Education. A single site of contamination was discovered in Room B29. This was immediately remediated and the success of decontamination was confirmed prior to completion of the confirmatory survey. The two named individuals are qualified by education, experience, and performance (based on Building 1) to decommission the three areas of interest.

2. Eberline HP-260

We sent our HP-260 probe and Eberline 520 (s/n 4913) meter to a second calibration service for a check of efficiency. The company informed us that their records indicated that the nominal efficiency, stated by the manufacturer for a HP-260 probe for C-14 is 10%. They noted that the calibration geometry is not stated by the manufacturer. The calibration service calibrates these probes at 1 cm from a point source and the typical efficiency is 4%. They measured a 3.4% efficiency for C-14 using their calibration geometry and our HP-260.

They recalibrated the meter anticipating an enhanced efficiency prior to the C-14 efficiency check. We did notice a minor enhancement of sensitivity after the recalibration. Our stated background on this meter is now 30 cpm. The new calibration report (attached) should address your concerns about the prior report.

The three lab areas (110, 119, 120) were resurveyed with the recalibrated meter and there were not readings noted that converted to activities above the MDA. The revised MDA values based on a background of 30 cpm are:

572471



Isotope	Eff.	Scanning MDA
Sr-90	45% (nominal)	1,335 dpm/ 100 cm. sq.
C-14	3.4% (measured)	17,650
P-32	25% (nominal)	2,400

The new MDA value when applied to the survey for room 110 still produces survey values at the MDA level of 2,400 dpm for P-32. This value is below the 5000 dpm (ave.) limit for the 100 cm. sq. surface area contamination limit set in the USNRC document "Guidelines for Decontamination..." dated August 1987.

### 3. NaI survey meter

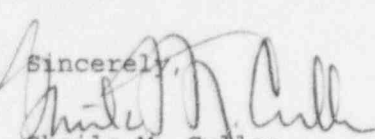
The scanning scintillation meter/probe is a PRM-6, s/n 520. The instrument-probe was calibrated as a unit. There is no separate identifiable serial number for the probe. The calibration certificate (attached) was corrected for lack of units after a discussion with the calibration service. We assume that the background for this meter is lower than our newer NaI meter because the NaI crystal is thinner.

### 4. Liquid scintillation windows

We use the manufacturer's suggested windows for the liquid scintillation counting of H-3, C-14, and P-32. The manufacturer's autocalibration program using NIST traceable standards of C-14 and H-3 is also used. We verified the appropriateness of these windows prior to conducting the decommissioning survey using H-3 and C-14 standards. We found that the standards counted properly in these windows based on measurement of efficiency and spillover. These window settings properly separated the two isotopes with a very small amount of spilldown of C-14 into the H-3 window. The window units, 0-400 for example, are not claimed to be in units of KeV.

Please contact our Associate Radiation Safety Officer, John T. Stalp, after you have studied our responses; he will provide additional information as needed. He can be contacted at 415-824-7234 or 415-608-5161 (cellular).

Sincerely,

  
Sheila M. Cullen  
Director

Enclosures (2)



# RADIATION DETECTION COMPANY

162 Wolfe Road • P.O. Box 3414 • Sunnyvale, California 94088-3414 • (408) 735-8700 Fax: (408) 735-0126

## CALIBRATION OF SURVEY INSTRUMENT

Report No. 168

V.A. Medical Center  
Attn: Rick Marcum, BIOMED  
150 Muir Road  
Martinez, CA 94553

Purchase Order #  
Account #: 10436c  
Calibration Date: April 15, 1997

Instrument: Eberline Probe: (HP-260)  
Model #: E-520 Serial #: 4913

Exposure	Instrument reading	Instrument Scale
1,500 mR/h	1,450 mR/h	X100 *
1,000 mR/h	1,000 mR/h	X100
500 mR/h	510 mR/h	X100
CPM	CPM	
180,000	179,000	X10
120,000	120,000	X10
60,000	60,000	X10
18,000	17,700	X1
12,000	11,800	X1
6,000	5,900	X1
1,800	1,780	X0.1
1,200	1,190	X0.1
600	590	X0.1
180	178	X0.01
120	119	X0.01
60	60	X0.01

Response to: 1 mR/h  $^{137}\text{Cs}$  3,500 CPM (Window to Source) X1  
Isotope:  $^{14}\text{C}$  Activity: 197,878 dpm  
Instrument Response: 6,700 cpm X1

Notes: Calibrated with a pulse generator (Traceable to NIST)  
Temperature: 70°F, Humidity: 71%, Barometer: 757mm.

\*Internal probe calibrated to  $^{137}\text{Cs}$  using  $^{137}\text{Cs}$  and  $^{60}\text{Co}$ .  
(Traceable to NIST # DG9852/95)

A complete record of each instrument calibration is maintained in our files. Battery checks and routine preventive maintenance are also included as a part of the calibration procedure. The Calibration Due date is only a suggestion. The actual frequency of re-calibration may vary depending on regulatory requirements.

Next Calibration Due: April 15, 1998 Calibrated by: [Signature]

hmr  
Calib\10436c.168  
04/15/97

SERVICE IS OUR PRODUCT

\* Film and Thermoluminescent Dosimetry.

Instrument Calibrations • Radiation Surveys • Health Physics Consultation • Environmental Analyses



# Certificate of Calibration

NWT analytic & Consultation Services  
1724 Holmes Street  
Livermore CA 94550  
Phone: (510) 443-7967 Fax (510) 443-0119

Customer: VANSC Order No.: \_\_\_\_\_  
Mfg.: Eberline Model: IRM-6 Serial No.: 520  
Mfg.: Eberline Det. Model: N/A Serial No.: N/A  
Cal. Date: 1-2-97 Due Date: 1-2-98 Cal. Interval: 1yr

Check mark applies to applicable instrument and/or detector.

( ) Det Bkg. 200 cpm Det. Operating voltage (mV) \_\_\_\_\_  
Temp \_\_\_\_\_ Hum. \_\_\_\_\_ % F/S Resp. chk. \_\_\_\_\_ Zero Reset chk. \_\_\_\_\_ Audio Chk. ☒  
Bat. chk. good Bat. Voltage: \_\_\_\_\_ Inst. Voltage set: 1kV  
Threshold: \_\_\_\_\_ mV Input Voltage: 300 mV  
HV Readout (2 points): \_\_\_\_\_ Ref./Inst.: 1 Ref./Inst.: 1  
Alarm Setting chk.: \_\_\_\_\_ Window Operation \_\_\_\_\_ Background Subtract: \_\_\_\_\_ Mechanical Check: \_\_\_\_\_  
Field Change Status: \_\_\_\_\_

Repair Instrument Received:	Within Tolerance (+/-10%)	10 to 20%	Out of Toler.	Requires Repair
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Comment:

Range Multiplier	Reference Point (ppm)	Instrument Reading (cpm)
<u>1</u>	<u>100</u>	<u>100</u>
	<u>400</u>	<u>400</u>
<u>10</u>	<u>1000</u>	<u>1000</u>
	<u>4000</u>	<u>4000</u>
<u>100</u>	<u>10000</u>	<u>10000</u>
	<u>40000</u>	<u>40000</u>
<u>1000</u>	<u>100000</u>	<u>100000</u>
	<u>400000</u>	<u>400000</u>
<u>I-129</u>	<u>98000</u>	<u>45000 ~ 45.9% eff</u>

Sources & Instruments:

<input checked="" type="checkbox"/> Gamma sn.: <u>208/27</u>	<input type="checkbox"/> Beta sn.: _____	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Alpha sn.: _____	<input type="checkbox"/> Oscilloscope sn.: _____	<input type="checkbox"/> Multimeter: _____
<input checked="" type="checkbox"/> Pulser sn.: <u>81071</u>		
Calibrated by: <u>[Signature]</u>	Date: <u>1-2-97</u>	

NWT certifies that the above instrument has been calibrated by instruments and standards traceable to NIST or the calibration facilities of other International Standards Organization members or have been derived from accepted values of natural physical constants, or have been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements of MIL-STD-45662A and ANSI N323-1978.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV

Walnut Creek Field Office  
1450 Maria Lane  
Walnut Creek, California 94596-5368

APR - 7 1997

Department of Veterans Affairs  
Northern California Health Care System  
ATTN: Sheila M. Cullen  
Director  
2300 Contra Costa Blvd., Suite 440  
Pleasant Hill, California 94523-3961

SUBJECT: LICENSE AMENDMENT REQUEST

This is in reference to your request dated March 28, 1997 for amendment of your byproduct material license. In order to complete our review, we need the following additional information:

1. Section 1 should be revised, as Room B29 in Building 1 evidenced residual contamination in excess of the surface contamination guidelines. The area was remediated and resurveyed while the Oak Ridge Institute for Science and Education personnel were onsite. Post-remedial action measurements confirmed that the area met the guidelines for unrestricted release. You should revise and resubmit this section.
2. Section 4 states that the background for the use of the Eberline HP-260 pancake probe was 20 counts per minute. Normal background counts for such a detector in a clean environment ranges between 40 and 60 counts per minute. There is a question as to whether the instrument is under-responding.

In Section 6.1, a ten-percent efficiency was cited as the manufacturer's nominal efficiency for C-14. However, manufacturer information on file in this office indicates a six-percent efficiency. You should have your calibration facility determine the C-14 detection efficiency of your Eberline E-520 instrument with the HP-260 probe used during the survey.

It should also be noted that the survey report provided for the E-520 instrument indicated that a cylindrical GM probe was being used during calibrations, as it refers to a calibration geometry, "Perpendicular to long axis of probe". The calibration should be performed with the probe to be used during surveys. The probe model and serial number should be identified on the calibration report. The calibration source used should also be identified; and it should be appropriate for the materials to be detected. At least one beta-emitter should be used in the calibration, as they are of interest. The units of the measured dose rates should be indicated on the calibration report, and the "mR/hr" note after "battery check" should be removed.

3. Section 6.2 discusses the use of a scanning scintillation probe, but the manufacturer and model number were not stated, nor was any calibration information given. Was the probe used in conjunction with the Eberline PRM-6, serial number 520, instrument described under Tab 3 of the report? Was the instrument-probe combination calibrated? This information should be submitted.

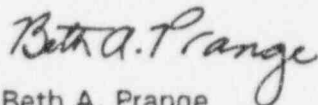
It should be noted that the calibration data for the Eberline PRM-6 does not include units for either the calibration "reference point" or "instrument readings". This should be corrected.

The background for this probe is noted in Section 9 to be 175 counts per minute. This is noted to be quite low for a gamma scintillation detector.

4. Section 6.4 indicates that C-14 would have been detected by the second energy window; however, it appears that the maximum beta-energy for C-14 is 156 keV, which would mean that it would be "seen" only in the first energy-window of the liquid scintillation counter. Please clarify.

We will continue the review of your amendment request upon receipt of your response to these items. In order to continue prompt review of your application, we request that you submit your response to this letter within 30 days from the date of this letter. Please reply in duplicate, and refer to Mail Control 572471.

Sincerely,



Beth A. Prange  
Sr. Health Physicist (Licensing)  
Materials Branch

Docket: 030-01223  
License: 04-02956-02  
Control: 572471

cc: F. Herbig, Director, V.A.  
E. Liedholdt, Western Region Program Manager, V.A.



bcc:  
Docket File  
WCFO Inspection File  
LFDCB, T-9 E10

DOCUMENT NAME: G:\beth\vaph

To receive copy of document, indicate in box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

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BPrange	<i>BaP</i>								
04/7/97		04/ /97		04/ /97					

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rec'd 3/31/97 BAP



Department of Veterans Affairs  
Northern California Health Care System  
Administrative Offices  
2300 Contra Costa Boulevard, Suite 440  
Pleasant Hill, CA 94523-3961

VA Outpatient Clinics  
2221 Martin Luther King Jr. Way, Oakland, CA 94612  
150 Main Road, Martinez, CA 94553  
4800 Broadway, Sacramento, CA 95820  
2787 Eureka Way, Redding, CA 96001  
  
Substance Abuse Program  
841 Folsom Ave., Berkeley, CA 94710

MAR 28 1997

In Reply Refer To:


U.S. Nuclear Regulatory Commission  
1450 Maria Lane Suite 210  
Walnut Creek, CA 94596

Dear Madam/Sir:

This letter and enclosed report are submitted as a request to amend our NRC License (#04-02956-02). The enclosed report replaces the earlier report submitted on March 14, 1997, in its entirety. We are requesting the removal of rooms 110, 119 and 120 in the Research Building from our list of restricted areas designated for radioactive materials use. These areas were surveyed to ascertain ambient dose levels and wipe-tested for removable radioactive material. No readings were above the NRC guidelines for release to unrestricted area use. Copies of the surveys and wipe tests are enclosed for your records.

The three areas will not be released for unrestricted use until approval has been received from the NRC. Radiation Safety Service (room 119) will move to room 4 of the Research Trailer. The other two labs are no longer operational and will, therefore, not be resited.

Please contact our Associate Radiation Safety Officer, John T. Stalp, after you have studied the report, and he will provide additional information as needed. He can be contacted at (415) 824-7234 or (415) 608-5161 (cellular).

Sincerely,  
  
Sheila M. Cullen  
Director

Enclosures

cc: Department of Veterans Affairs  
Health Physics Program (115HP)  
915 North Grand Boulevard  
St. Louis, MO 63106

572471

Decommissioning of Rooms 110, 119, and 120  
Research Building  
VA Northern California Health Care System  
Martinez, CA

NRC License Number 04-02956-02

March 1-23, 1997

#### CONTENTS

1. Personnel
2. Location of Research Building
3. Original Floorplan (as built)
4. Preparation of Rooms for Survey
5. Presurvey of Rooms 120
6. In-House Instrumentation and Standards
7. Room 110 - Research Building
8. Room 120 - Research Building
9. Room 119 - Research Building

## 1. Personnel

The decommissioning survey was conducted by ABR certified radiological physicists - John T. Stalp, M.S. and Bernard Tatera, PhD. Their combined medical health physics experience is over 40 years. Their last decommissioning project was the VA Hospital (Building 1) on the Martinez campus in 1993. A confirmatory survey of Building 1 was conducted by Oak Ridge Institute for Science and Education and no residual contamination was discovered. These individuals are qualified by education, experience, and performance (based on Building 1) to decommission the three areas of interest.

## 2. Location of Research Building

The VANCHS Research Building is located at 150 Muir Road, Martinez, California. The structure is located at the rear of the campus. A campus map is included (Attachment 1) with the Research Building labeled (5).

## 3. Original Floorplan (as built drawings)

The Research building is a recent structure. It was built in three phases over a seven year period from 1982 to 1989. The walls, floors and ceilings in the three rooms have not changed since the original construction. There have been minor changes relating to furniture and instrumentation in the labs but the lab benches, water/sewer fixtures, and fixed lab benches are as built in 1982. The original floorplan is included (Attachment 2).

## 4. Preparation of Rooms for Survey

Prior to the removal of any material from the rooms a survey of all surfaces was done using the "pancake" probe (See section 6 for MDA discussion). Readings could not be differentiated from background (20 cpm) so the ancillary items not related to radiation were removed. These noninstrument items consisted mainly of paper items. Two large instruments, a RF machine from Room 120 and an incubator/oven from Room 110 were not used in radiation experiments. The RF machine was moved to the storage room in the ARF building and the incubator was moved to the storage room in the Research Building Annex.

Plastic beta shields and cassettes used for autoradiography were transferred to Room 4 (a restricted area) in the Research Building Annex after wipe tests showed no removable contamination.

All utensils, storage containers, shielding material, absorbant paper, and other noninstrument material used in conjunction with radioactive material were placed in a 55 gallon lined barrel for disposal as

radioactive waste. The sewer pipes in Rooms 110 and 119 were removed to the their entry points into the walls and then placed in the waste barrel. The barrel is located on-site in our waste storage room (a restricted area) in the Engineering Building. The location of the Engineering Building is shown on Attachment 1. When the barrel is full it will be compacted on site and then sent to Barnwell, S.C. for burial after super compaction by the transporter. The total compacted waste material for the three rooms was less than 1/4 of a barrel.

Radioactive material had been stored in the following four cold storage devices. The freezer and refrigerator from Room 110 were moved to Room 113B (a restricted area). The freezer from Room 120 and the refrigerator from Room 119 were moved to the waste storage room discussed above. The external surfaces of these cold storage devices were wipe tested prior to relocation to insure that the movers were not exposed to removable radioactive material. Ambient dose levels at 1 cm from the surface of all devices was not distinguishable from background (20 cpm). Surveys of ambient dose levels was done with the thin window pancake probe discussed in Section 6.

## 5. Presurvey of Rooms 120

Room 120 was approved for P-32 use until 1988. A time exceeding over 200 half lives of P-32 have elapse since last P-32 use in the lab. We therefore did expect to find residual P-32. The only other isotope used in this lab, until this month, was H-3. Our survey meters can't detect H-3.

In spite of the above analysis we did a careful survey of the lab with the Eberline "pancake" probe. The survey was done to reinforce the belief that only P-32 and H-3 were used in this lab and that no other isotopes in significant quantity exist at this time.

We scanned 1 cm from room surfaces (except the ceiling) with the "pancake" probe and found no areas that could be differentiated from background. See MDA discussion on Section 6. It is difficult to discuss exact MDA values applicable to this room since we were scanning for unknowns at this point in the decommissioning project.

## 6. In-House Instrumentation and Standards

### 6.1 " Pancake"

A Eberline E520 (S/N 4913) rate meter with "pancake" HP260 probe calibrated 3/27/96 was used for all ambient exposure surveys. The calibration certificate is enclosed (Attachment 3). The probe has a thin mica window (1.40-2.0 mg/cm<sup>2</sup>) that permits useful beta sensitivities down to 40 keV. Scanning MDA values are as follow based on a 20 cpm background. Efficiencies are the manufacturer's nominal values.



Scanning MDA values are based on equations in NUREG/CR 5849 page 5.9.

#### Pancake probe MDA values

Isotope	Eff.	Scanning MDA
Sr-90	45%	850
C-14	10%	3850
P-32	25%	1500

A constancy check of the meter was conducted each day using a Cs-137 sealed source.

#### 6.2 Scintillation Probe - NaI

A scanning scintillation probe was available. The previous RSO calculated a MDA of 6000 for this instrument but no data related to I-125 efficiency could be located. The previously calculated value was used. The calibration certificate is located in Attachment 3. A 45% efficiency is noted on the certificate for I-129.

#### 6.3 Beckman Gamma 5500 NaI Well Counter

The well counter has a 3" crystal and two discriminators. Prior to use, the gain was adjusted and the manufacturer's stated efficiencies for Cs-137 and I-125 were verified with in-house standards. The energy resolution and BKG specifications were also verified.

Based on a 5 min. preset counting time the MDA for the selected discriminator windows are as follow,

window	BKG (cpm)	Eff.	MDA (5849 equations)
I-125 (preset)	27	74%	15 dpm
0-1000 set (0-2 MeV)	140	42%	60 dpm

#### 6.4 Beckman 3801 Liquid Scintillation Counter

The liquid scintillation counter was set for three energy windows, 0-400 for H-3, 400-670 for C-14, and 670-1000 for P-32. Ecolume (manufactured by ICN) was used as the fluoro for all samples. A calibration check was run before each use. Beckman standards were used to verify efficiencies for H-3 and C-14. Dupont H-3 quenched standards were used to provide H# for quench correction of H-3 wipe samples. Quench correction was required for H-3 but not required for P-32 according to the manufacturer's instructions.

The C-14 efficiency was used as a conservative value for P-32 efficiency. The measured C-14 efficiency was 79%. This is in good agreement with the manufacturer's specification of 70%. Both P-32 and C-14 are beta emitters (100% abundance). P-32 has a higher maximum energy that will enhance efficiency of the liquid scintillation counting process. If statistically significant amounts of P-32 appeared to be present based on the C-14 correction we would have obtained a P-32 standard and measured the P-32 efficiency for the cpm to dpm conversion.

MDA values for the isotopes of interest are based on 5 min. count times. Equations (5.4) from NUREG/CR-5849 were used in MDA calculations.

isotope	Eff.	BKG	MDA
=====	=====	=====	=====
H-3	0.60	20	16 dpm
P-32	0.70	16	13 dpm

#### 6.5 In-House Standards

=====

Beckman gamma counter 5500 (3" crystal) standards

Cs-137 Beckman	Gamma source #184010	NIST traceable (+/- 3%)
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I-125 Packard	Gamma source #5042961	NIST traceable (+/-?)
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Beckman liquid scintillation counter standards

H-3 Beckman	Beta source #13600	NIST traceable (+/-4%)
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C-14 Beckman	Beta source #198700	NIST traceable (+/-4%)
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## 7. Room RB 110

The core laboratory in room 110 of the research laboratory was under the direction of Dr. McCabe with isotope work commencing in 1993. Compounds (liquids) were tagged with P-32. The laboratory operated satisfactorily and there were no spills of radioactivity during its operation. The last use of this laboratory was in February 1995 when a final inventory of 1.150 millicuries of P-32 was present. The total cumulative P-32 use in this room was less than 10 mCi. This P-32 remaining in the lab in Feb. of 1995 was turned over to the Radiation Safety Office for decay and disposal. The elapsed time since last use is over 50 half lives of P-32. The maximum calculated activity that could be present from the total cumulative P-32 use in this room is  $< 1$  dpm. This assumes all the isotope that went into the room, stayed in the room. This is the most conservative assumption possible in this theoretical calculation. It clearly shows that the room could not be contaminated if all the records of use are correct.

The room was surveyed with the "pancake" probe discussed in Section 6 to reinforce our contention that only P-32 has been used in the room and that physical decay has eliminated any residual material. A continuous survey of the areas shown in Attachment 4 was performed at a distance of 1 cm from surfaces. No activity above 40 cpm was discovered. This translates to 1032 dpm/ 100 cm. sq. using a 25% efficiency for the 15.5 cm. sq. detector. The scanning MDA of 1500 dpm per 100 sq. cm. is greater than this value and is therefore used as the maximum detected survey level. Acceptable surface contamination levels (ave.) are 5000 dpm/ sq. cm. according to the NRC's " Guidelines for Decontamination of Facilities and Equipment...", May 1987. Surface contamination levels are therefore acceptable.

Dry wipe tests over sample areas of 100 cm. sq. were obtained from 171 locations indicated in Attachment 4. The floor grid was 2 ft. X 2 ft. and bench top grids were 1 ft. X 1 ft. All horizontal surfaces were sampled as were most vertical surfaces. There were no wipes of the ceiling.

The liquid scintillation counter was used in the 670-1000 P-32 window setting. Background was 16 cpm in this channel. The maximum net count for any of the 171 samples was 6 cpm. Results listed by location are attached (Attachment 5). Note that the entries listed as "deleted" are for lab items that have been removed from the room. When the 6 cpm is corrected for P-32 efficiency (70%) we get a value of  $< 10$  dpm. We must therefore use our MDA value of 13 dpm /100 cm. sq. for our maximum removable contamination. The MDA value is less than the limit of 1000 dpm per 100 cm. sq. stated in the aforementioned NRC document and the room is acceptable for release as an unrestricted area.

## 8. Room RB 120

The use of radioactive material in room 120 of the research building began in 1985 when Dr. Tsukamoto used tritium labelled amino acids and proteins with a possession limit of 5 mCi of tritium. Dr. Kwee was approved to use the room in 1988 for P-32 labelled nucleotides. The use of these experiments were discontinued later the same year. From Oct. 1992 until March 9, 1997 Dr. Kwee used H-3 in RIA kits and in glucose analogs (liquids). During the period of Jan 1993 to Aug 1993 71 mCi of tritium was used in the lab. During its operation approximately 4 mCi of tritium was disposed via the sink prior to the 1994 ban of sink disposal by Contra Costa County. The final inventory of 16 mCi was transferred to Radiation Safety Officer for disposal on March 9, 1997. The waste was transferred to the waste storage room in the Engineering building. There were no spills or contamination events detected by a historical review of the lab records.

The room was wipe tested over 100 cm. sq. sample areas using wet wipes (water) at the locations indicated on the drawings in Attachment 6. The samples were then counted on the liquid scintillation counter using the 0-400 H-3 window with quench correction. The counting efficiency varied for each sample based on the degree of quenching. Only three wipe locations were more than 2 standard deviations above BKG with the maximum net activity for any of these three locations registering 140 dpm/100 cm. sq. with a 30% efficiency for that wipe. The floor tiles corresponding to these general locations (sites 95-118) were removed and placed in waste storage for later disposal as described in Section 4. The area was resampled with wet wipes and all the counted samples were below BKG. The adhesive used to affix the tile caused excessive chemical and color quenching - beyond the range of our quench correction factors. An accurate conversion to dpm therefore can't be discussed for the re-wipe survey but it is evident that there is no significant removable H-3 present.

Attachment 7 lists the wipe test results by location. Note that deleted items on the Attachment 7 list are for items removed from the room. The final maximum removable contamination value from the floor region was after tile removal was below the 1000 dpm/ 100 sq. cm. allowed by the NRC's document "Guidelines for Decontamination of Facilities and Equipment Prior to Release..", dated May 1987. The room is acceptable for nonrestricted use.

9. Room RB 119

The the use of this room by the Radiation Safety Office began in 1991. It was used to store sealed radioactive sources, process incoming radioactive packages and prepare wipe samples for counting in the scintillation counter. During the use of this room there was no processing of any leaking packages and the leak tests for the sealed sources were always negative. The sealed sources and refrigerator were moved into the waste storage room (a restricted area) in the Engineering Building after the Radiation Safety Committee approved the transfer on March 17. Attachment 8 is a representative list of the isotopes and activities stored in the room.

The accessible areas of the room were scan monitored with an Eberline "pancake" probe at 1 cm from surfaces. There were no readings above 40 cpm which is twice background. There are a wide variety of sealed source isotopes in the room but a conservative efficiency of 10% gives 2580 dpm per cm. sq. for the 40 cpm value. At 10% efficiency the scanning MDA for this meter is 3850 dpm/ 100 cm. sq. The MDA value was used as maximum detected activity. This value is less than the 5000 dpm per 100 cm<sup>2</sup> limit for surface contamination that applies to most of the isotopic sealed sources. It does not meet the limits set for I-129, Sr-90, Ra-226, and I-125. The last four groups involve sealed sources of submicroCurie quantities however. Due to this low level of activity in sealed source form it seems appropriate to assume that there is minimal chance of contamination from these sources.

The room was also scanned at 1 cm from surfaces at locations 1-16, 37-41, and 50 with the NaI meter used for I-125 surveys. Background for this meter is 175 cpm and no readings above twice BKG were noted. This observed countrate of less than 350 cpm when converted to dpm will produce results below the MDA of 6000 dpm/ 100 cm. sq. for this counter. We have therefore only shown compliance to the 6000 dpm level. The logic from the above paragraph applies in that we are dealing with submicrocurie quantities that show no evidence of contamination.

Dry wipes were obtained over 100 sq. cm areas from all surfaces at 50 locations in the room except for floor samples which involved taking samples of the carpet. The storage area bench top was sampled with a 1.5 ft. X 1.5 ft. grid and the floor used a 2 ft. X 2 ft. grid. Sample locations are are listed in Attachment 8.

Removable contamination samples were counted on the liquid scintillation counter and the gamma well counter. The maximum net countrate for any sample on the gamma counter I-125 window was 6 cpm. The efficiency on this counter runs from 75% for I-125 to 42% for Cs-137. Using the efficiency value for I-125 gives 8 dpm/100 cm. sq. The MDA for I-125 on this counter is 15 dpm. This satisfies the 20 dpm/100 sq. cm. limit listed in Table 1 of the NRC's document "Guidelines for Decontamination of Facilities and Equipment...", dated May 1987. The integral gamma window (0-2 MeV) had a maximum net count



of 19 cpm. Using the Cs-137 efficiency results in 42 dpm/100 sq. cm. This satisfies the removable contamination limit for all isotopes with a 200 dpm/ 100 cm/sq. release limit listed in the above mentioned document with the exception of I-129 and Ra-226 which have a 20 dpm/ 100 cm sq. limit. Since the I-129 and Ra-226 are submicrocurie quantity sealed check sources it seems unlikely that these sources could produce significant contamination without evidence of physical damage to the source.

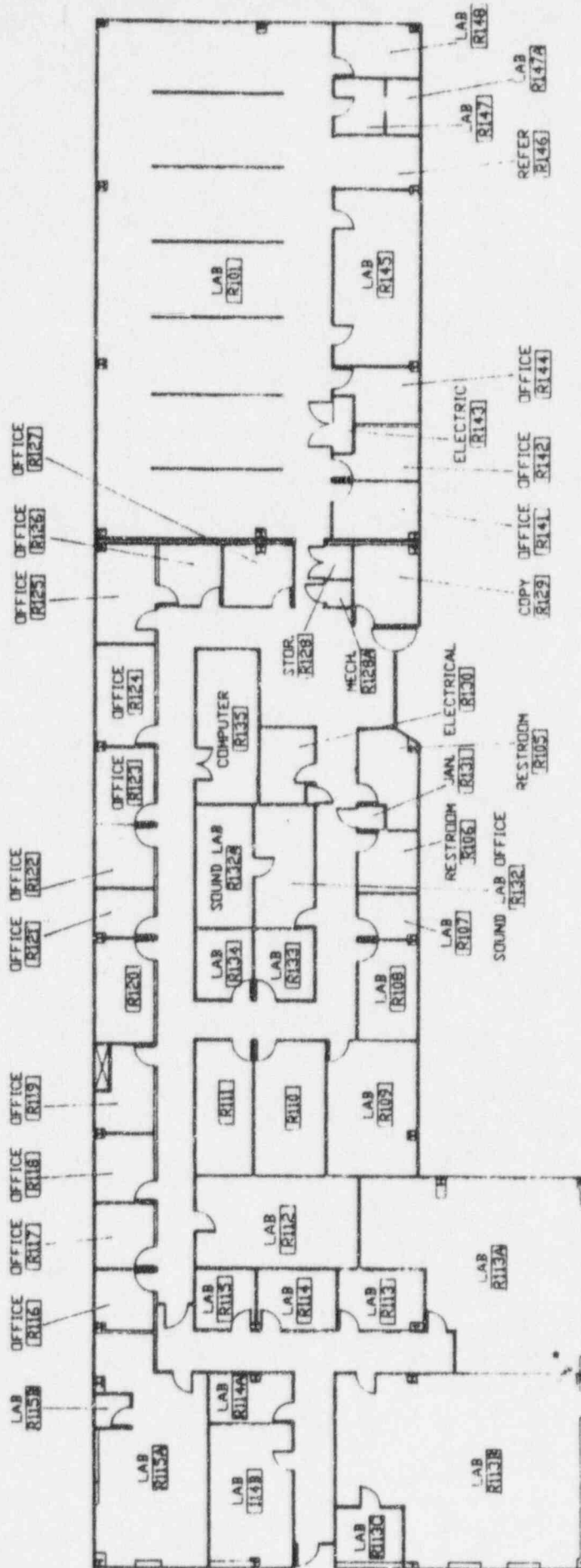
The dry wipe samples were counted on the liquid scintillation counter to look for contamination even though efficiencies are not known for most of the isotopes on the sealed source list. Three energy channels were used. The lower energy channel had a BKG of 20 cpm, the midchannel 15 cpm, and the upper channel 16 cpm. A maximum net count difference for any sample in any channel was 3, 2 and 3 cpm for the low/mid/upper channels. If we had detected significant count rates above background we would have identified the isotope and obtained an efficiency so that conversion to dpm could be done. While not converted to dpm these results support the gamma counter data in showing no evidence of contamination of the lab space. The wipe test data results is detailed in Attachment 10. Note that the deleted items are instruments removed from the lab.

These results of the two types of area surveys and two types of removable material testing provide the information necessary to release the lab for nonrestricted use. If contamination were present it is highly probable that detection would have occurred by one of the four modes.

# Notes

A series of horizontal lines for writing notes, with three binder holes punched along the right margin.





RESEARCH BUILDING FLOOR PLAN

NTS





# SUMMIT MEDICAL PHYSICS

1195 Park Avenue, Suite 101, Emeryville, CA 94608 (510) 652-5810 FAX: (510) 652-5809

## Survey Meter Calibration Report

Date: 3/27/96 Facility: VANCSC  
Meter Type: GM Model #: E520  
Manufacturer: Eberline Serial #: 4913

The calibration was performed using an Amersham Model 773 Instrument Calibrator equipped with a Cesium-137 encapsulated source. The output of the device was 50.8 mR/hr at 1 Meter. Distance and attenuation were used to calculate dose rates required to deflect the meter to approximately 20% and 80% scale. The meter was then placed in the radiation field using the calculated distances and attenuation.

### Instrument Checks:

Battery Check: 14 mR/hr  
Check Source: mR/hr  
Calibration Geometry: Perpendicular to long axis of probe  
Window: Fixed  
Notes: No check source. Instrument required minor calibration adjustments.

Multiplier	Range	Standard Dose Rate	Measured Dose Rate	C. Factor
0.01	0.2	0.05	0.05	1.00
0.01	0.2	0.16	0.16	1.00
0.1	2	0.4	0.4	1.00
0.1	2	1.6	1.6	1.00
1	20	4	4	1.00
1	20	16	16	1.00
10	200	40	40	1.00
10	200	160	150	1.07
100	2000	400	400	1.00
100	2000	1600	1600	1.00

Name: M. P. [Signature]

Date: 3/27/96



# Certificate of Calibration

NWT analytic & Consultation Services  
1724 Holmes Street  
Livermore CA 94550  
Phone: (510) 443-7967 Fax (510) 443-0119

Customer: VANSC Order No.: \_\_\_\_\_  
Mfg.: Eberline Model: PRM-6 Serial No.: 520  
Mfg.: Eberline Det. Model: N/A Serial No.: N/A  
Cal. Date: 1-2-97 Due Date: 1-2-98 Cal. Interval: 1yr

Check mark applies to applicable instrument and or detector.

( ) Det Bkg. 200 cpm Det. Operating voltage (mV) \_\_\_\_\_  
Temp \_\_\_\_\_ Hum. \_\_\_\_\_ % F/S Resp. chk. \_\_\_\_\_ Zero Reset chk. \_\_\_\_\_ Audio Chk. ☒  
Bat. chk. good Bat. Voltage: \_\_\_\_\_ Inst. Voltage set: 1kV  
Threshold: \_\_\_\_\_ mV Input Voltage: 300 mV  
HV Readout (2 points): Ref. Inst.: 1 Ref. Inst.: 1  
Alarm Setting chk.: \_\_\_\_\_ Window Operation \_\_\_\_\_ Background Subtract: \_\_\_\_\_ Mechanical Check: \_\_\_\_\_  
Field Change Status: \_\_\_\_\_  
Repair Instrument Received: \_\_\_\_\_ Within Tolerance (+/-10%) \_\_\_\_\_ 10 to 20% \_\_\_\_\_ Out of Toler. \_\_\_\_\_ Requires Repair \_\_\_\_\_

Comment:

Range Multiplier	Reference Point	Instrument Reading
<u>1</u>	<u>100</u>	<u>100</u>
	<u>400</u>	<u>400</u>
<u>10</u>	<u>1000</u>	<u>1000</u>
	<u>4000</u>	<u>4000</u>
<u>100</u>	<u>10000</u>	<u>10000</u>
	<u>40000</u>	<u>40000</u>
<u>1000</u>	<u>100000</u>	<u>100000</u>
	<u>400000</u>	<u>400000</u>
<u>I-129</u>	<u>98000</u>	<u>45000 ~ 45.9% eff</u>

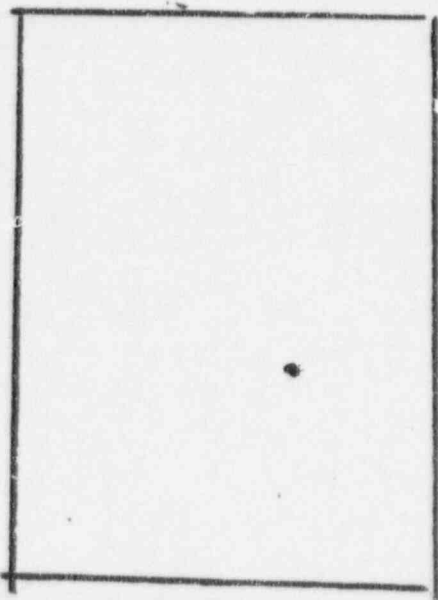
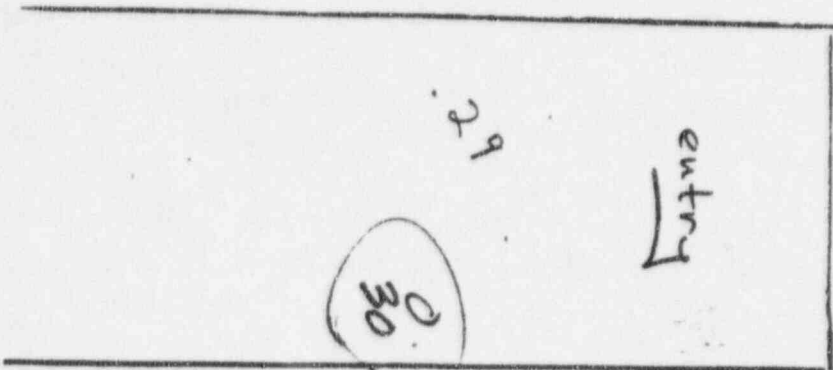
Sources & Instruments:

☒ Gamma sn.: 208/27 ☐ Beta sn.: \_\_\_\_\_ ☐ Other: \_\_\_\_\_  
☐ Alpha sn.: \_\_\_\_\_  
☒ Pulser sn.: 81071 ☐ Oscilloscope sn.: \_\_\_\_\_ ☐ Multimeter: \_\_\_\_\_  
Calibrated by: [Signature] Date: 1-2-97

NWT certifies that the above instrument has been calibrated by instruments and standards traceable to NIST or the calibration facilities of other International Standards Organization members or have been derived from accepted values of natural physical constants, or have been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements of MIL-STD-45662A and ANSI N323-1978.

R B Run 110  
VA Mattieing

(N) wall



Area Survey - all areas & 40sqm

22-141 50 SHEETS  
22-142 100 SHEETS  
22-144 200 SHEETS



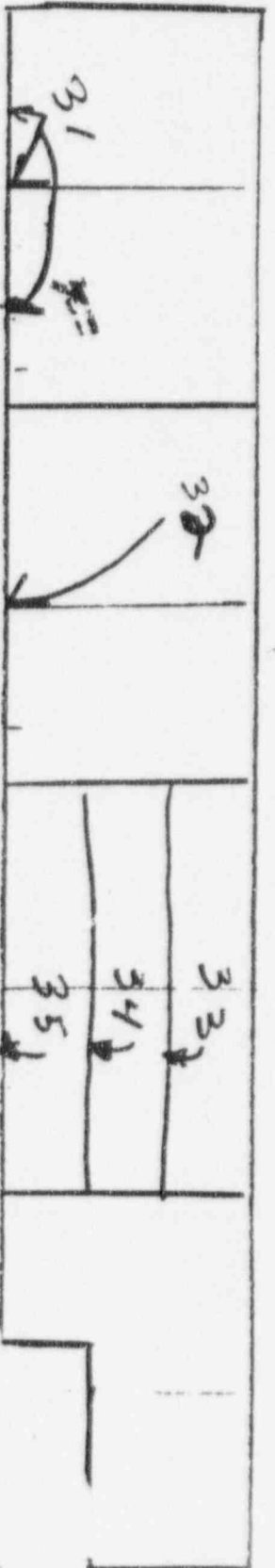
F16

3/10/97



East Wall

K.O. RM 110  
VA Martinez



Water tank 89 Benchtop was labeled rad. materials use

12 1/2 x 13 1/4 grid



91 ft  
92 ft  
93 ft

Area Survey - All areas < 40 sq ft

101 sq ft 102 sq ft

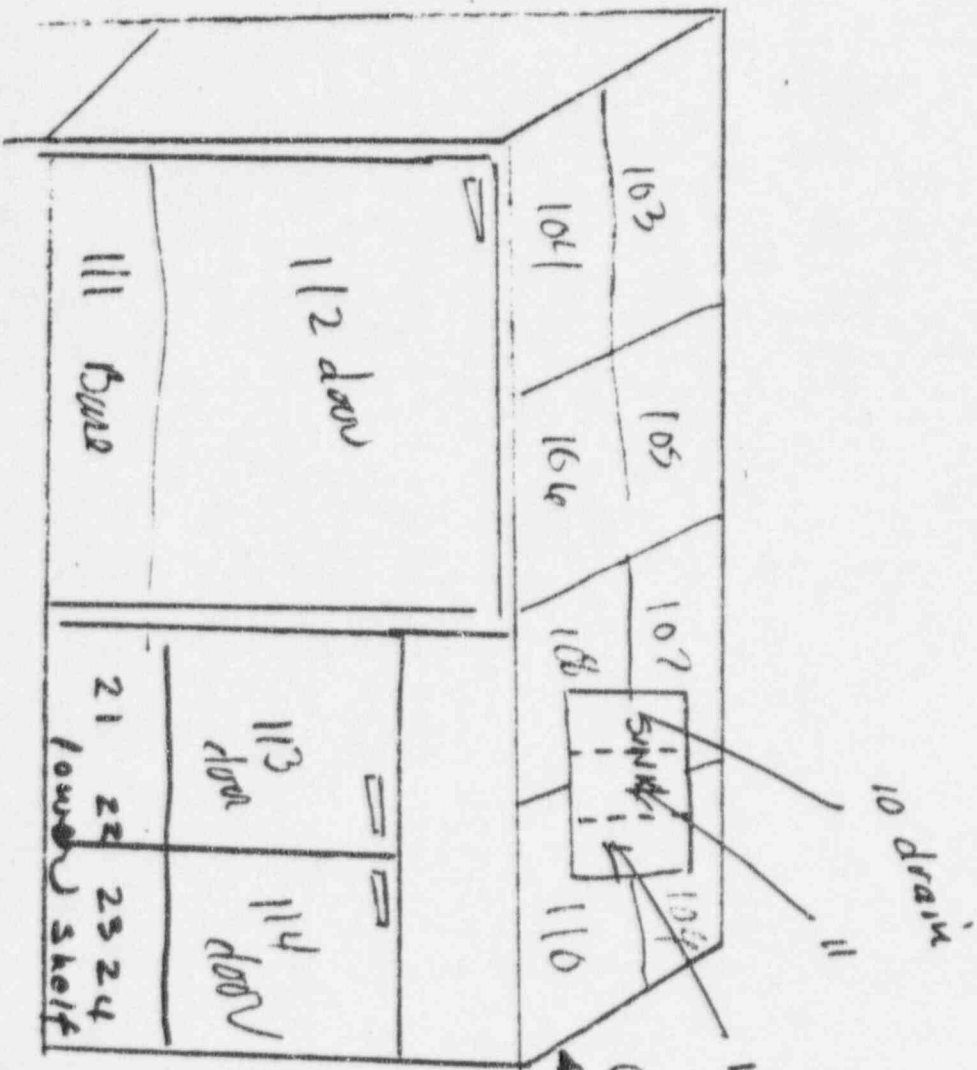
22-141 50 SHEETS  
22-142 100 SHEETS  
22-144 200 SHEETS



12

V.M. WILKINSON

K.D. LUNN  
(S) wall



22-141 50 SHEETS  
22-142 100 SHEETS  
22-144 200 SHEETS



Area Survey FIG 13  
air view 2 40 p.m. 3/10/97



VA Maritime →

West Wall

Bookcase

Cabinets

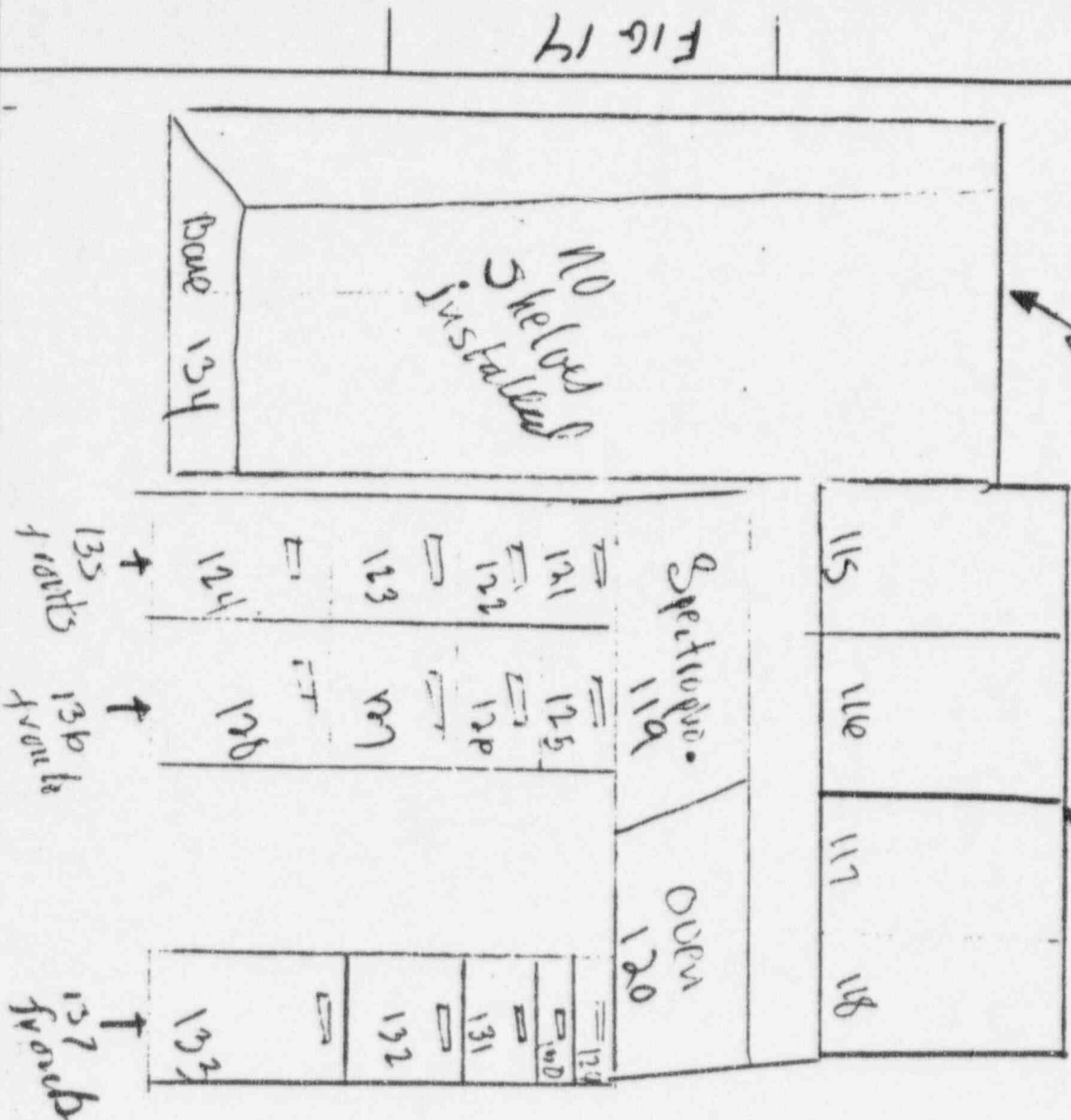


Fig 14

22-141 50 SHEETS  
22-142 100 SHEETS  
22-144 200 SHEETS



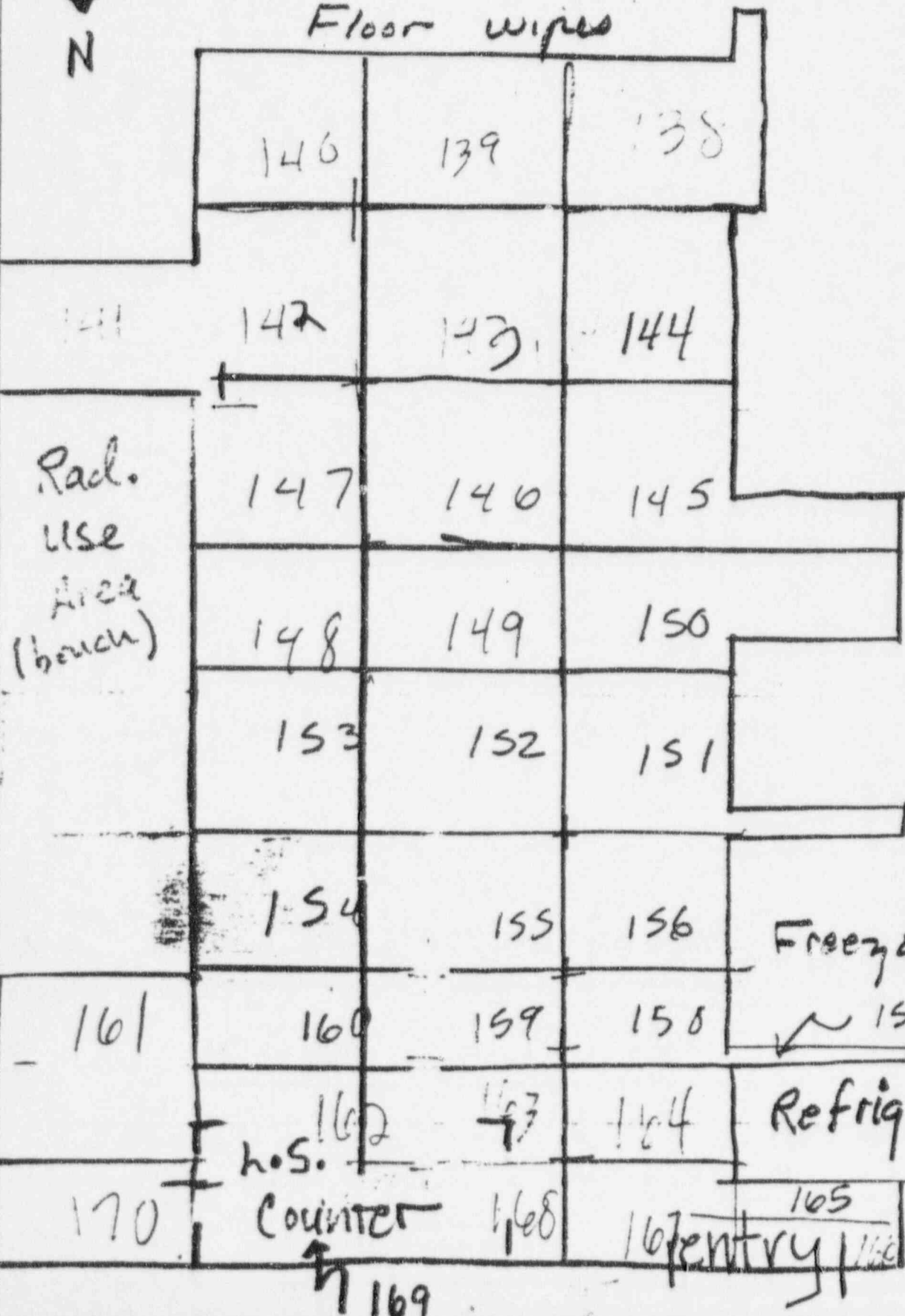
Area Survey - all areas & 400m  
14  
3/10/97

Max. grid size  
is 2' x 2'

R.B. Rm 110  
VA Martinez  
3-10-97  
(not to scale)

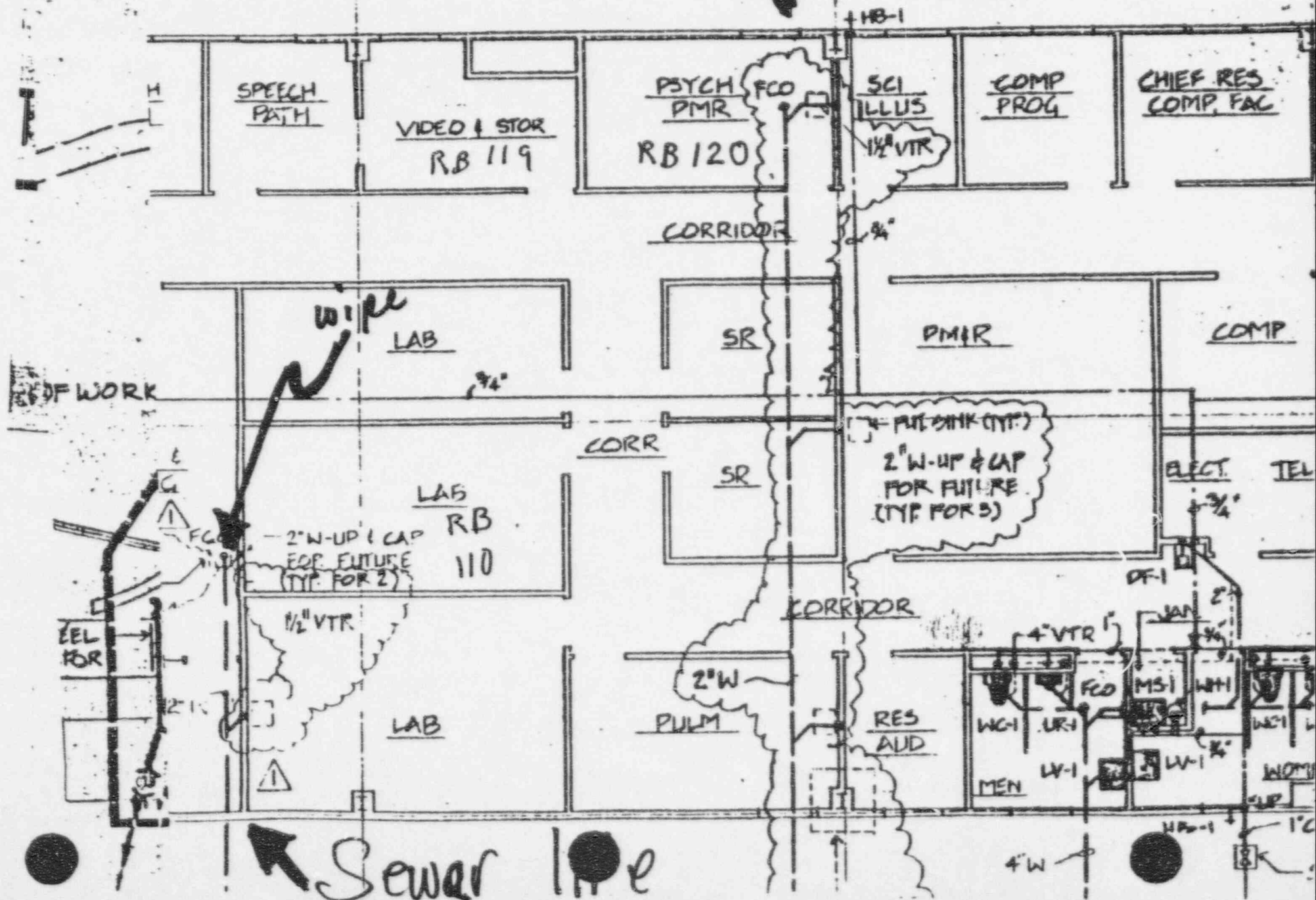
↓  
N

Floor wipes




22-141 50 SHEETS  
22-142 100 SHEETS  
22-144 200 SHEETS





Sewar line

4" W 

## Attachment 5

Room RB 110  
5 min. count time

Decommissioning samples

Page 1

Sample  
Number

Location

*Liquid Scintillation*  
Net count per min.  
per 100 cm. sq.  
670-100, P-32 window

=====

1-9 deleted

10	Sink drain region	0
11	Bottom of sink	0
12	Sink sides	0
21	Left Lower Shelf	0
22	Mid Lower Shelf	0
23	Right Mid Lower Shelf	0
24	Right Lower Shelf	0

25-28 deleted

29	Door	1
30	Door Handle	0
31	Left Wall Cabinet	0
32	Middle Wall Cabinet	0
33	Upper Shelf	0
34	Second Shelf	0
35	Bottom Shelf	0
36	Left Cabinet	0
37	Back Counter Top Row 1	0
38	Front Counter Top Row 1	0
39	Back Counter Top Row 2	0
40	Front Counter Top Row 2	0
41	Back Counter Top Row 3	0
42	Front Counter Top Row 3	0
43	Back Counter Top Row 4	0
44	Front Counter Top Row 4	0
45	Back Counter Top Row 5	0
46	Front Counter Top Row 5	0
47	Back Counter Top Row 6	0
48	Front Counter Top Row 6	0
49	Back Counter Top Row 7	0
50	Front Counter Top Row 7	0
51	Back Counter Top Row 8	0
52	Front Counter Top Row 8	0
53	Back Counter Top Row 9	0
54	Front Counter Top Row 9	0
55	Back Counter Top Row 10	0
56	Front Counter Top Row 10	1
57	Back Counter Top Row 11	0
58	Front Counter Top Row 11	1
59	Back Counter Top Row 12	0
60	Front Counter Top Row 12	0
61	Back Counter Top Row 13	2
62	Front Counter Top Row 13	0

63-66 deleted

67	Top Right Cabinet Drawer	0
68	Top Left Cabinet Drawer	0
69	Bottom Right Cabinet Shelf	0
70	Bottom Left Cabinet Shelf	1
71	Top Right Cabinet Drawer	0
72	Second Right Cabinet Drawer	0
73	Third Right Cabinet Drawer	6
74	Fourth Right Cabinet Drawer	3
75	Bottom Right Cabinet Drawer	0
76	Top Middle Cabinet Drawer	2
77	Second Middle Cabinet Drawer	2
78	Bottom Middle Cabinet Shelf	2
79	Top Left Cabinet Drawer	3
80	Second Left Cabinet Drawer	2
81	Bottom Left Cabinet Shelf	3
82	Top Left Cabinet Drawer	0
83	Second Left Cabinet Drawer	3
84	Third Left Cabinet Drawer	0
85	Fourth Left Cabinet Drawer	0
86	Bottom Left Cabinet Drawer	0
87	Centrifuge	3
88	Fisher Centrifuge	2
89	Water Bath	0
90	Water Bath	4
91-96 deleted		
97	Left Cabinet Front	4
98	Left Middle Cabinet Front	2
99	Center Middle Cabinet Front	4
100	Right Middle Cabinet Front	5
101	Right Cabinet Front	3
102	Right Cabinet Front	0
103	Back Left Counter Top	4
104	Front Left Counter Top	1
105	Back Left Center Counter Top	1
106	Front Left Center Counter Top	0
107	Back Right Center Counter Top	2
108	Front Right Center Counter Top	0
109	Back Right Counter Top	0
110	Front Right Counter Top	0
111	Left Cabinet Bottom	0
112	Left Cabinet Door	2
113	Right Cabinet Door	1
114	Right Cabinet Door	0
115	Left Cabinet	1
116	Middle Cabinet	2
117	Right Middle Cabinet	3
118	Right Cabinet	0
119	Spectrophotometer	0
120	deleted	
121	Top Left Cabinet Drawer	1
122	Second Left Cabinet Drawer	0
123	Third Left Cabinet Drawer	2
124	Bottom Left Cabinet Drawer	2
125	Top Middle Cabinet Drawer	8
126	Second Middle Cabinet Drawer	0



127	Third Middle Cabinet Drawer	4
128	Bottom Middle Cabinet Drawer	5
129	Top Right Cabinet Drawer	3
130	Second Right Cabinet Drawer	3
131	Third Right Cabinet Drawer	2
132	Fourth Right Cabinet Drawer	1
133	Bottom Right Cabinet Drawer	2
134	Bookcase	0
135	Front Left Cabinet	0
136	Front Middle Cabinet	0
137	Front Right Cabinet	0
138	Floor Right Row 1	0
139	Floor Center Row 1	1
140	Floor Left Row 1	1
141	Floor Left Row 2	2
142	Floor Mid Left Row 2	2
143	Floor Mid Right Row 2	0
144	Floor Right Row 2	0
145	Floor Right Row 3	2
146	Floor Center Row 3	0
147	Floor Left Row 3	0
148	Floor Left Row 4	0
149	Floor Center Row 4	0
150	Floor Right Row 4	0
151	Floor Right Row 5	0
152	Floor Center Row 5	0
153	Floor Left Row 5	0
154	Floor Left Row 6	0
155	Floor Center Row 6	1
156	Floor Right Row 6	1
157	Floor Right Row 7	0
158	Floor Right Mid Row 7	2
159	Floor Center Row 7	0
160	Floor Left Mid Row 7	0
161	Floor Left Row 7	2
162	Floor Left Row 8	0
163	Floor Center Row 8	0
164	Floor Right Row 8	3
165	Floor Right Row 9	0
166	Floor Entryway	0
167	Floor Right Mid Row 9	3
168	Floor Center Row 9	0
169	Floor Left Mid Row 9	0
170	Floor Left Row 9	0
171	Sewer Pipe	0

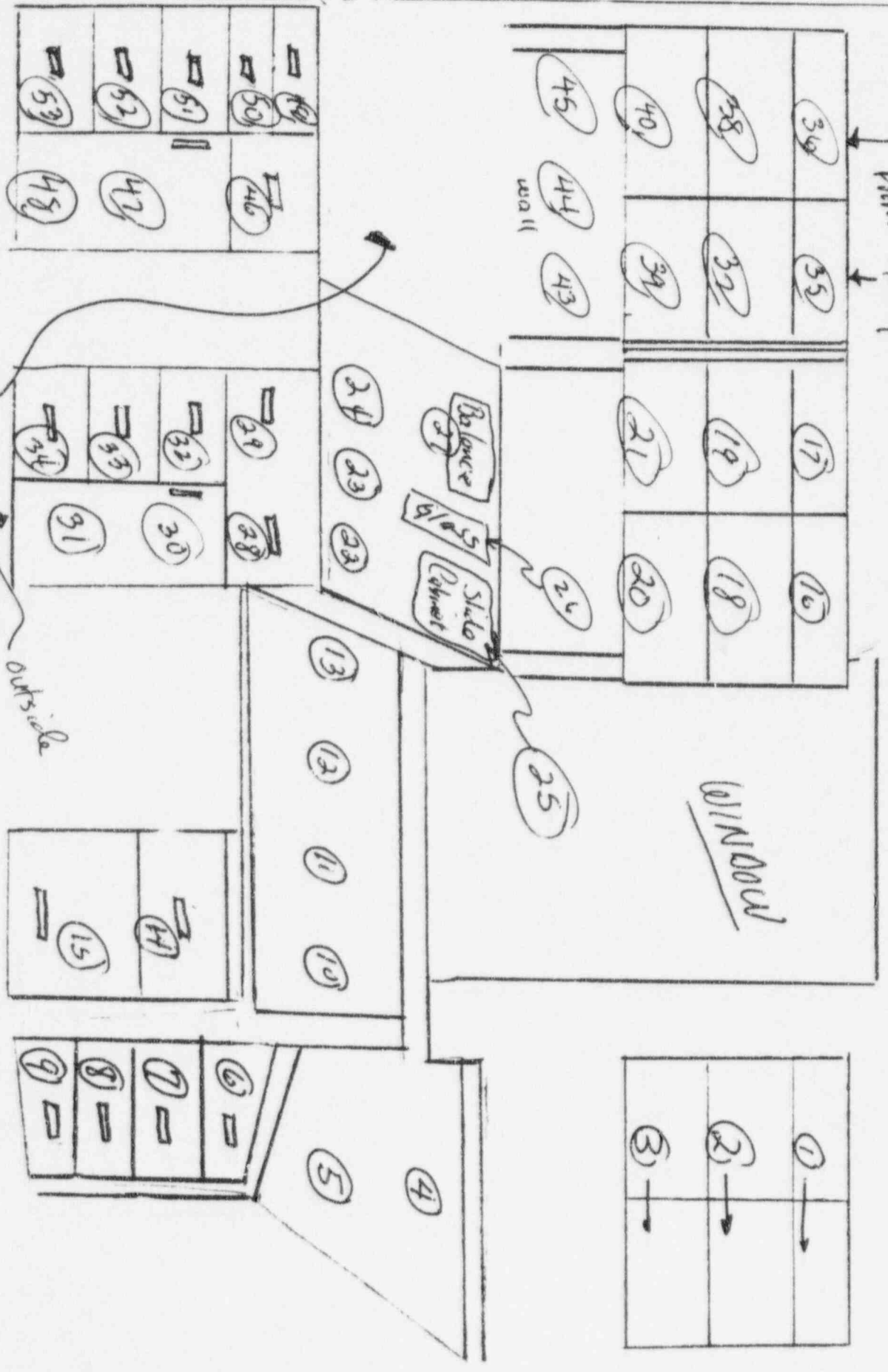
NOT TO SCALE

Rm 120

42 Glass front  
48 Glass front

W Wall

cut side

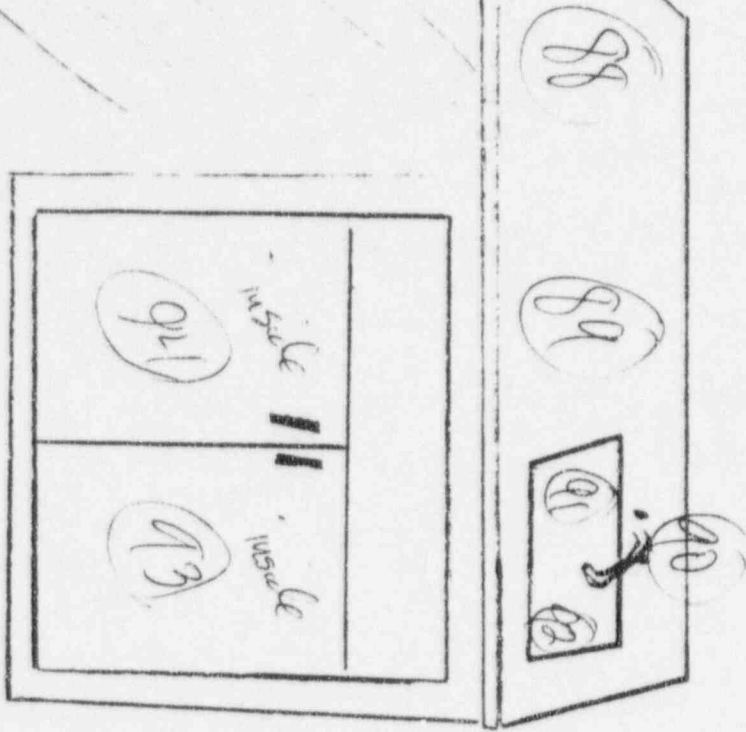


22-141 50 SHEETS  
22-142 100 SHEETS  
22-144 200 SHEETS



NOT TO SCALE

Room 120

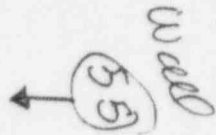
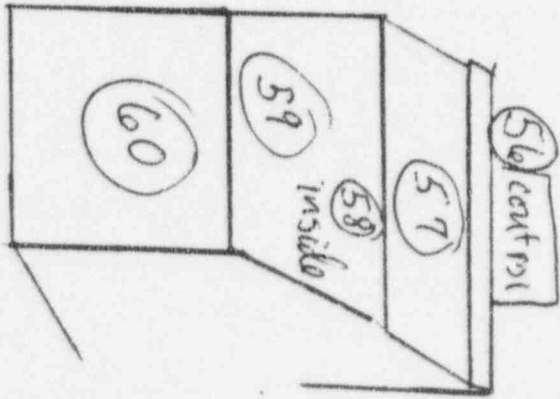


N Wall

NOT TO SCALE

Room 120

22-141 50 SHEETS  
22-142 100 SHEETS  
22-144 200 SHEETS



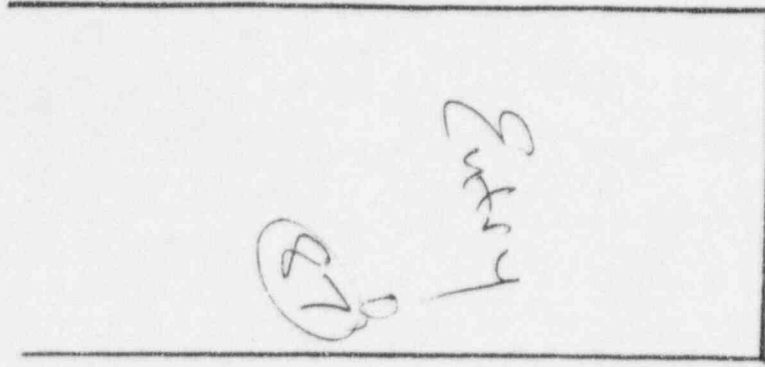
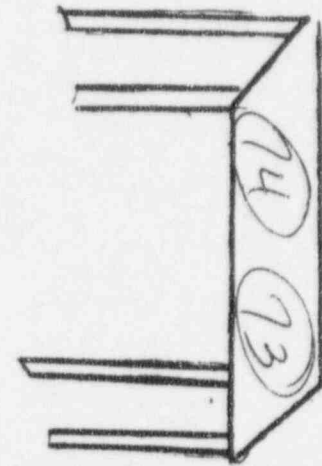
S. Wall

NOT TO SCALE

Room 120

E. Wall

70	71	72	73
64	69	74	77
60	65	60	79





NOT TO SCALE

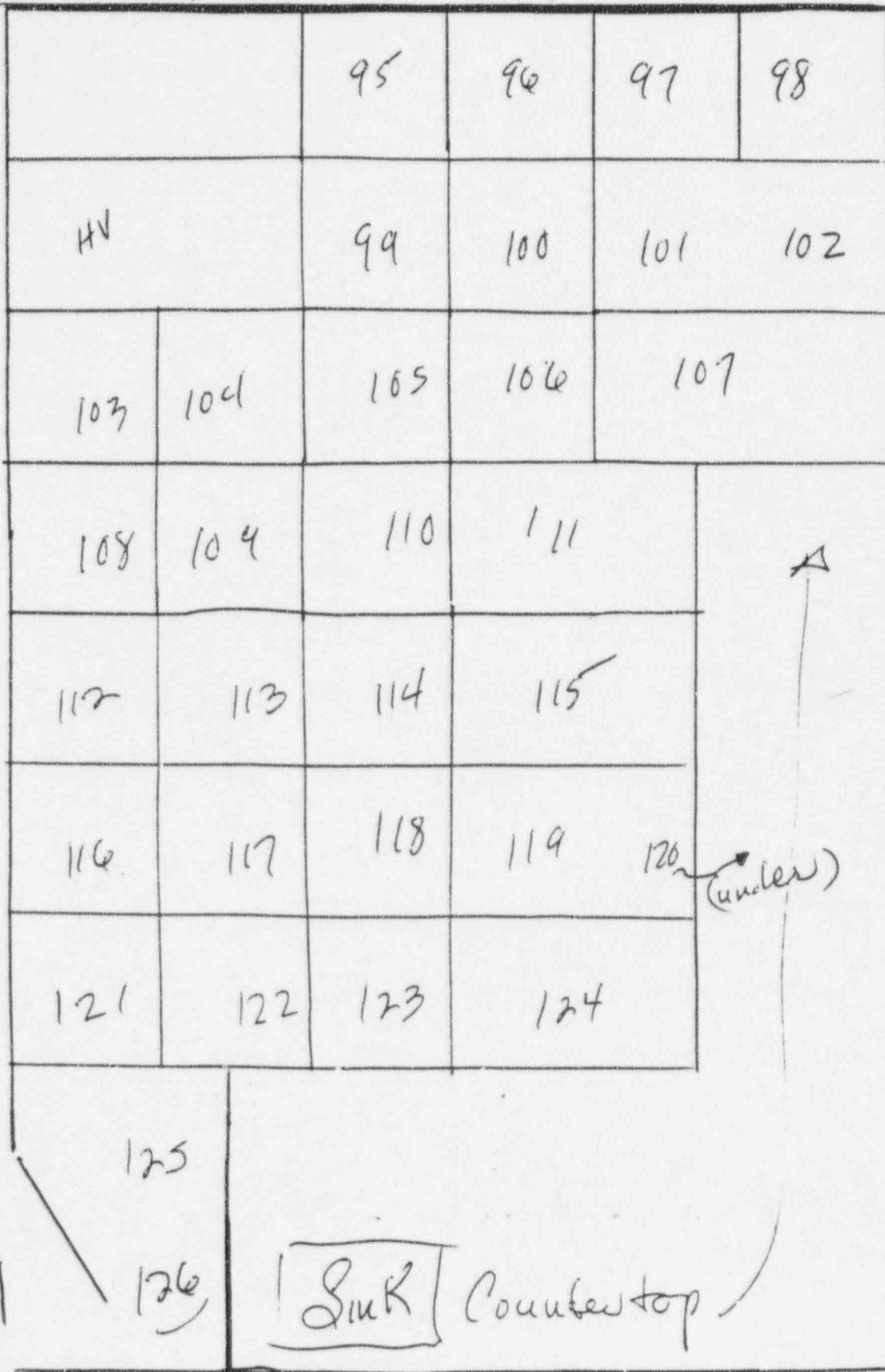
Room 120

22-141 50 SHEETS  
22-142 100 SHEETS  
22-144 200 SHEETS



Corridor

Corridor





## Attachment 7

Room RB 120

Decommissioning Samples

Page 1

5 minute count times

Liquid Scintillation Samples

Sample Number	Location	Raw Counts
		Tritium Window (cpm/100cm2)
0	BKG	20
1	Upper Shelf	20
2	Middle Shelf	20
3	Lower Shelf	20
4	Back Counter Top	16
5	Front Counter Top	16
6	Top Drawer	22
7	Second Drawer	18
8	Third Drawer	15
9	Bottom Drawer	19
10	Right Counter Top	17
11	Right Center Counter Top	16
12	Left Center Counter Top	21
13	Left Counter Top	16
14	Top Drawer	19
15	Bottom Drawer	19
16	Right Top Shelf	23
17	Left Top Shelf	23
18	Right Second Shelf	14
19	Left Second Shelf	20
20	Right Bottom Shelf	22
21	Left Bottom Shelf	18
22	Right Counter Top	21
23	Middle Counter Top	21
24	Left Counter Top	27
25	Slide Container	17
26	Glass Cage	16
27	Balance	14
28	Right Top Drawer	17
29	Left Top Drawer	21
30	Right Top Shelf	19
31	Right Bottom Shelf	20
32	Left Second Drawer	19
33	Left Third Drawer	17
34	Left Bottom Drawer	14
35	Right Top Shelf	18
36	Left Top Shelf	19
37	Right Middle Shelf	23
38	Left Middle Shelf	20
39	Right Bottom Shelf	15
40	Left Bottom Shelf	19
41	Right Glass Door	16
42	Left Glass Door	19
43	Right Wall	20
44	Center Wall	21

45	Left Wall	21
46	Right Top Drawer	17
47	Right Top Shelf	18
48	Right Bottom Shelf	19
49	Left Top Drawer	19
50	Left Second Drawer	19
51	Left Third Drawer	19
52	Left Fourth Drawer	21
53	Left Bottom Drawer	19
54	wall surface	17
55	wall surface	17
56	top of tissue slicer	18
57	inside tissue slicer	20
58	top/front of tissue slicer	19
59	front of tissue slicer	17
60	lower front of slicer	18
61	upper side of slicer	15
62	lower side of slicer	19
63	upper side of slicer	19
64	lower side of slicer	21
65-72	deleted - not applicable	
73	Right Table Top	18
74	Left Table Top	14
75	Right top shelf	22
76	Left Top Shelf	17
77	Right Second Shelf	28
78	Left Second Shelf	22
79	Right Bottom Shelf	20
80	Left Bottom Shelf	19
81	Right Top Shelf	19
82	Left Top Shelf	18
83	Right Second Shelf	17
84	Left Second Shelf	20
85	Right Bottom Shelf	16
86	Left Bottom Shelf	17
87	Inside Door	20
88	Left Counter Top	20
89	Mid Counter Top	21
90	Back Sink Top	18
91	Sink Back	19
92	Sink	17
93	Right Sink Door	20
94	Left Sink Door	22
95	Floor Left Row 1	22
96	Floor Mid Row 1	53
97	Floor Right Row 1	15
98	Under use area Row 1	21
99	Floor Left Row 2	20
100	Floor Mid Row 2	27
101	Floor Right Row 2	17
102	Under use area Row 2	29
103	Floor Left Row 3	17
104	Floor Left Mid Row 3	20
105	Floor Middle Row 3	25
106	Floor Right Mid Row 3	24

107	Floor Right Row 3	14
108	Floor Left Mid Row 4	17
109	Floor Right Mid Row 4	62
110	Floor Right Row 4	38
111	Floor Left Row 4	27
112	Floor Left Row 5	24
113	Floor Left Mid Row 5	15
114	Floor Right Mid Row 5	22
115	Floor Right Row 5	19
116	Floor Left Row 6	18
117	Floor Left Mid Row 6	21
118	Floor Right Mid Row 6	19
119	Floor Right Row 6	18
120	Floor Left Row 7	22
121	Floor Left Row 8	18
122	Floor Left Row 9	19
123	Floor Right Row 8	19
124	Floor Left Mid Row 7	18
125	Floor Right Mid Row 7	19
126	Floor Right Row 7	21
127	Inside sewer pipe at wall	19



## Attachment 8

## SEALED SOURCE INVENTORY

Updated Mar 27, 1996

NUCLIDE	ACTIVITY	DATE	MANUFACTURER	MODEL NO.	SERIAL NO.
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## PRESENT

Radiation Safety

RB 119

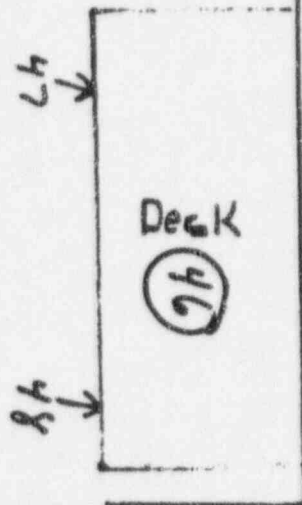
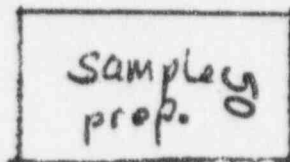
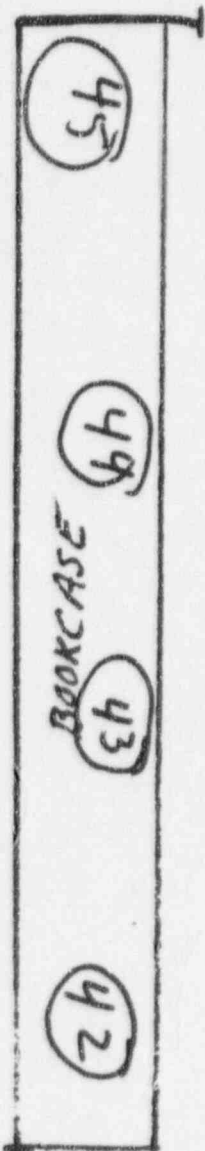
I-129	.017 uCi		Curtis Nuclear	844363	7764 vial 3
	.023 uCi		Curtis Nuclear	844363	7764 vial 1
	.029 uCi		Curtis Nuclear	844363	7764 vial 2
I-129	.1 uCi			HNO300	C2152
Cs-137	.8 uCi		Eberline	Cs-7B	
Ba-133	9 uCi	8/75			
(From Searle Mk III Liquid Scintillation Counter Serial 33604 )					
Cs-137	.1 uCi	5/87	Beckman	586165	081
Ra-226	.9 uCi		Amersham/Searle	184100	
Cs-137	.11 uCi	4/66	Nuclear Chicago	184010	
Cs-137	0.1 uCi	04/71	Amersham/Searle	184642	
Ba-133	1.06 uCi	10/85	NEN	NES-1305	100185
Cs-137	1.04 uCi	7/85	NEN	NES-1315	071985
Mn-54	1.3 uCi	6/85	NEN	NES-1325	060585
Na-22	1.13 uCi	7/85	NEN	NES-1335	071785
Co-60	.82 uCi	7/85	NEN	NES-1345	071985
Cd-109	8.3 uCi	7/85	NEN	NES-1055	071785
Co-57	1.33 uCi	8/85	NEN	NES-1295	
Cs-137	5 uCi		Eberline	Cs-7A	
Cs-137	1 uCi		The Nucleus	Cs-7B	
Ba-133	.109 uCi	3/83	NEN	NES-138S	
Cs-137	.106 uCi	1/83	NEN	NES-139S	
Co-57	.108 uCi	5/83	NEN	NES-137S	
Am-241	1.874x10 <sup>5</sup> dps	2/70	NBS	4213-88	
Cs-137	6.526x10 <sup>4</sup> dps	9/79	NBS	117	
Sr-90	.02 uCi	3/87	NEN	NES-267	
I-129	<0.1 uCi	4/87	Amersham	196330	(Ibrinator)
Co-57	1.02 uCi	11/90	Dupont	NES-129S	110290
Cs-137	100 mCi	1/80	J.L. Shepherd	28-5	5075
Cs-137	8 uCi		Eberline	Cs-7A	
Cs-137	7 uCi	7/31/91	Eberline	Cs-7B	1008/91
Cs-137	7 uCi	7/31/91	Eberline	Cs-7B	1009/91
Tc-99	24580 CPM	4/79	Eberline		8064
Tc-99	2730 CPM	4/79	Eberline		8066
Tc-99	253 CPM	4/79	Eberline		8063
I-125	0.12 uCi	11/94	Packard		5030700
I-125	0.12 uCi	11/94	Packard		5030726
I-125	0.1 uCi	9/93	Packard		5023304
I-125	0.1 uCi	9/93	Packard		5023289
I-125	0.1 uCi	2/94	Packard		5026066
I-125	0.1 uCi	2/94	Packard		5026098
I-125	0.1 uCi	7/94	Packard		5028796
I-125	0.1 uCi	7/94	Packard		5028808
I-125	0.1 uCi	11/94	Packard		5033533
I-125	0.1 uCi	11/94	Packard		5033426
Co-57	0.1 uCi	1/92	Packard		7006316
Co-57	0.1 uCi	1/92	Packard		7006320
Co-57	0.1 uCi	1/92	Packard		7006321
Co-57	0.1 uCi	1/92	Packard		7006324
Co-57	0.1 uCi	1/92	Packard		7006335

Co-57	0.1 uCi 1/92	Packard	7006323	_____
Co-57	0.1 uCi 1/92	Packard	7006336	_____
Co-57	0.1 uCi 1/92	Packard	7006349	_____
Co-57	0.1 uCi 1/92	Packard	7006344	_____
Co-57	0.1 uCi 1/92	Packard	7006347	_____
Co-57	0.1 uCi 2/93	Packard	7008922	_____
Co-57	0.1 uCi 2/93	Packard	7008926	_____
Co-57	0.1 uCi 2/94	Packard	7011678	_____
Co-57	0.1 uCi 2/94	Packard	7011671	_____
Co-57	0.1 uCi 11/94	Packard	7013286	_____
Co-57	0.1 uCi 11/94	Packard	7013288	_____
H-3	518,600DPM 5/85	Amersham	180050 Lot 480	_____
	(set of seven LSC quench standards)			
H-3	257,000DPM 5/90	NEN	NES-203 S203009-007	_____
	(set of 10 vials)			
C-14	.017 uCi each	NEN	NES-202	_____
	(set of 6 vials A thru F)			

N

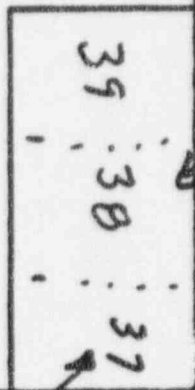
office

corridor



exterior

entry



Rad. Material label

22-151 30 SHEETS  
22-162 100 SHEETS  
22-164 200 SHEETS



Rm 119 RB

(NOT TO SCALE)

office

corridor

BOOKCASE

DECK

exterior

sample prep.

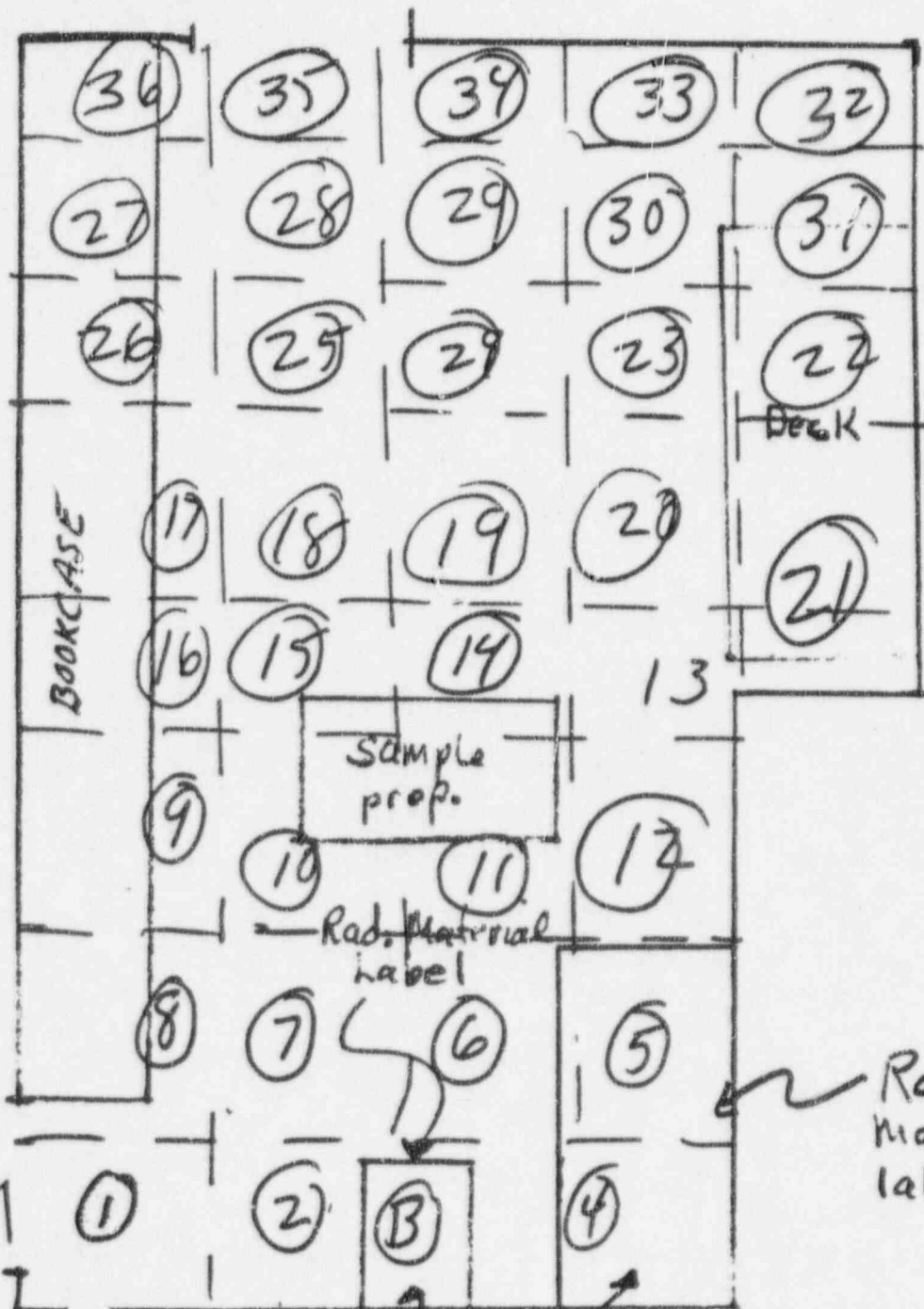
Rad. Material label

Rad. Material label

entry

Refrigerator

isotope storage bench top



## Attachment 10

Room RB 119                      Decommissioning Samples  
counting time = 5.0 min.

Page 1

Sample Number	Location	Net counts (cpm/100 cm. sq.)
		liquid scint window low/mid/upper      Gamma Counter I-125/integ.
1	Floor Right Row 1	0/0/0      2/1
2	Floor Mid Right Row 1	0/0/0      1/3
3	Floor Mid Left Row 1	1/0/1      3/5
4	Floor Left Row 1	1/0/0      1/0
5	Floor Left Row 2	0/0/0      0/4
6	Floor Mid Left Row 2	0/2/1      0/7
7	Floor Mid Right Row 2	0/0/0      0/0
8	Floor Right Row 2	0/0/2      0/0
9	Floor Right Row 3	0/0/3      0/1
10	Floor Mid Right Row 3	0/1/1      1/0
11	Floor Mid Left Row 3	0/1/2      0/10
12	Floor Left Row 3	2/0/0      6/5
13	Floor Left Row 4	0/1/2      1/0
14	Floor Mid Left Row 4	2/0/0      0/0
15	Floor Mid Right Row 4	0/0/0      3/6
16	Floor Right Row 4	0/0/0      1/4
17	Floor Right Row 5	0/1/0      1/1
18	Floor Mid Right Row 5	0/0/0      0/1
19	Floor Center Row 5	0/0/0      2/12
20	Floor Mid Left Row 5	0/0/0      2/19
21	Floor Left Row 5	0/0/0      4/6
22	Floor Left Row 6	0/3/0      0/0
23	Floor Mid Left Row 6	0/0/3      0/8
24	Floor Center Row 6	0/0/2      3/6
25	Floor Mid Right Row 6	1/0/0      2/7
26	Floor Right Row 6	0/1/1      4/5
27	Floor Right Row 7	1/1/0      5/3
28	Floor Mid Right Row 7	1/1/3      1/1
29	Floor Center Row 7	0/0/0      3/0
30	Floor Mid Left Row 7	2/1/0      0/0
31	Floor Left Row 7	0/1/3      3/0
32	Floor Left Row 8	0/0/0      0/6
33	Floor Mid Left Row 8	1/1/3      4/13
34	Floor Center Row 8	2/3/1      5/3
35	Floor Mid Right Row 8	0/0/0      1/0
36	Floor Right Row 8	3/0/0      4/10
37	Left Table Top	0/3/0      0/0
38	Center Table Top	0/2/0      2/0
39	Left Table Top	0/0/1      2/0
40,41	deleted	

572471



42	Bookcase	0/0/0	0/2
43	Bookcase	0/0/2	1/0
44	Bookcase	2/1/3	0/0
45	Bookcase	0/0/1	1/6
46	Desk	0/0/2	6/14
47	Desk Front	0/0/1	0/8
48	Desk front	0/1/0	1/6
49	Control Background	0/1/2	0/0
50	Sample Preperation Area	0/1/3	2/0

00/00/00 3/19/97

TELEPHONE OR VERBAL CONVERSATION  
RECORDTIME 9:00  
00:00 am/pm

MS-15

☒ INCOMING CALL ☐ OUTGOING CALL ☐ VISIT

PERSON CALLING:

John Stalp

OFFICE/ADDRESS:

Consultant for VA Pleasant Hill

PHONE NUMBER:

(415) 824-7234

PERSON CALLED:

OFFICE/ADDRESS:

PHONE NUMBER:

## CONVERSATION

SUBJECT -

Control No. 572471

SUMMARY -

Mr. Stalp called + discussed the survey report submitted on March 13, 1997. Frank Wonslawski + Dean Chaney participated in the call.

Stalp explained that, as a matter of course, drains + pipes are removed and disposed as radioactive waste by transfer to Barnwell. They wipe inside the pipe connection at the wall, and that is analyzed.

They also had trouble with decontamination solvents which interfered with quench corrections. Stalp believed there was over-correction for quench curves. Rather than performing multiple surveys, they removed bend, tops + other equipment that gave results above background levels.

They will provide background counts, information on calibration sources, and counting efficiencies.

REFERRED TO:

☐ ADVISE ME OF ACTION  
TAKEN

ACTION REQUESTED:

INITIALS:

DATE:

ACTION TAKEN:

INITIALS:

DATE:

00/00/00

TELEPHONE OR VERBAL CONVERSATION  
RECORD

TIME

00:00 am/pm

☐ INCOMING CALL☐ OUTGOING CALL☐ VISIT

PERSON CALLING:

OFFICE/ADDRESS:

PHONE NUMBER:

PERSON CALLED:

OFFICE/ADDRESS:

PHONE NUMBER:

## CONVERSATION

SUBJECT -

SUMMARY -

Because laboratories using various radioactive materials are side-by-side, they perform surveys to check for any materials likely to be in the area. The MDA of the E-520 instrument of 6000 dpm/100cm<sup>2</sup> was really for C-14, not H-3.

Some laboratory equipment ~~to be~~ which was used in the areas to be released will be moved to other use areas.

Dean Chaney explained that integrated fixed measurements should be conducted in the areas of concern, rather than scanning-type surveys.

Frank Wenslawski stated that confirmatory surveys will be performed. This will necessitate cleaning out materials which are not involved in the survey effort, such as books, papers, and labware.

REFERRED TO:

☐ ADVISE ME ON ACTION  
TAKEN

ACTION REQUESTED:

INITIALS:

DATE:

ACTION TAKEN:

INITIALS:

DATE:

00/00/00

TELEPHONE OR VERBAL CONVERSATION  
RECORD

TIME

00:00 am/pm

☐ INCOMING CALL☐ OUTGOING CALL☐ VISIT

PERSON CALLING:

OFFICE/ADDRESS:

PHONE NUMBER:

PERSON CALLED:

OFFICE/ADDRESS:

PHONE NUMBER:

## CONVERSATION

SUBJECT -

SUMMARY -

Mr. Stalp stated that the survey would be re-written and resubmitted by March 24, 1997. He will so inform Mr. Richard Phillips of the VA Pleasant Hill at 372-2484. Mr. Phillips is responsible for coordinating renovation of the areas. We will conduct a confirmatory survey once ~~on~~ the close-out survey is reviewed.

-B. Prange

REFERRED TO:

☐ ADVISE ME ON ACTION  
TAKEN

ACTION REQUESTED:

INITIALS:

DATE:

ACTION TAKEN:

INITIALS:

DATE:



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV

Walnut Creek Field Office  
1450 Maria Lane  
Walnut Creek, California 94596-5368

MAR 14 1997

Department of Veterans Affairs  
Northern California Health Care System  
ATTN: Sheila M. Cullen  
Director  
2300 Contra Costa Blvd., Suite 440  
Pleasant Hill, California 94523

SUBJECT: ACKNOWLEDGMENT OF REQUEST FOR LICENSING ACTION

REFERENCE: Letter dated March 13, 1997

We have completed the administrative review and initial processing of your application.

Deficiencies have been noted in our initial review of your request for amendment. We will be contacting you in the near future to discuss the problems noted.

Please note that the technical review may identify additional omissions in the submitted information or technical issues that require additional information.

Any correspondence about this application should reference the Control number listed below.

Sincerely,

*Beth A. Prange*

Beth A. Prange  
Senior Health Physicist (Licensing)  
Materials Branch

Docket No. 030-01223  
License No. 04-02956-02  
Control No. 572471



bcc:

Docket File

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OFFICE	RIV:WCFO:NMLB	N		N
NAME	J. Garcia <i>JG</i>	B. Prange <i>BAP</i>		
DATE	3/14/97	3/14/97		



Department of  
Veterans Affairs

Northern California  
Health Care System

2300 Contra Costa Blvd.  
Suite 440  
Pleasant Hill, CA 94523

*Amendment*  
030-01223

MAR 13 1997

In Reply Refer To: 612/115

U.S. Nuclear Regulatory Commission  
1450 Maria Lane Suite 210  
Walnut Creek, CA 94596

Dear Madam/Sir:

VA Northern California Health Care System requests an amendment to the NRC License (#04-02956-02) to remove laboratories used by Dr. Ingrid Kwee (RB120), Dr. Robert McCabe (RB110) and the radiation safety area (RB119) in the research building from our list of radioactive use areas. These areas and the associated equipment were surveyed and no readings were above the NRC guidelines for release of the area for unrestricted use. Copies of the surveys and wipe tests are enclosed for your records. These areas will not be released for unrestricted use until approval has been received from the NRC. Radiation Safety Service will move to Room 4 of the Research Trailer.

Questions regarding the above may be referred to Charles Barnett, M.D.,  
Radiation Safety Officer, at (510) 372-2124.

Sincerely,

Sheila M. Cullen

Enclosures

cc:  
Department of Veterans Affairs  
Health Physics Program (115HP)  
915 North Grand Boulevard  
St. Louis, MO 63106

572471

NRC License(number 04-02956-02)  
Room RB 120

The radioactive use of room 120 of the research building began in 1985 when Dr. Tsukamoto used tritium labelled amino acids and proteins with a possession limit of 5mCi of tritium. Dr. Kwee was approved to use the room in 1988 for P32 labelled nucleotides. The use of these experiments were discontinued in 1988. In 1993 Dr. Kwee used compounds which were tagged with tritium. During the period of Jan 1993 to Aug 1993 71mCi of tritium was ordered. During its operation approximately 4 mCi of tritium was disposed via the sink prior to the 1994 ban of sink disposal by Contra Costa County. The final inventory of 16 mCi was transferred to radiation safety for disposal.

The room layout is shown in figures 1-4. An Eberline E-520 (S/N4913) with a pancake probe calibrated 3/27/96 and a MDA of 6000 dpm/100cm<sup>2</sup> was used to monitor all accessible areas. The areas were monitored by placing the meter 1 cm above the surface and obtaining readings. There were several areas which were above background, the counter top was removed and placed into radioactive waste for disposal as waste. The handling devices, miscellaneous equipment, sink trap and radioactive waste was transferred to radiation safety for disposal as radioactive waste. All other areas were below 40 cpm.

The room was wipe tested as indicated in the attached drawings (figures 5-9) and the results of the tests are attached. The results are below the one listed for release of unrestricted use.

The sewer lines are shown on the attached drawing on figure 10 the sample of the sewer line after removal of the trap showed it to be at 39.5 dpm which is at background.

*How analyzed?*

R.B. Rm 120  
VA. Martiney

West Wall

NOT TO SCALE

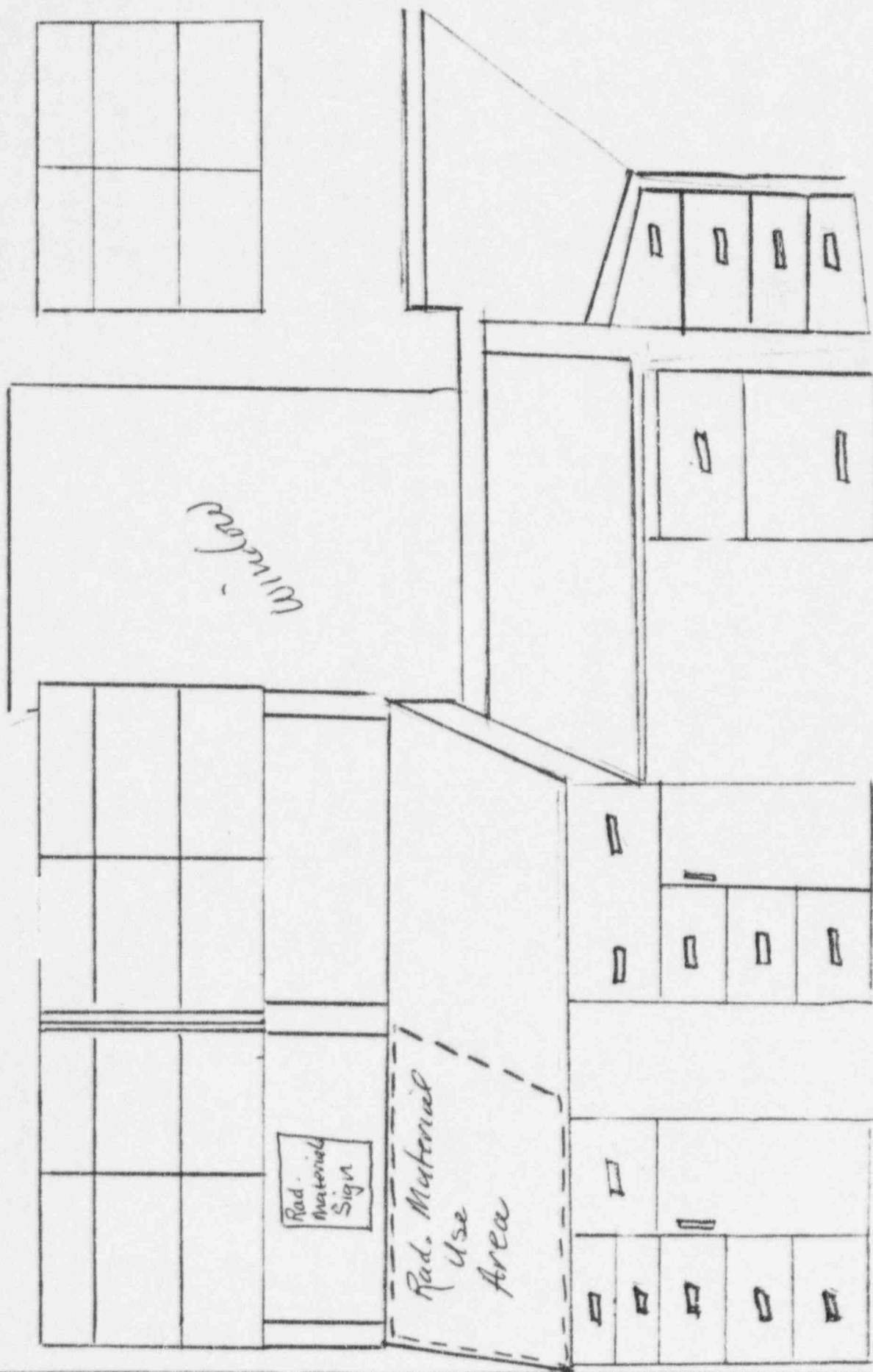


FIG 1

NOT TO SCALE

East Wall

R.B. Cum 120  
VA Martinez

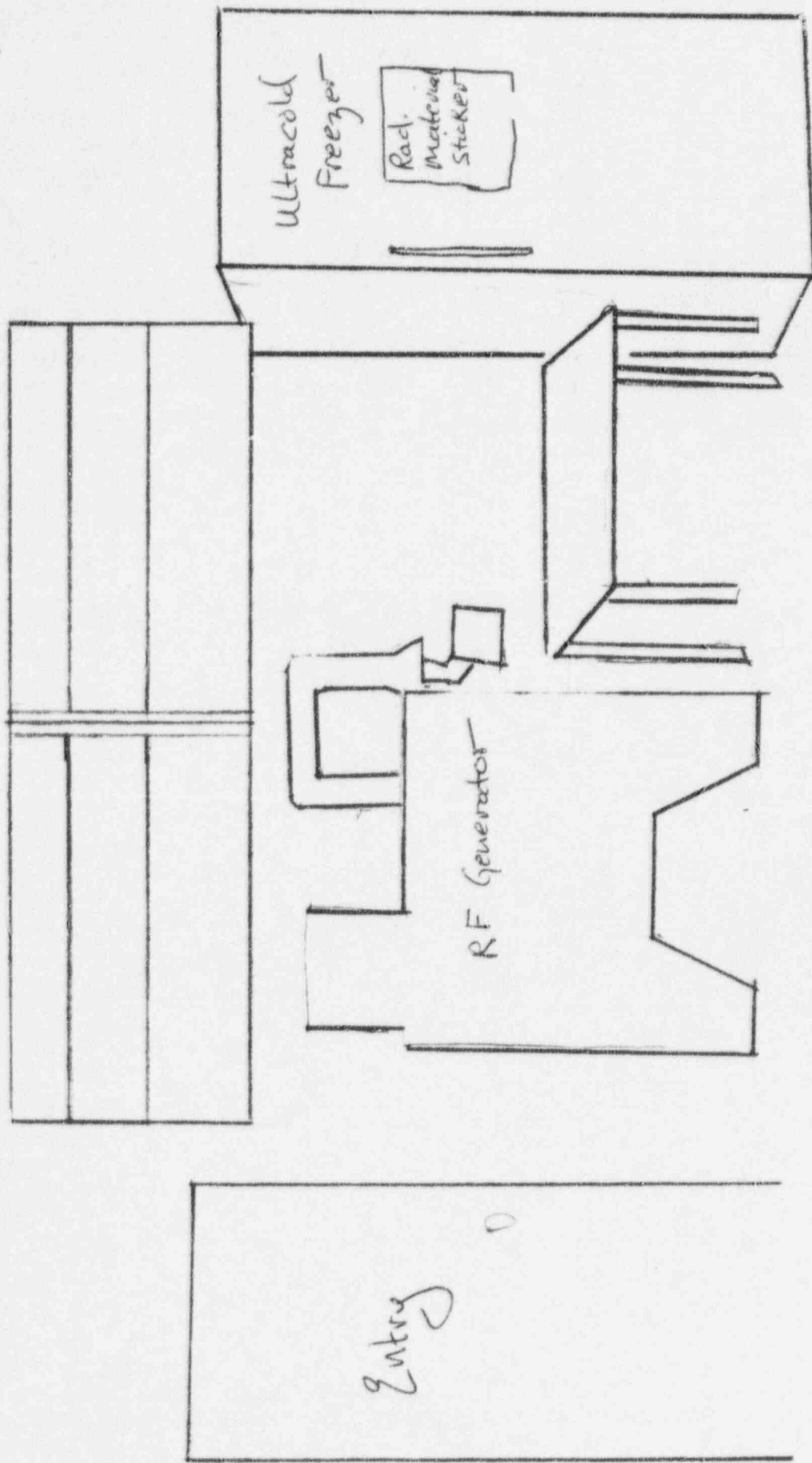


FIG 2

R.B. Rm 120  
VA MARTINEZ

NOT TO SCALE NORTH WALL

labeled  
"Hot Sink"

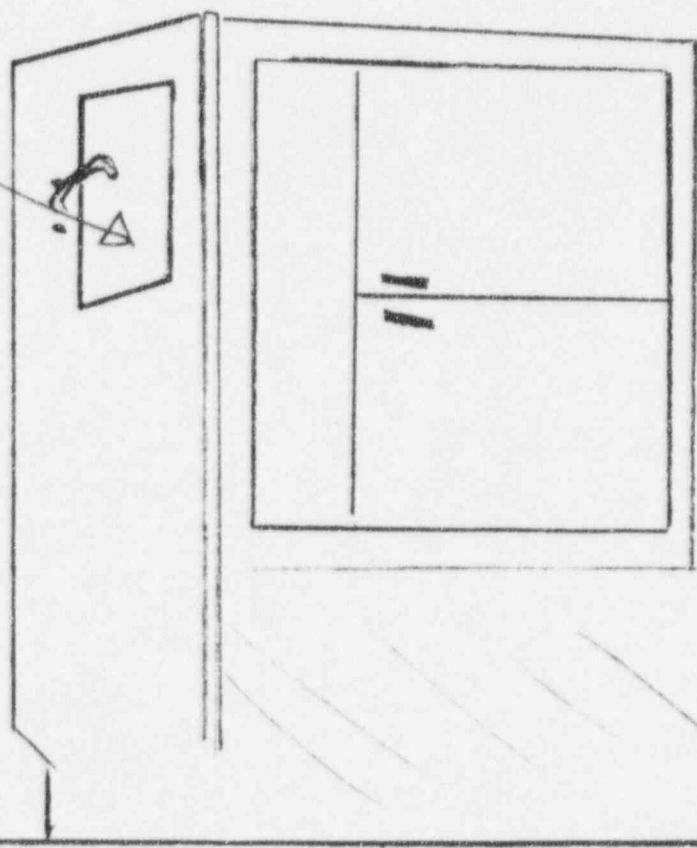


FIG 3



Ultracold  
Freezer



tissue  
slicer

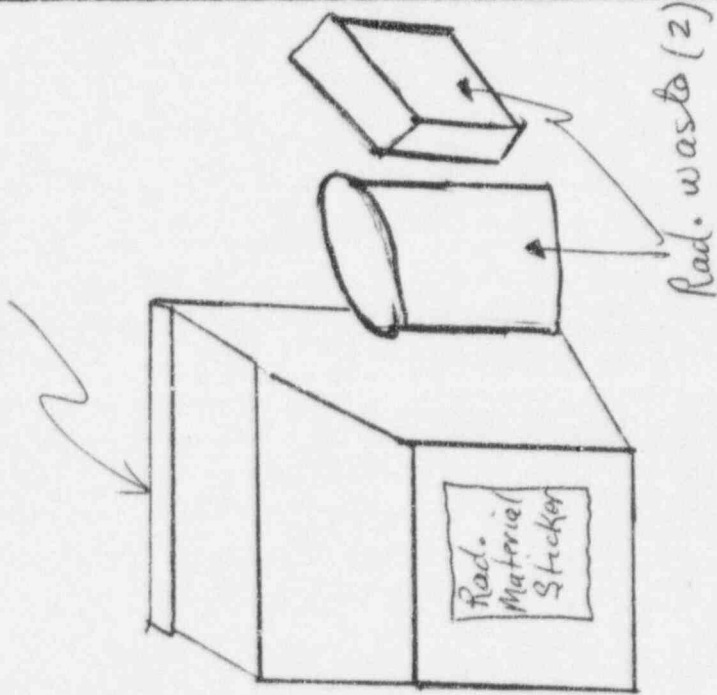


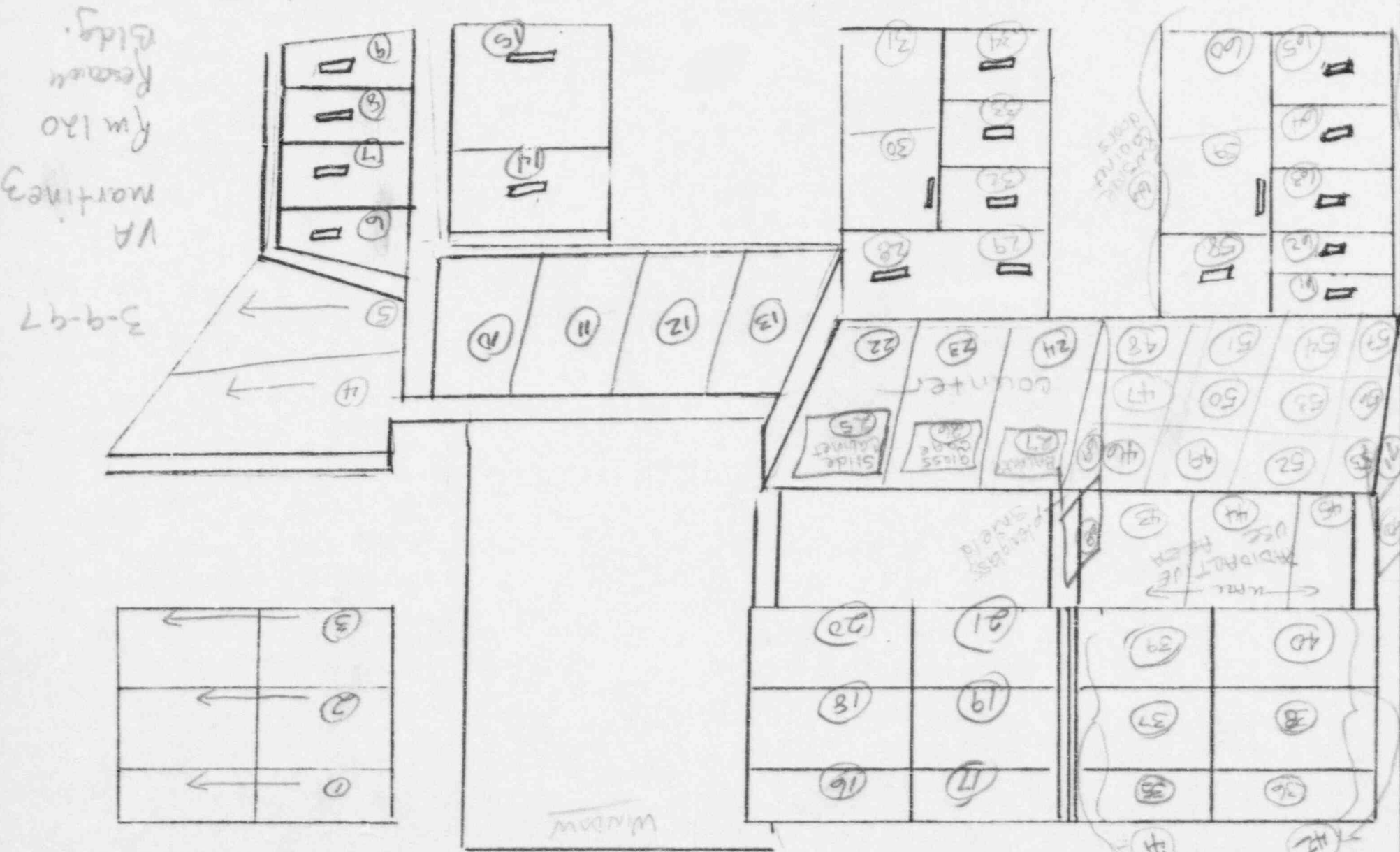
FIG 4

NOT TO SCALE

88-08

54 p/27

R 8120



-100 gm @ Surface Ave.  
500 gm max. @ #57.

Fig 5



22-141	50 SHEETS
22-142	100 SHEETS
22-144	200 SHEETS

22-141	50 SHEETS
22-142	100 SHEETS
22-144	200 SHEETS

NOT TO SCALE

RB 120

93-90 CASSETTES

Room 120  
Research Bldg  
VA Martinez

3-9-97



101-103 - INSIDE  
Tissue SLICER

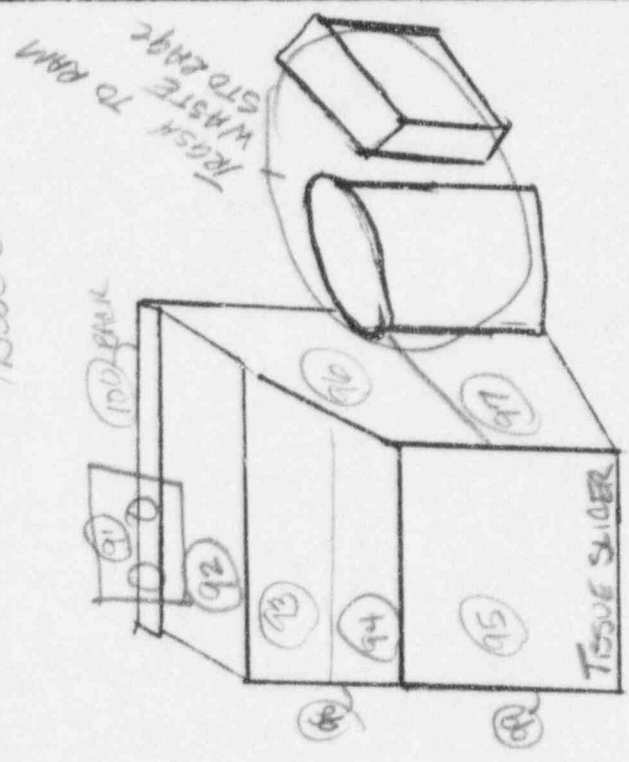


FIG 6

22-141 50 SHEETS  
22-142 100 SHEETS  
22-144 200 SHEETS



NOT TO SCALE

R8120

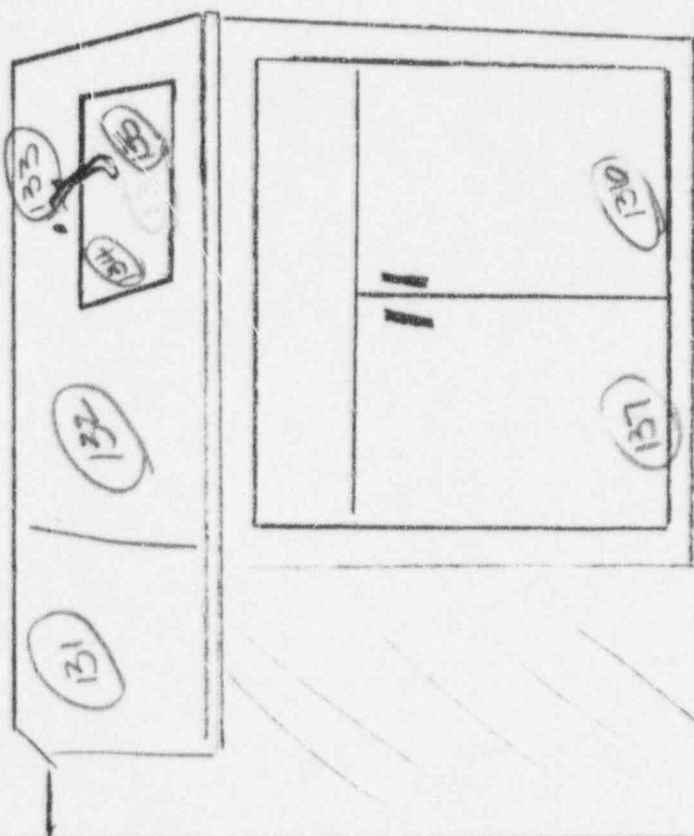


FIG 7

22-141 50 SHEETS  
22-142 100 SHEETS  
22-144 200 SHEETS

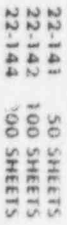
Room 120  
Research Bldg  
VA - Martinez  
3-9-97

RG 120



3-9-97

FIG 9



RB120

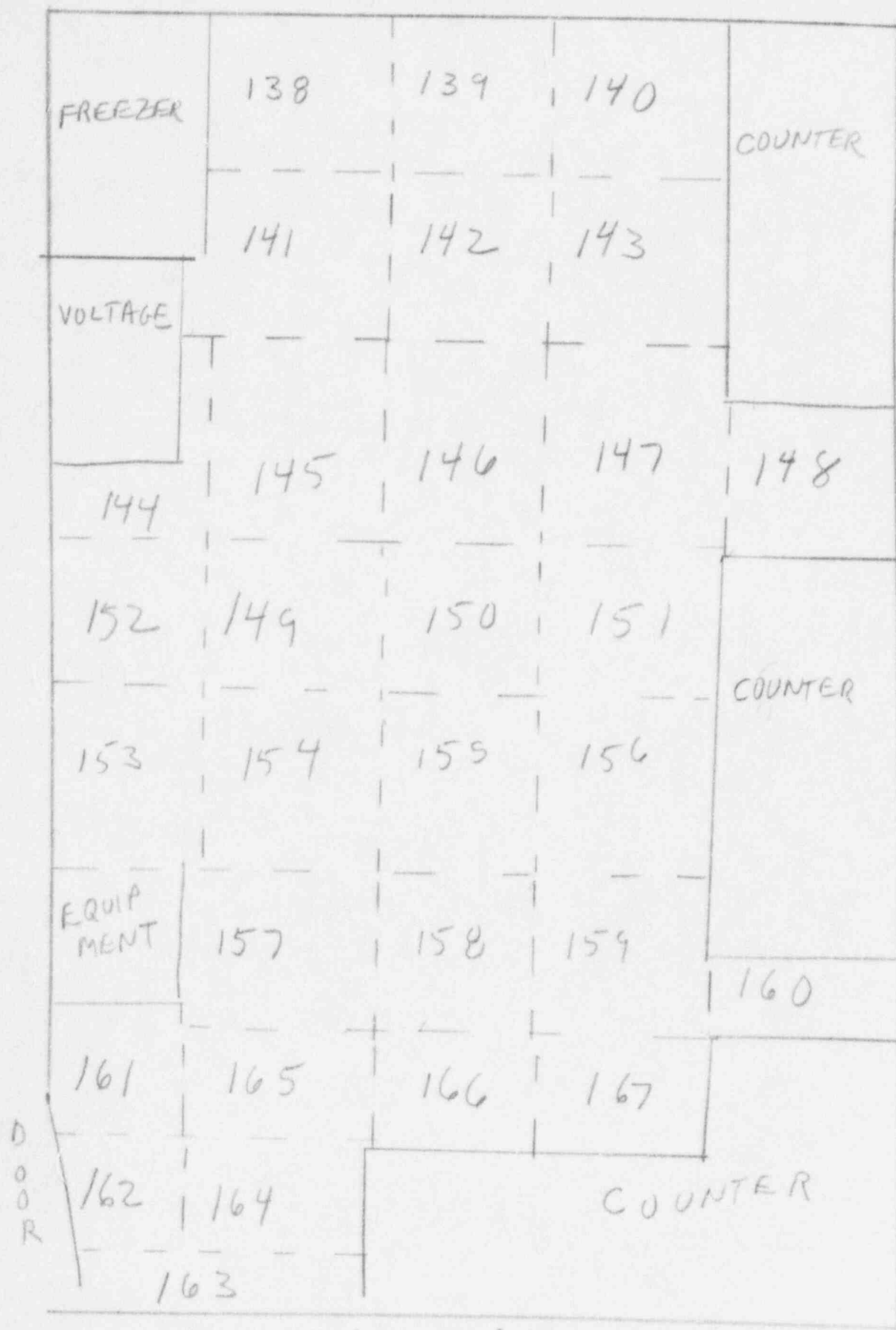
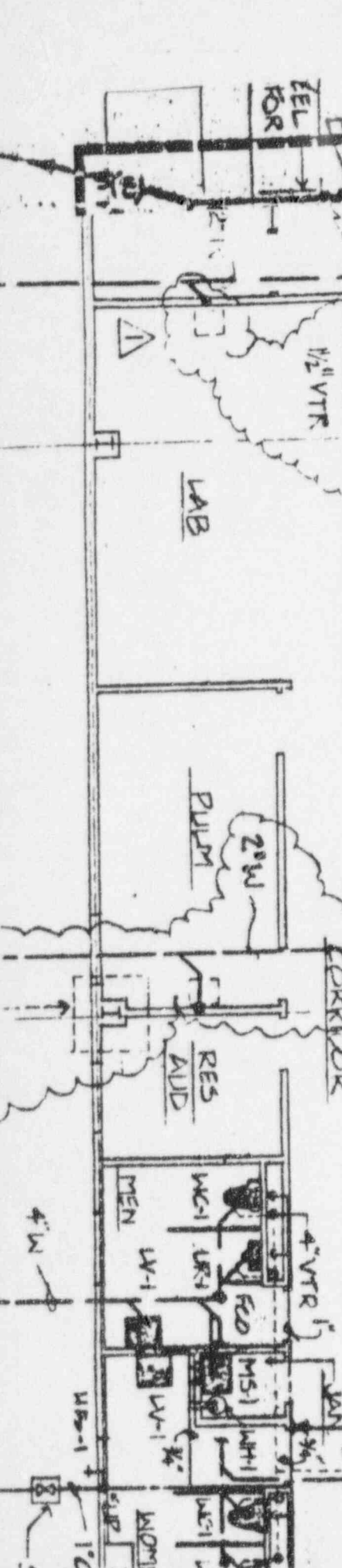
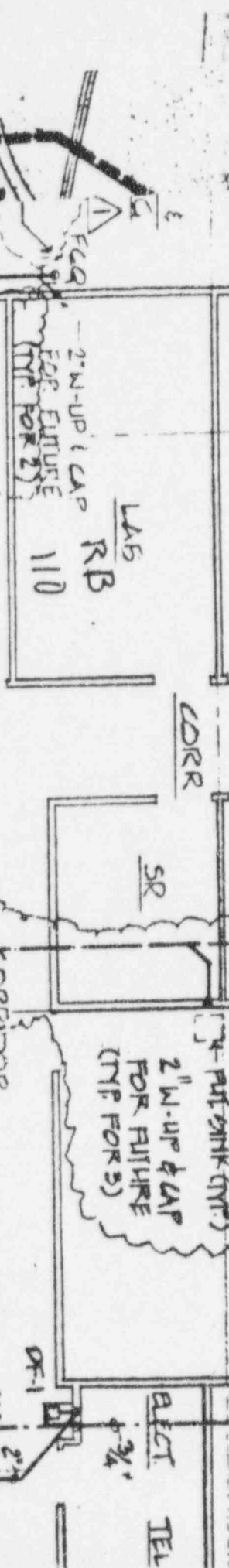
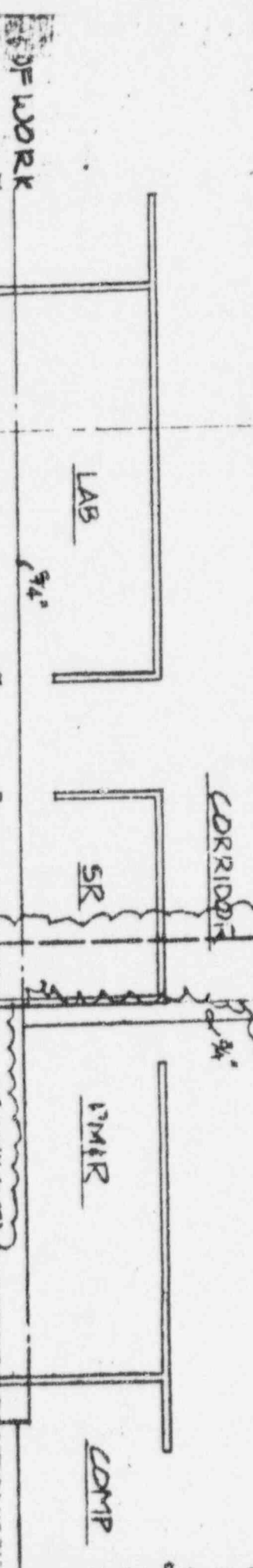
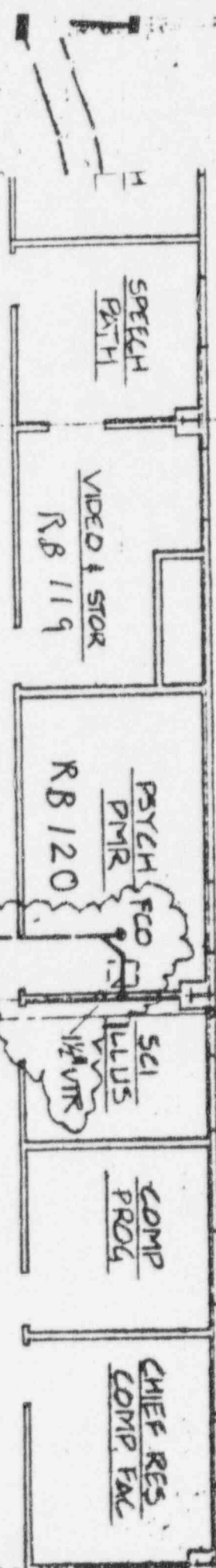
NOT  
TO  
SCALEROOM RB 120  
FLOOR SAMPLES 3-9-97

FIGURE 9





NRC License(number 04-029566-02)

Room RB 120

Decommissioning Samples

Page 1

Sample Number	Location	Tritium Window (dpm/100cm2)
1	Upper Shelf	89.6
2	Middle Shelf	45.6
3	Lower Shelf	40.4
4	Back Counter Top	53.3
5	Front Counter Top	89.1
6	Top Drawer	52.3
7	Second Drawer	47.3
8	Third Drawer	50.9
9	Bottom Drawer	48.9
10	Right Counter Top	214.2
11	Right Center Counter Top	64.2
12	Left Center Counter Top	118.8
13	Left Counter Top	101.0
14	Top Drawer	39.5
15	Bottom Drawer	97.9
16	Right Top Shelf	48.1
17	Left Top Shelf	47.7
18	Right Second Shelf	31.6
19	Left Second Shelf	39.8
20	Right Bottom Shelf	49.5
21	Left Bottom Shelf	50.4
22	Right Counter Top	45.7
23	Middle Counter Top	40.6
24	Left Counter Top	34.6
25	Slide Container	47.7
26	Glass Cage	46.5
27	Balance	58.9
28	Right Top Drawer	92.4
29	Left Top Drawer	112.2
30	Right Top Shelf	58.0
31	Right Bottom Shelf	55.9
32	Left Second Drawer	33.1
33	Left Third Drawer	58.4
34	Left Bottom Drawer	73.7
35	Right Top Shelf	35.4
36	Left Top Shelf	61.7
37	Right Middle Shelf	34.1
38	Left Middle Shelf	38.6
39	Right Bottom Shelf	40.1
40	Left Bottom Shelf	62.2
41	Right Glass Door	36.4
42	Left Glass Door	49.0
43	Right Wall	49.1
44	Center Wall	51.5
45	Left Wall	44.6
46	Right Rear Counter Top	85.0
47	Right Middle Counter Top	88.5
48	Right Front Counter Top	43.0
49	Right Middle Rear Counter Top	47.1
50	Right Middle Mid Counter Top	43.7
51	Right Middle Front Counter Top	58.5
52	Left Middle Rear Counter Top	125.1

NRC License(number 04-02956-02)

Room RB 120 Decommissioning Samples

Page 2

Sample Number	Location	Tritium Window (dpm/100cm2)
53	Left Middle Mid Counter Top	137.4
54	Left Middle Front Counter Top	172.2
55	Left Rear Counter Top	159.0
56	Left Mid Counter Top	137.5
57	Left Front Counter Top	174.8
58	Right Top Drawer	72.7
59	Right Top Shelf	74.4
60	Right Bottom Shelf	35.0
61	Left Top Drawer	76.1
62	Left Second Drawer	117.9
63	Left Third Drawer	95.2
64	Left Fourth Drawer	86.6
65	Left Bottom Drawer	89.0
66	Outside Right Door	47.4
67	Outside Left Door	48.7
68	Right Upper Shield	89.6
69	Right Lower Shield	59.1
70	Left Upper Shield	44.7
71	Left Lower Shield	62.0
72	Plexiglass Shield Upper Right	79.7
73	Plexiglass Shield Upper Left	92.4
74	Plexiglass Shield Mid Right	94.5
75	Plexiglass Shield Mid Left	97.0
76	Plexiglass Shield Lower Right	41.8
77	Plexiglass Shield Lower Left	59.7
78	Plexiglass Shield Bottom Right	74.8
79	Plexiglass Shield Bottom Left	69.5
80	Right Support Air Duct	42.9
81	Center Support Air Duct	49.7
82	Left Support Air Duct	44.6
83	Casette	41.9
84	Casette	50.4
85	Casette	44.3
86	Casette	39.2
87	Casette	38.6
88	Casette	41.8
89	Casette	28.7
90	Casette	54.6
91	Control Tissue Slicer	48.3
92	Top Tissue Slicer	49.5
93	Top Window Tissue Slicer	42.3
94	Bottom Window Tissue Slicer	45.4
95	Front Tissue Slicer	50.5
96	Top Right Tissue Slicer	46.2
97	Bottom Right Tissue Slicer	45.3
98	Top Left Tissue Slicer	76.4
99	Bottom Left Tissue Slicer	44.0
100	Back Tissue Slicer	59.9
101	Inside Tissue Slicer	41.0
102	Inside Tissue Slicer	49.3
103	Inside Tissue Slicer	98.3
104	Top Front Freezer	38.9

NRC License(number 04-02956-02)

Room RB 120 Decommissioning Samples

Page 3

Sample Number	Location	Tritium Window(dpm/100cm2)
105	Mid Front Freezer	36.9
106	Lower Front Freezer	37.8
107	Bottom Front Freezer	47.9
108	RAM Storage In Freezer	41.2
109	RAM Storage In Freezer	91.2
110	RAM Storage In Freezer	110.3
111	RAM Storage In Freezer	201.0
112	Right Table Top	36.0
113	Left Table Top	67.6
114	Chamber RF Rat Zapper	82.0
115	Wave Guide RF Rat Zapper	49.9
116	Front RF Rat Zapper	42.0
117	Left RF Rat Zapper	72.7
118	Right Top Shelf	45.4
119	Left Top Shelf	54.6
120	Right Second Shelf	37.7
121	Left Second Shelf	43.9
122	Right Bottom Shelf	57.3
123	Left Bottom Shelf	49.7
124	Right Top Shelf	38.1
125	Left Top Shelf	42.4
126	Right Second Shelf	64.3
127	Left Second Shelf	57.2
128	Right Bottom Shelf	56.3
129	Left Bottom Shelf	35.9
130	Door	45.5
131	Left Counter Top	40.3
132	Mid Counter Top	49.6
133	Back Sink Top	35.1
134	Sink Back	24.8
135	Sink	35.4
136	Right Sink Door	39.4
137	Left Sink Door	28.9
138	Floor Left Row 1	118.3
139	Floor Mid Row 1	146.5
140	Floor Right Row 1	203.3
141	Floor Left Row 2	105.8
142	Floor Mid Row 2	143.8
143	Floor Right Row 2	224.5
144	Floor Left Row 3	109.0
145	Floor Left Mid Row 3	66.8
146	Floor Middle Row 3	134.3
147	Floor Right Mid Row 3	252.8
148	Floor Right Row 3	60.8
149	Floor Left Mid Row 4	58.6
150	Floor Right Mid Row 4	81.3
151	Floor Right Row 4	67.1
152	Floor Left Row 4	65.5
153	Floor Left Row 5	116.1
154	Floor Left Mid Row 5	102.8
155	Floor Right Mid Row 5	37.7
156	Floor Right Row 5	87.2

NRC License(number 04-02956-02)

Room RB 120 Decommissioning Samples

Page 4

Sample Number	Location	Tritium Window(dpm/100cm2)
157	Floor Left Row 6	99.4
158	Floor Left Mid Row 6	85.5
159	Floor Right Mid Row 6	84.5
160	Floor Right Row 6	152.2
161	Floor Left Row 7	59.4
162	Floor Left Row 8	148.4
163	Floor Left Row 9	65.4
164	Floor Right Row 8	92.4
165	Floor Left Mid Row 7	48.5
166	Floor Right Mid Row 7	87.7
167	Floor Right Row 7	68.4
168	Background Control	42.8
169	Sewer	39.5

The wipes were obtained using count off and obtaining scrub wipes. Each wipe was taken from an area of 100 cm2 in each sampling grid and the wipes were counted in a Beckman LS 3801 liquid scintillation counter using a multiple channel analysis. This counter has an MDA of 70 dpm for the tritium window. The results from the tritium window showed that there were no areas above the NRC release limit of 1000 dpm/100cm2 of removable activity.

P-32  
t<sub>1/2</sub> = 14.3 da

NRC License (number 04-02956-020)  
Room RB 110

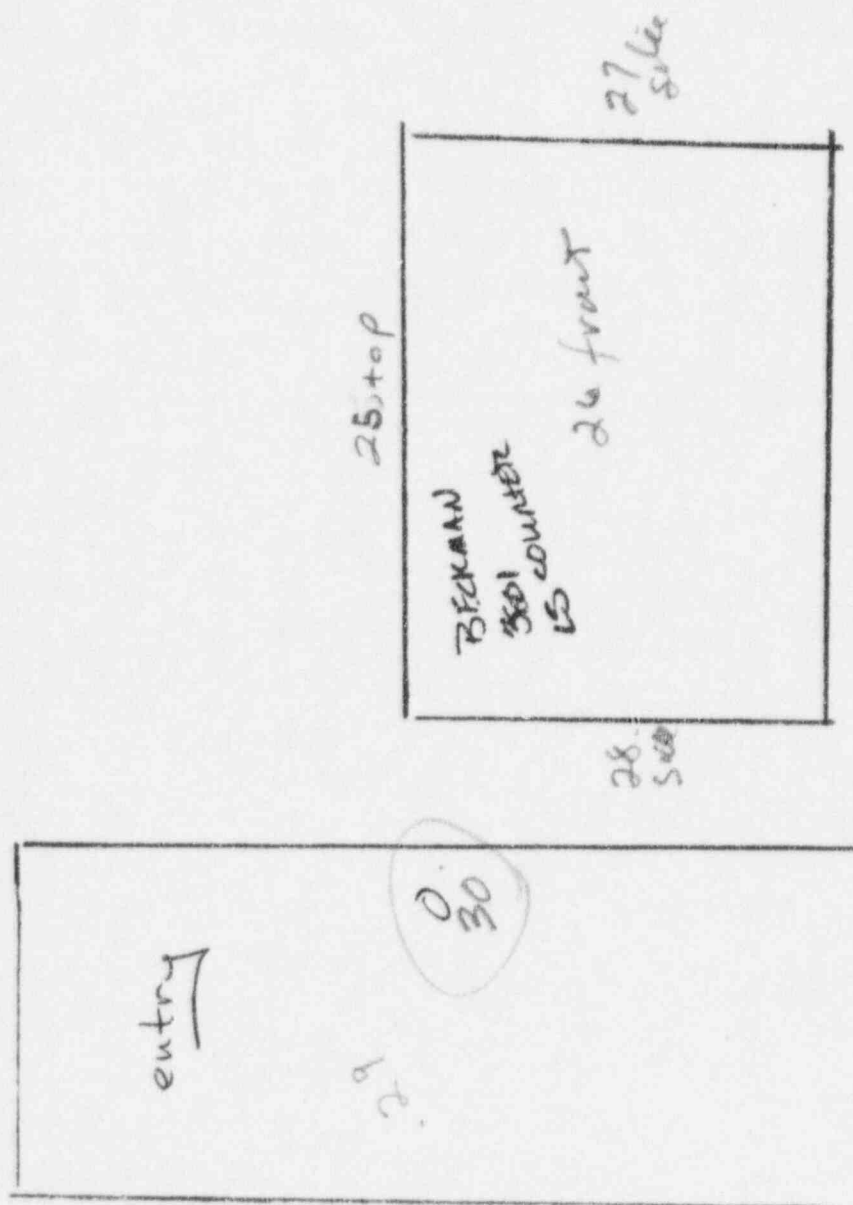
The core laboratory in room 110 of the research laboratory was under the direction of Dr. McCabe and used compounds that were tagged with P32. The laboratory operated satisfactorily and there were no major spills of radioactivity during its operation. The last use of this laboratory was in February 1995 when a final inventory of 1.150 millicuries of P32 was present. This inventory was turned over to radiation safety for decay and disposal. This would be 51.4 half lifes on March 1, 1997 and the maximum activity that could be present from this inventory would be background.

The room was surveyed with an Eberline E-520(S/N 4913) with a pancake probe calibrated 3/27/96 which has an MDA for P32 of 3000dpm/100cm<sup>2</sup>. All accessible areas were monitored by placing the meter 1 cm above the surface no readings above 40 cpm on the meter were found. The layout of the room and sampling plan is shown on the attached drawings figures(11-15) Wipe samples were taken by obtaining a scrub wipe and samples were counted in a Beckman liquid scintillation counter with a tritium window and and upper window. The MDA for the tritium window on this instrument is 70 dpm for the tritium window and an MDA of 49.2 for the upper window. All readings were below the level listed for release for unrestricted use. The wipe sample readings are attached for your records.

The freezer and refrigerator are being moved to room 113B in the radioactive use area in that room for any future research projects using radioisotopes. The sink drain was removed and placed into radioactive waste for disposal. The sample of the sewer line was at background. The remainder of cabinets and equipment in the laboratory will be released for unrestricted use.



(N) wall



Area Survey - all areas L 40gms

3/10/97

11911



22-141	50 SHEETS
22-142	100 SHEETS
22-144	200 SHEETS

FIG 11

R.B RM 110  
VA Martinez 3

East Wall

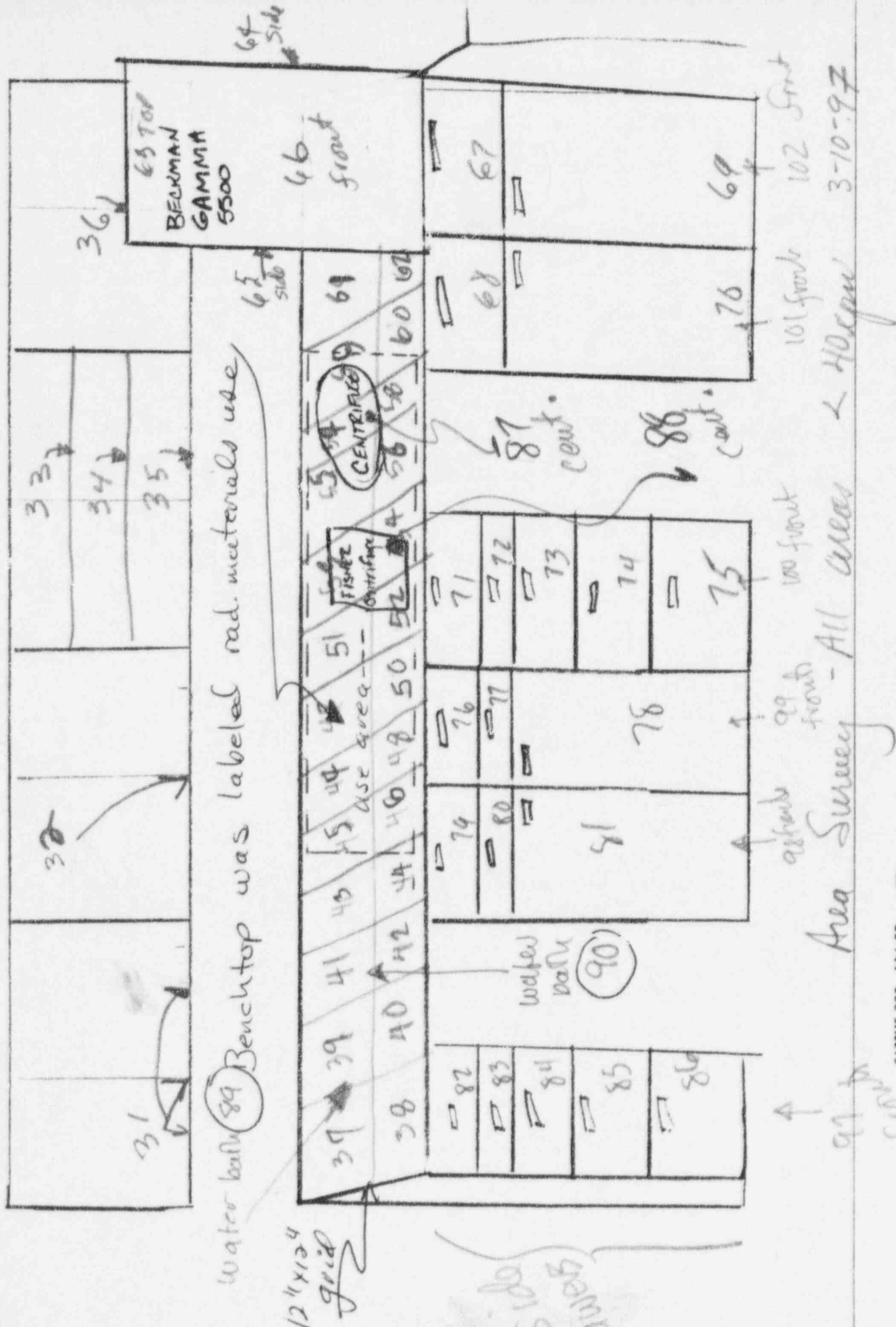


FIG 12

FIG 12

Acrylic Shield  
 from use area

- 91 outer top
- 92 " front
- 93 " bottom
- 94 inner top
- 95 " front
- 96 " bottom

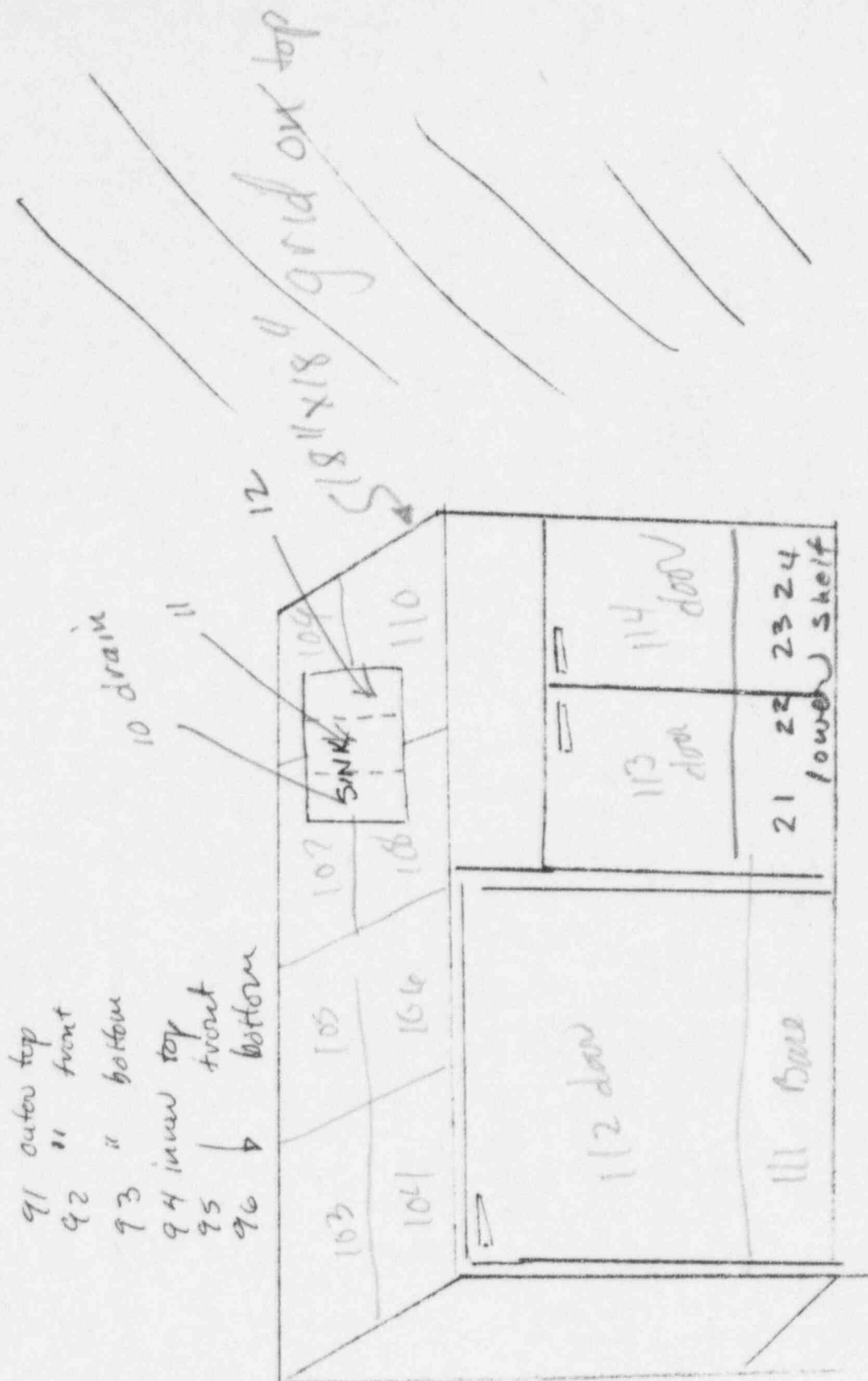


FIG 13

FIG 13

Area Survey  
 all areas L 40cm  
 3/10/97



22-141 50 SHEETS  
 22-142 100 SHEETS  
 22-144 200 SHEETS

West wall

Cabinets

Bookcase

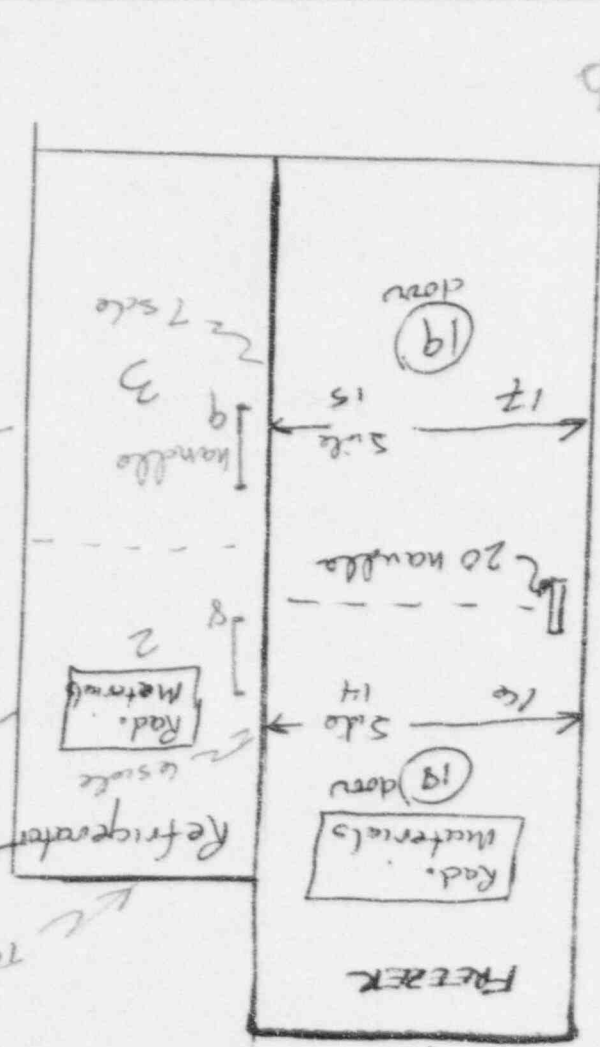
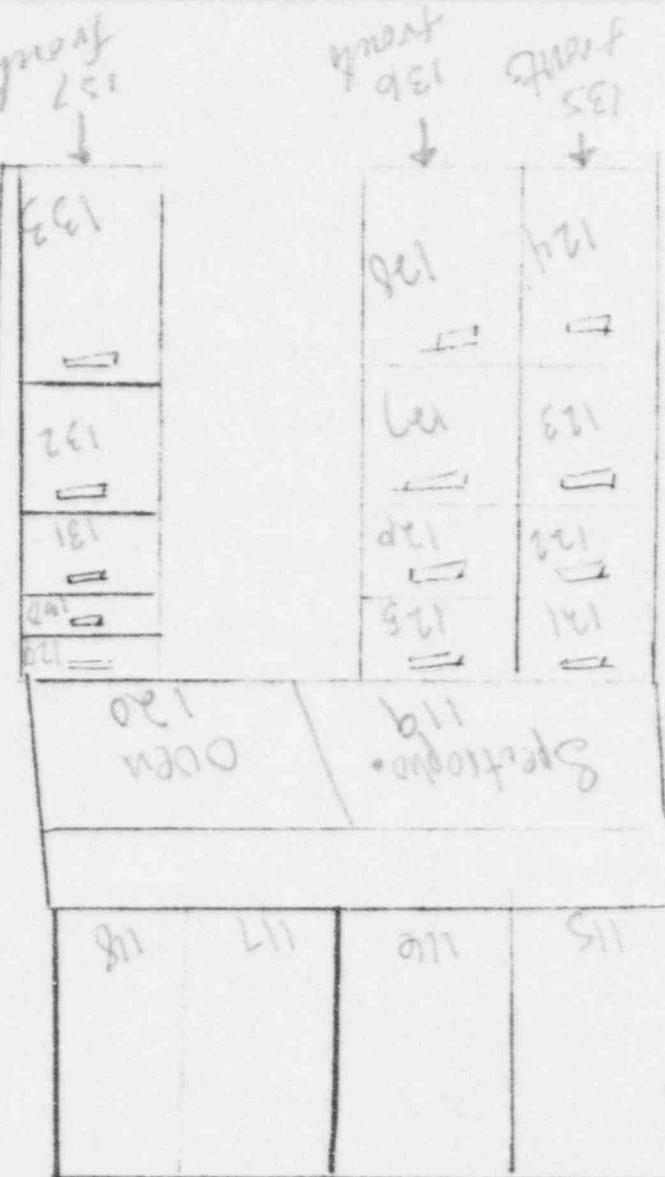
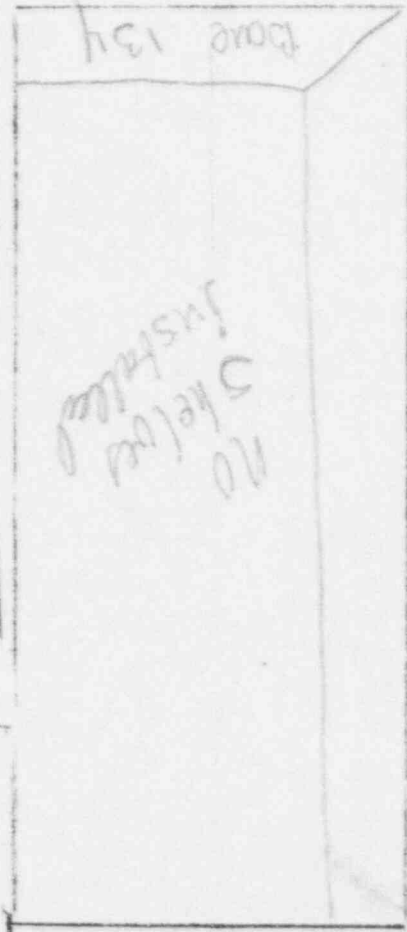


FIG 14



22-141 50 SHEETS  
22-142 100 SHEETS  
22-144 200 SHEETS

FIG 14

3/10/97

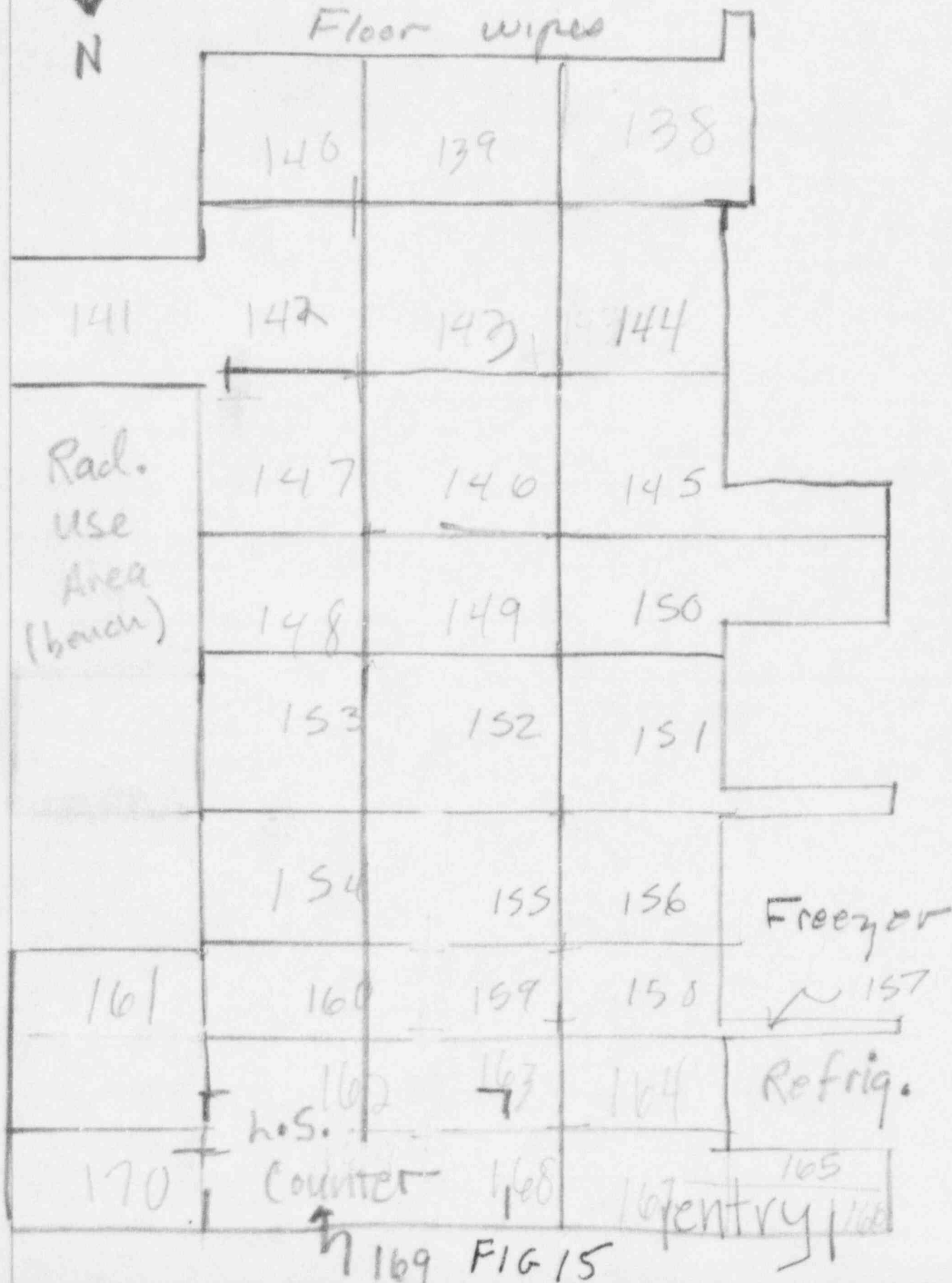
Area Survey - all new & 40g

Max. grid size  
is 2' x 2'

R.B. Rm 110  
VA Martinez  
3-10-97  
(not to scale)

↓  
N

Floor wipes



NRC License(number 04-02956-02)

Room RB 110

Decommissioning samples

Page 1

Sample Number	Location	Tritium Window (dpm/100cm2)	Upper Window (dpm/100cm2)
1	Top of Refrigerator	239.1	17.6
2	Upper Front of Refrigerator	88.0	23.8
3	Lower Front of Refrigerator	99.3	21.0
4	Upper Right Side of Refrigerator	116.3	22.2
5	Lower Right Side of Refrigerator	87.4	23.8
6	Upper Left Side of Refrigerator	162.9	22.9
7	Lower Left Side of Refrigerator	144.6	18.6
8	Upper Handle of Refrigerator	234.3	28.9
9	Lower Handle of Refrigerator	62.9	26.9
10	Sink Drain	224.7	20.9
11	Sink Bottom	255.2	22.3
12	Sink Sides	186.0	21.9
13	Top of Freezer	91.5	23.8
14	Upper Right Side of Freezer	55.2	19.0
15	Lower Right Side of Freezer	83.5	20.4
16	Upper Left Side of Freezer	112.5	21.7
17	Lower Left Side of Freezer	65.9	21.8
18	Upper Front of Freezer	40.3	21.0
19	Lower Front of Freezer	45.6	22.0
20	Handle Freezer	43.9	19.6
21	Left Lower Shelf	91.6	24.4
22	Mid Lower Shelf	41.9	21.6
23	Right Mid Lower Shelf	102.9	21.7
24	Right Lower Shelf	174.0	16.3
25	Top of Scintillation Counter	54.7	17.9
26	Front of Scintillation Counter	43.5	25.5
27	Right Side of Scintillation Coun.	36.8	21.2
28	Left Side of Scintillation Count.	47.0	24.5
29	Door	44.7	19.5
30	Door Handle	60.4	18.7
31	Left Wall Cabinet	41.1	21.3
32	Middle Wall Cabinet	42.4	20.4
33	Upper Shelf	46.6	16.1
34	Second Shelf	41.2	21.6
35	Bottom Shelf	40.0	20.5
36	Left Cabinet	41.7	19.6
37	Back Counter Top Row 1	37.8	25.6
38	Front Counter Top Row 1	38.1	20.2
39	Back Counter Top Row 2	48.9	20.4
40	Front Counter Top Row 2	56.1	21.7
41	Back Counter Top Row 3	89.4	20.0
42	Front Counter Top Row 3	92.0	23.6
43	Back Counter Top Row 4	78.0	22.1
44	Front Counter Top Row 4	62.5	19.3
45	Back Counter Top Row 5	65.3	22.5
46	Front Counter Top Row 5	48.4	18.7
47	Back Counter Top Row 6	38.7	22.4
48	Front Counter Top Row 6	44.2	17.2
49	Back Counter Top Row 7	42.2	18.3
50	Front Counter Top Row 7	47.8	17.6
51	Back Counter Top Row 8	39.4	19.7



NRC License(number 04-02956-02)

Room RB 110

Decommissioning Samples

Page 2

Sample Number	Location	Tritium Window (dpm/100cm2)	Upper Window (dpm/100cm2)
52	Front Counter Top Row 8	43.2	16.4
53	Back Counter Top Row 9	47.1	19.3
54	Front Counter Top Row 9	50.6	20.3
55	Back Counter Top Row 10	43.6	17.0
56	Front Counter Top Row 10	33.3	23.1
57	Back Counter Top Row 11	43.0	18.3
58	Front Counter Top Row 11	49.2	17.9
59	Back Counter Top Row 12	46.0	19.7
60	Front Counter Top Row 12	39.5	15.7
61	Back Counter Top Row 13	33.7	21.0
62	Front Counter Top Row 13	45.9	13.6
63	Top Beckman Gamma Counter	30.5	18.8
64	Right Side of Beckman Gamma Counter	40.2	17.9
65	Left Side Beckman Gamma Counter	39.4	26.2
66	Front Beckman Gamma Counter	38.8	17.4
67	Top Right Cabinet Drawer	44.1	20.0
68	Top Left Cabinet Drawer	50.3	16.5
69	Bottom Right Cabinet Shelf	40.1	19.9
70	Bottom Left Cabinet Shelf	35.9	20.9
71	Top Right Cabinet Drawer	49.1	17.2
72	Second Right Cabinet Drawer	40.0	18.6
73	Third Right Cabinet Drawer	49.4	19.6
74	Fourth Right Cabinet Drawer	45.0	23.7
75	Bottom Right Cabinet Drawer	40.9	23.6
76	Top Middle Cabinet Drawer	37.6	17.5
77	Second Middle Cabinet Drawer	37.7	22.5
78	Bottom Middle Cabinet Shelf	46.2	20.5
79	Top Left Cabinet Drawer	40.0	20.7
80	Second Left Cabinet Drawer	38.4	20.1
81	Bottom Left Cabinet Shelf	49.9	18.5
82	Top Left Cabinet Drawer	40.1	18.0
83	Second Left Cabinet Drawer	45.0	21.1
84	Third Left Cabinet Drawer	40.7	20.4
85	Fourth Left Cabinet Drawer	42.6	22.5
86	Bottom Left Cabinet Drawer	45.4	17.4
87	Centrifuge	44.5	20.8
88	Fisher Centrifuge	58.8	15.9
89	Water Bath	43.5	22.5
90	Water Bath	46.8	18.8
91	Outer Top Shield	38.4	26.1
92	Outer Middle Shield	40.4	17.9
93	Outer Bottom Shield	42.4	18.2
94	Inner Top Shield	38.4	16.1
95	Inner Middle Shield	40.9	19.0
96	Inner Bottom Shield	36.6	20.3
97	Left Cabinet Front	50.6	21.6
98	Left Middle Cabinet Front	113.9	19.6
99	Center Middle Cabinet Front	62.6	21.0
100	Right Middle Cabinet Front	52.6	20.8
101	Right Cabinet Front	51.8	24.1
102	Right Cabinet Front	66.1	17.5

NRC License(number 04-02956-02)

Room RB 110 Decommissioning Samples

Page 3

Sample Number	Location	Tritium Window (dpm/100cm <sup>2</sup> )	Upper Window (dpm/100cm <sup>2</sup> )
103	Back Left Counter Top	42.1	22.1
104	Front Left Counter Top	52.0	26.3
105	Back Left Center Counter Top	51.7	28.2
106	Front Left Center Counter Top	46.7	16.8
107	Back Right Center Counter Top	60.2	21.6
108	Front Right Center Counter Top	60.9	23.7
109	Back Right Counter Top	40.9	24.1
110	Front Right Counter Top	55.6	22.4
111	Left Cabinet Bottom	46.7	20.1
112	Left Cabinet Door	40.1	15.5
113	Right Cabinet Door	47.0	18.9
114	Right Cabinet Door	40.0	21.7
115	Left Cabinet	54.0	21.9
116	Middle Cabinet	42.8	20.1
117	Right Middle Cabinet	37.6	18.3
118	Right Cabinet	37.9	24.2
119	Spectrophotometer	34.3	22.1
120	Oven	52.1	20.8
121	Top Left Cabinet Drawer	42.2	21.2
122	Second Left Cabinet Drawer	43.4	17.9
123	Third Left Cabinet Drawer	44.5	23.9
124	Bottom Left Cabinet Drawer	49.3	18.7
125	Top Middle Cabinet Drawer	41.2	25.1
126	Second Middle Cabinet Drawer	53.8	19.8
127	Third Middle Cabinet Drawer	41.6	18.9
128	Bottom Middle Cabinet Drawer	38.6	19.3
129	Top Right Cabinet Drawer	49.0	21.5
130	Second Right Cabinet Drawer	40.8	18.8
131	Third Right Cabinet Drawer	45.2	20.2
132	Fourth Right Cabinet Drawer	47.6	21.8
133	Bottom Right Cabinet Drawer	39.3	18.0
134	Bookcase	45.4	19.9
135	Front Left Cabinet	33.4	24.5
136	Front Middle Cabinet	39.9	20.1
137	Front Right Cabinet	51.6	21.3
138	Floor Right Row 1	32.3	23.7
139	Floor Center Row 1	41.8	21.5
140	Floor Left Row 1	48.2	24.2
141	Floor Left Row 2	49.0	19.8
142	Floor Mid Left Row 2	39.6	19.4
143	Floor Mid Right Row 2	38.2	22.0
144	Floor Right Row 2	30.4	20.2
145	Floor Right Row 3	39.9	21.7
146	Floor Center Row 3	30.9	19.3
147	Floor Left Row 3	46.5	17.2
148	Floor Left Row 4	55.6	19.7
149	Floor Center Row 4	39.6	21.5
150	Floor Right Row 4	41.2	18.0
151	Floor Right Row 5	48.4	17.3
152	Floor Center Row 5	39.8	21.5
153	Floor Left Row 5	46.7	22.0

NRC License(number 04-02956-02)

Room RB 110

Decommissioning Samples

Page 4

Sample Number	Location	Tritium Window (dpm/100cm2)	Upper Window (dpm/100cm2)
154	Floor Left Row 6	49.2	22.5
155	Floor Center Row 6	42.9	17.6
156	Floor Right Row 6	39.2	21.0
157	Floor Right Row 7	44.3	23.6
158	Floor Right Mid Row 7	53.1	21.4
159	Floor Center Row 7	43.5	20.2
160	Floor Left Mid Row 7	35.2	24.3
161	Floor Left Row 7	33.3	16.8
162	Floor Left Row 8	50.8	17.9
163	Floor Center Row 8	40.4	19.4
164	Floor Right Row 8	39.8	19.3
165	Floor Right Row 9	38.9	20.2
166	Floor Entryway	44.0	15.2
167	Floor Right Mid Row 9	44.0	23.6
168	Floor Center Row 9	36.3	18.6
169	Floor Left Mid Row 9	48.9	21.5
170	Floor Left Row 9	44.2	24.3
171	Sewer Pipe	47.2	23.8

NRC License(number 04-02956-02)

Room RB 119

The radiation safety use of room 119 began in 1991 and was used to store sealed radioactive sources, process incoming radioactive packages and prepare wipe samples for counting in the scintillation counter. During the operation in this room there was no processing of any leaking packages and the leak tests for the sealed sources were negative so that this room only handled sealed sources. The sources were moved into room 4 of the research trailer where radiation safety will continue to operate. The attached list gives the isotopes and strength of the sealed sources moved. The accessible areas of the room were monitored with an Eberline E-520 (S/N4913) with a pancake probe calibrated 3/27/96 with a MDA of 2000 dpm/100cm<sup>2</sup> for gamma rays. All areas were monitored by placing the meter 1 cm above the surface and obtaining readings. All readings were found to be below 40 cpm. Wipe samples were taken of all equipment and working surfaces by obtaining scrub samples. The layout and sampling plan are shown on figures 16 and 17. The floor was sampled by taking fiber of the rug and counting these in the Beckman liquid scintillation counter which has an MDA of 70 dpm for the Tritium window and 49.2 dpm for the upper window. All readings were within 25dpm of the control and below the level listed for release to unrestricted use. The readings are attached for your file.

## SEALED SOURCE INVENTORY

Updated Mar 27, 1996

NUCLIDE   ACTIVITY   DATE   MANUFACTURER   MODEL NO.   SERIAL NO.  
PRESENT

Radiation Safety

RB 119

I-129	.017 uCi		Curtis Nuclear	844363	7764 vial 3
	.023 uCi		Curtis Nuclear	844363	7764 vial 1
	.029 uCi		Curtis Nuclear	844363	7764 vial 2
I-129	.1 uCi			HNO300	C2152
Cs-137	.8 uCi		Eberline	Cs-7B	
Ba-133	9 uCi	8/75			
(From Searle Mk III Liquid Scintillation Counter Serial 33604 )					
Cs-137	.1 uCi	5/87	Beckman	586165	081
Ra-226	.9 uCi		Amersham/Searle	184100	
Cs-137	.11 uCi	4/66	Nuclear Chicago	184010	
Cs-137	0.1 uCi	04/71	Amersham/Searle	184642	
Ba-133	1.06 uCi	10/85	NEN	NES-1305	100185
Cs-137	1.04 uCi	7/85	NEN	NES-1315	071985
Mn-54	1.3 uCi	6/85	NEN	NES-1325	060585
Na-22	1.13 uCi	7/85	NEN	NES-1335	071785
Co-60	.82 uCi	7/85	NEN	NES-1345	071985
Cd-109	8.3 uCi	7/85	NEN	NES-1055	071785
Co-57	1.33 uCi	8/85	NEN	NES-1295	
Cs-137	5 uCi		Eberline	Cs-7A	
Cs-137	1 uCi		The Nucleus	Cs-7B	
Ba-133	.109 uCi	3/83	NEN	NES-138S	
Cs-137	.106 uCi	1/83	NEN	NES-139S	
Co-57	.108 uCi	5/83	NEN	NES-137S	
Am-241	1.874x10 <sup>5</sup> dps	2/70	NBS	4213-88	
Cs-137	6.526x10 <sup>4</sup> dps	9/79	NBS	117	
Sr-90	.02 uCi	3/87	NEN	NES-267	
I-129	<0.1 uCi	4/87	Amersham	196330	(Ibrinator)
Co-57	1.02 uCi	11/90	Dupont	NES-129S	110290
Cs-137	100 mCi	1/80	J.L. Shepherd	28-5	5075
Cs-137	8 uCi		Eberline	Cs-7A	
Cs-137	7 uCi	7/31/91	Eberline	Cs-7B	1008/91
Cs-137	7 uCi	7/31/91	Eberline	Cs-7B	1009/91
Tc-99	24580 CPM	4/79	Eberline		8064
Tc-99	2730 CPM	4/79	Eberline		8066
Tc-99	253 CPM	4/79	Eberline		8063
I-125	0.12 uCi	11/94	Packard		5030700
I-125	0.12 uCi	11/94	Packard		5030726
I-125	0.1 uCi	9/93	Packard		5023304
I-125	0.1 uCi	9/93	Packard		5023289
I-125	0.1 uCi	2/94	Packard		5026066
I-125	0.1 uCi	2/94	Packard		5026098
I-125	0.1 uCi	7/94	Packard		5028796
I-125	0.1 uCi	7/94	Packard		5028808
I-125	0.1 uCi	11/94	Packard		5033533
I-125	0.1 uCi	11/94	Packard		5033426
Co-57	0.1 uCi	1/92	Packard		7006316
Co-57	0.1 uCi	1/92	Packard		7006320
Co-57	0.1 uCi	1/92	Packard		7006321
Co-57	0.1 uCi	1/92	Packard		7006324
Co-57	0.1 uCi	1/92	Packard		7006335

Co-57	0.1 uCi 1/92	Packard	7006323	_____
Co-57	0.1 uCi 1/92	Packard	7006336	_____
Co-57	0.1 uCi 1/92	Packard	7006349	_____
Co-57	0.1 uCi 1/92	Packard	7006344	_____
Co-57	0.1 uCi 1/92	Packard	7006347	_____
Co-57	0.1 uCi 2/93	Packard	7008922	_____
Co-57	0.1 uCi 2/93	Packard	7008926	_____
Co-57	0.1 uCi 2/94	Packard	7011678	_____
Co-57	0.1 uCi 2/94	Packard	7011671	_____
Co-57	0.1 uCi 11/94	Packard	7013286	_____
Co-57	0.1 uCi 11/94	Packard	7013288	_____
H-3	518,600DPM 5/85	Amersham	180050 Lot 480	_____
	(set of seven LSC quench standards)			
H-3	257,000DPM 5/90	NEN	NES-203 S203( )9-007	_____
	(set of 10 vials)			
C-14	.017 uCi each	NEN	NES-202	_____
	(set of 6 vials A thru F)			



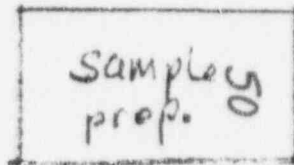
Rm 119 RB

(NOT TO SCALE)

office



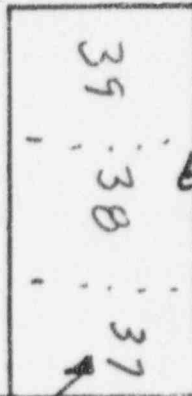
entry



Rad. Material label



Refrigerator



isotope  
storage  
bench top

47

48

Desk

46

exterior





Rm 119 RB

(NOT TO SCALE)

N

office

corridor

BOOKCASE

entry

Refrigerator

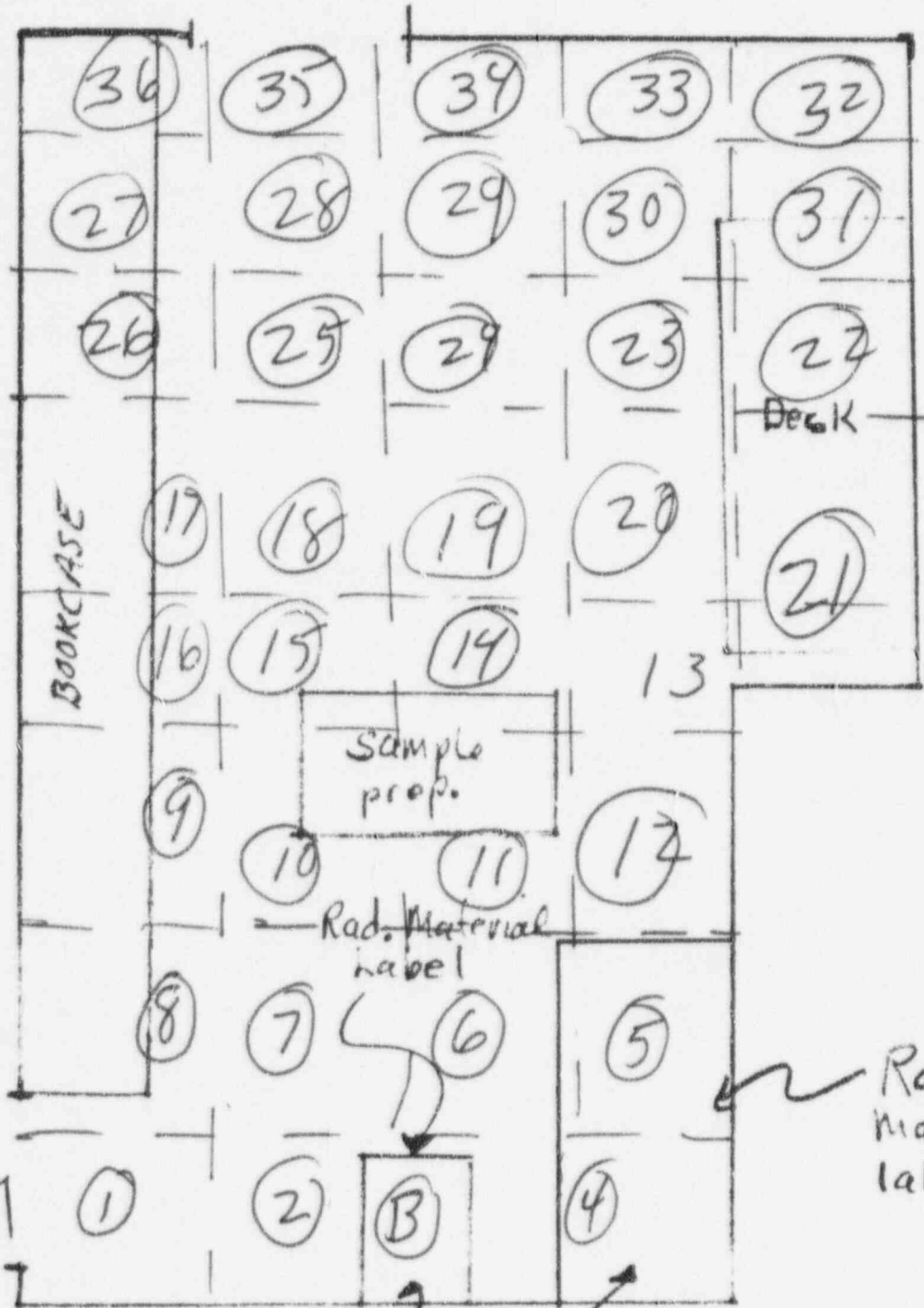
isotope  
storage  
bench top

sample  
prep.

Rad. Material  
label

Rad. Material  
label

exterior



NRC License(number 04-02956-02)

Room RB 119

Decommissioning Samples

Page 1

Sample Number	Location	Tritium Window (dpm/100cm2)	Upper Window (dpm/100cm2)
1	Floor Right Row 1	35.8	21.8
2	Floor Mid Right Row 1	38.1	17.8
3	Floor Mid Left Row 1	53.5	18.2
4	Floor Left Row 1	49.2	18.2
5	Floor Left Row 2	40.4	16.9
6	Floor Mid Left Row2	30.9	22.7
7	Floor Mid Right Row 2	45.9	18.2
8	Floor Right Row 2	43.3	18.8
9	Floor Right Row 3	37.9	19.9
10	Floor Mid Right Row 3	30.3	21.4
11	Floor Mid Left Row 3	41.4	21.2
12	Floor Left Row 3	54.1	19.3
13	Floor Left Row 4	41.1	21.2
14	Floor Mid Left Row 4	55.6	17.3
15	Floor Mid Right Row 4	46.8	16.1
16	Floor Right Row 4	34.9	20.0
17	Floor Right Row 5	40.2	20.7
18	Floor Mid Right Row 5	45.3	15.8
19	Floor Center Row 5	43.1	19.6
20	Floor Mid Left Row 5	41.8	16.4
21	Floor Left Row 5	48.1	17.9
22	Floor Left Row 6	39.7	24.1
23	Floor Mid Left Row 6	46.0	18.4
24	Floor Center Row 6	44.5	20.1
25	Floor Mid Right Row 6	50.6	17.9
26	Floor Right Row 6	41.4	21.3
27	Floor Right Row 7	46.7	21.4
28	Floor Mid Right Row 7	47.1	20.3
29	Floor Center Row 7	41.5	17.5
30	Floor Mid Left Row 7	50.8	20.3
31	Floor Left Row 7	45.4	21.2
32	Floor Left Row 8	45.4	17.4
33	Floor Mid Left Row 8	51.8	21.5
34	Floor Center Row 8	50.3	23.5
35	Floor Mid Right Row 8	38.5	18.1
36	Floor Right Row 8	53.0	18.9
37	Left Table Top	31.9	23.8
38	Center Table Top	38.5	21.8
39	Left Table Top	41.1	20.1
40	Refrigerator	51.1	21.6
41	Refrigerator	40.6	22.2
42	Bookcase	42.7	19.9
43	Bookcase	41.1	19.2
44	Bookcase	52.3	21.1
45	Bookcase	49.5	16.9
46	Desk	42.9	16.3
47	Desk Front	41.0	18.8
48	Desk front	44.2	20.6
49	Control Background	31.6	21.0
50	Sample Preparation Area	45.2	20.9