NRC FORM 314 (6-2004) 10 CFR 30.36(j)(1); 40.42(j)(1); 70.38(j)(1); and 72.54(j)(1)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB: NO. 3150-0028	EXPIRES: 06/30/2007

CERTIFICATE OF DISPOSITION OF MATERIALS

Estimated burden per response to comply with this mandatory collection request: 30 minutes. This submittal is used by NRC as part of the basis for its determination that the facility is released for unrestricted use. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0028), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE NAME AND ADDRESS	LICENSE NUMBER	DOCKET NUMBER
Conopco, Inc. d/b/a Unilever Research and Development - Edgewater 45 River Road Edgewater, NJ 07020	29-00304-02	030-05233
	LICENSE EXPIRATION DATE: 02/28/2006	

A. LICENSE STATUS *(Check the appropriate box)*

☐ This license has expired. ☑ This license has not yet expired; please terminate it.

B. DISPOSAL OF RADIOACTIVE MATERIAL

(Check the appropriate boxes and complete as necessary. If additional space is needed, provide attachments)

The licensee, or any individual executing this certificate on behalf of the licensee, certifies that:

☐ 1. No radioactive materials have ever been procured or possessed by the licensee under this license.

☑ 2. All activities authorized by this license have ceased, and all radioactive materials procured and/or possessed by the licensee under this license number cited above have been disposed of in the following manner.

☑ a. Transfer of radioactive materials to the licensee listed below:

Radioactive materials were transferred to the following licensees: (1) Conopco, Inc., d/b/a Unilever HPC-NA in Trumbull, CT; (2) Agilent Technologies, Inc. in Wilmington, DE; and (3) NRD, LLC in Grand Island, NY. For additional details, see Attachment 1.

☑ b. Disposal of radioactive materials:

☐ 1. Directly by the licensee:

☐ 2. By licensed disposal site:

☑ 3. By waste contractor:

The final shipment of radioactive waste was transferred to Onyx Environmental Services on April 26, 2005. This shipment was sent to 2 locations: (1) Alaron Corporation in Wampum, PA, and (2) Perma-Fix of Florida, Inc. For additional details, see Attachment 1.

'05 MAY 24 AM 10:13
RECEIVED
REGION 1

☑ c. All radioactive materials have been removed such that any remaining residual radioactivity is within the limits of 10 CFR Part 20, Subpart E, and is ALARA.

C. SURVEYS PERFORMED AND REPORTED

☑ 1. A radiation survey was conducted by the licensee. The survey confirms:

☐ a. the absence of licensed radioactive materials

☑ b. that any remaining residual radioactivity is within the limits of 10 CFR 20, Subpart E, and is ALARA.

☑ 2. A copy of the radiation survey results:

☑ a. is attached; or ☐ b. is not attached (Provide explanation); or ☐ c. was forwarded to NRC on: ________ Date

☐ 3. A radiation survey is not required as only sealed sources were ever possessed under this license, and

☐ a. The results of the latest leak test are attached; and/or ☐ b. No leaking sources have ever been identified.

The person to be contacted regarding the information provided on this form:

NAME	TITLE	TELEPHONE *(Include Area Code)*	E-MAIL ADDRESS
Dennis M. Quinn	Radiation Safety Officer	(845) 223-1960	dqdx@aol.com

Mail all future correspondence regarding this license to:
Scott Spoerl, Sr. Attorney, Unilever United States, Inc., 700 Sylvan Ave., Englewood Cliffs, NJ 07362

C. CERTIFYING OFFICIAL

I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND CORRECT

PRINTED NAME AND TITLE	SIGNATURE	DATE
Anthony K. Mills, VP Skin Development	AK Mills	5/23/05

WARNING: FALSE STATEMENTS IN THIS CERTIFICATE MAY BE SUBJECT TO CIVIL AND/OR CRIMINAL PENALTIES. NRC REGULATIONS REQUIRE THAT SUBMISSIONS TO THE NRC BE COMPLETE AND ACCURATE IN ALL MATERIAL RESPECT. 18 U.S.C. SECTION 1001 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

137195

NMSS/RGNI MATERIALS-002

Attachment 1 to NRC Form 314

License No. 29-00304-02 Docket No. 030-05233

Additional Information for Item B.2.a:

(1) Transfer of radioactive materials in the form of potentially contaminated equipment and small quantities (less than 10 millicuries total C-14 and H-3) of radioactive research materials as follows:

- Date: April 4-5, 2005
- Recipient: Conopco Inc., d/b/a Unilever Home and Personal Care – North America, 40 Merritt Blvd., Trumbull, CT 06611.
- Contact Name: Dr. John Bajor, 40 Merritt Blvd., Trumbull, CT 06611, phone: 203-381-5726
- NRC License No. 29-30984-01

(2) Transfer two 15-mCi Ni-63 sources back to the vendor:

A. Serial No. K1165, 15 mCi Ni-63, date of source production: April 1995

B. Serial No. S10664, 15 mCi Ni-63, date of source production: April 1988

- Date of transfer to vendor: April 21, 2005 (received 4/22/05)
- Recipient: Agilent Technologies, Inc., 2850 Centerville Rd., Wilmington, DE 19808-1610.
- Contact Name: Todd White, 2850 Centerville Rd., Wilmington, DE 19808-1610, phone: 305-633-8469
- NRC License No. 074-28762-01

(3) Transfer two Polonium static eliminators back to the vendor:

- Sources were not part of License 29-00304-02, and were the following models and quantities:
    - IC200: 200 uCi Po-210
    - 2U500: 500 uCi Po-210
- Date: April 21, 2005
- Recipient: NRD, LLC, 2937 Alt Blvd., Grand Island, NY 14072
- Contact Name: Jessica Dellario, 2937 Alt Blvd., Grand Island, NY 14072, phone: 716) 773-7634
- NY State Department of Labor Radioactive Materials License: 1391-1811

Additional Information for Item B.2.b:

The final shipment of radioactive waste from Unilever Research and Development - Edgewater was made on 4/26/05 via Onyx Environmental Services, 1 Eden Lane, Flanders, NJ 07836; phone: (973) 691-3900.

Five 55-gallon drums of dry active waste were sent to Alaron Corporation, 2138 State Route 18, Wampum, PA 16157; phone: 724-535-5777.

This same shipment included one 55-gallon drum of liquid scintillation vials (H-3 and C-14 with less than 0.05 uCi/gram) via Onyx Environmental Services to Perma-Fix of Florida, Inc., 1940 NW 67th Place, Gainesville, FL 32653; phone: 352-373-6066.

Subject: **FedEx Shipment 790493774978 Delivered**
Date: 4/22/2005, 9:16 AM
From: Notifications@fedex.com
To: dqdx@aol.com

Our records indicate that the following shipment has been delivered:

Tracking number:	790493774978
Reference:	Unilever ECDs
Ship (P/U) date:	Apr 21, 2005
Delivery date:	Apr 22, 2005 09:00 AM
Signed for by:	J.BUSH
Service type:	FedEx Priority Overnight
Packaging type:	Your Packaging
Number of pieces:	1
Weight:	2.0 LB

Shipper Information	Recipient Information
Dennis Quinn	Todd White
DAQ, Inc.	Agilent Technologies
3 Shadow Lane	Attn: ECD Lab
Hopewell Junction	2850 Centerville Road
NY	Wilmington
US	DE
12533	US
	19808

Special handling/Services
Deliver Weekday

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 8:16 AM CDT on 04/22/2005.

For questions about FedEx Express, please call us at 1.800.Go.FedEx.

All weights are estimated.

To track the status of this shipment online, please use the following:
http://www.fedex.com/Tracking?tracknumbers=790493774978&action=track&language=english&cntry_code=us&clienttype=ivpodalr

Thank you for your business.

FedEx Express
Customer Support Trace
3875 Airways Boulevard
Module H, 4th Floor
Memphis, TN 38116

U.S. Mail: PO Box 727
Memphis, TN 38194-4643

Telephone: 901-369-3600

05/05/2005

Dear Customer:

Here is the proof of delivery for the shipment with tracking number **790493774978**. Our records reflect the following information.

Delivery Information:

Signed for by: J.BUSH

Delivery Date: Apr 22, 2005 09:00

Shipping Information:

Tracking number: 790493774978

Ship Date: Apr 21, 2005
Weight: 2.0 lbs.

If you are the shipper, recipient, or third-party payor for this shipment and require additional Signature Proof of Delivery information, please log-in using your My FedEx login ID.

Recipient:
Wilmington , DE US

Shipper:
Hopewell Junction , NY US

Reference: Unilever ECDs

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Subject: FedEx Shipment 792900975122 Delivered
Date: 4/22/2005, 9:07 AM
From: Notifications@fedex.com
To: dqdx@aol.com

Our records indicate that the following shipment has been delivered:

Tracking number:	792900975122
Reference:	Unilever static return
Ship (P/U) date:	Apr 21, 2005
Delivery date:	Apr 22, 2005 09:05 AM
Signed for by:	T.DICKINSON
Service type:	FedEx Priority Overnight
Packaging type:	Your Packaging
Number of pieces:	1
Weight:	2.0 LB

Shipper Information	Recipient Information
Dennis Quinn	Staticmaster Returns
DAQ, Inc.	NRD, LLC
3 Shadow Lane	2937 Alt Blvd.
Hopewell Junction	Grand Island
NY	NY
US	US
12533	14072

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For questions about FedEx Express, please call us at 1.800.Go.FedEx.

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To track the status of this shipment online, please use the following:
http://www.fedex.com/Tracking?tracknumbers=792900975122&action=track&language=english&cntry_code=us&clienttype=ivpodalr

Thank you for your business.

FedEx Express

FedEx Express
Customer Support Trace
3875 Airways Boulevard
Module H, 4th Floor
Memphis, TN 38116

U.S. Mail: PO Box 727
Memphis, TN 38194-4643

Telephone: 901-369-3600

05/05/2005

Dear Customer:

Here is the proof of delivery for the shipment with tracking number **792900975122**. Our records reflect the following information.

Delivery Information:

Signed for by: T.DICKINSON

Delivery Date: Apr 22, 2005 09:05

Shipping Information:

Tracking number: 792900975122

Ship Date: Apr 21, 2005

Weight: 2.0 lbs.

If you are the shipper, recipient, or third-party payor for this shipment and require additional Signature Proof of Delivery information, please log-in using your My FedEx login ID.

Recipient:
Grand Island , NY US

Shipper:
Hopewell Junction , NY US

Reference: Unilever static return

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CoPhysics Corporation
1242 Route 208
Monroe, NY 10950
Tel: 845-783-4402 Fax: 845-783-7191
www.cophysics.com

RADIOANALYTICAL RESULTS

Client: DAQ, Inc.
Attn: Dennis Quinn
3 Shadow Lane
Hopewell Junction, NY 12533

Lab # 468

Project: Unilever
Type: Wipe Tests
Date Collected: 3/21/05
Date Analyzed: 3/23/05
Report Date: 3/25/2005

SAMPLE	DESCRIPTION	Gross Beta (dpm/wipe)
1	Leak Test #10 Ni-63 S#10664 Room 3-811	4 ± 3
MDA		9 dpm

Method: pulse shape, liquid scintillation counting
Instrument: Wallac Model 1415 LSC, Serial #4150043
Uncertainties are 1-sigma counting and quench correction errors.
MDA - Minimum Detectable Activity
Standards are traceable to the National Institute of Standards and Technology.
Radioactive Materials License: NYS 2691-3949, expires 7/31/07.

Theodore E. Rahon

Theodore E. Rahon, Ph.D., CHP
President

DAQ Inc.
Health and Safety Consultants
RADIOLOGICAL • ENVIRONMENTAL • OCCUPATIONAL

March 21, 2005

Byron Cotter
Unilever Research and Development- Edgewater
45 River Road
Edgewater, New Jersey 07020-1074

Dear Dr. Cotter:

Enclosed is the report detailing the results of the monthly radiological survey performed by DAQ, Inc. at the Unilever Research and Development Edgewater (URDE) facility on February 14, 2005. This survey was performed using the guidelines of the existing URDE Radioisotope Operations Manual (January 2003). This survey will likely be the last monthly survey prior to cleanout of the labs and the subsequent Final Status Survey for decommissioning.

The sealed source leak check was performed on the Ni-63 source in the gas chromatograph in room 1-421. Results indicated no leakage.

If you have any questions or require further information, please contact me at (845) 223-1960 (office), (845) 519-7321 (mobile), or email at dqdx@aol.com.

Sincerely,

Dennis Quinn, CHP
Radiation Safety Officer

Table of Contents

I. Introduction

DAQ, Inc. has prepared this report for Unilever Research and Development, Edgewater (URDE) to summarize the results of the monthly radiation safety surveys performed in the radioactive materials use areas at the facility. The purpose of the survey was to identify and define the extent of fixed and removable radioactive contamination and to review radiological compliance items.

Surveys Performed By: Dennis Quinn Date: 2/14/05

LSC Analyses By: CoPhysics Corporation Date: 2/15/05

II. Survey Instrumentation

Table 2-1: Routine Monthly Survey Instrumentation

Instrument	Detector Type	Use	Serial #	Calibration Date
Ludlum Model 3 Survey Meter	Ludlum Model 44-9, 15 cm^2 GM probe	Direct measurement for beta and gamma radiation	Meter-145244 Probe PR 150355	10/6/04
Liquid Scint. Analyzer, Wallac model 1415	Photomultiplier Tube Method: Pulse Shape	Liquid scintillation counting of smears for identification of removable contamination	4150043	Efficiency determined at time of use.

Table 2-2: Instrumentation Minimum Detectable Activity

Instrument	Serial #	Minimum Detectable Activity
Ludlum Model 3 Survey Meter w/ 44-9, 15 cm^2 GM probe	Meter-145244 Probe PR 150355	Approx. 1200 dpm per probe area for C-14
Liquid Scintillation Analyzer, Wallac Model 1415	4150043	Gross Beta: 9 dpm/sample Tritium: 5 dpm/sample Carbon-14: 2 dpm/sample Based on the above MDAs, the survey results will be reported with numerical values if they exceed the critical level, or 0.5 MDA. For example, H-3 will be reported if it is 3 dpm or higher; or else it will be reported as Not Detectable (ND).

III. Survey Methodology

The URDE Radioisotope Users Manual (January 2003) defines 200 disintegrations per minute (dpm) per sample of removable activity, and 4 times background for fixed activity, as levels above which decontamination is necessary.

As an example, direct radiation readings were obtained by passing the probe of the Ludlum Model 3 (Ludlum probe model 44-9) over the surfaces in the laboratory at a height of approximately 1 cm. The background for this survey was approximately 50 counts per minute (cpm); so direct readings that were elevated above 200 cpm (above 4 times background) would indicate areas requiring decontamination.

Removable radioactive contamination surveys consisted of smear samples taken by wiping approximately 100 cm^2 of surface area with an absorbent material at representative areas in the laboratories, as indicated on the attached survey forms. Smears were analyzed by liquid scintillation counting using standards traceable to the National Institute of Standards and Technology.

IV. Sealed Source Leak Test Methodology:

URDE currently possesses two sealed sources with different frequencies for leak tests. Both are electron capture detectors containing 15 mCi of Ni-63. One source has been removed and is currently in storage in 03-811 awaiting return to the vendor for reclamation or disposal. The leak test for the source in room 03-811 is not required at this time (10 year requirement when in storage). The other is in use and is located in building 01 room 421 contained in the HP Series II 3890 gas chromatograph S/N K1165 dated 4/95.

The electron capture detector was checked for leakage by performing a wipe test. Two smears were wiped around the detector cell and analyzed by liquid scintillation. The leak test must have the ability to detect 0.005 μCi (11,100 dpm).

Liquid scintillation detection is energy dependent and is appropriate for low energy beta emitting isotopes. Ni-63 emits a beta spectrum with maximum beta energy of approximately 0.066 MeV. The current liquid scintillation data is reported in gross beta, H3, and C14 regions of interest. The C-14 and gross beta regions of interest are used to quantify the Ni-63 activity on a wipe.

V. Sealed Source Leak Test Results:

The results indicate a maximum of 8 dpm of gross beta activity, and a maximum of 3 dpm in the C-14 range. These results indicate that the source is not leaking.

VI. Survey Results

A. Significant Removable Activity (>2000 dpm/sample):

No areas identified.

B. Removable Activity > 200 dpm/sample (URDE guideline):

No areas identified.

C. Direct Radiation Levels > 200 cpm (URDE guideline of 4 times background):

In room 05-108, the area previously identified at several thousand cpm was covered with radioactive material tape and is reading near backgrounds levels (50-100 cpm). It is expected that the fixed activity remains under the tape.

Existing fixed contamination areas are present in room 05-136, one location in 05-135, and one location (now covered over) in 05-108. The previous location in room 05-124A is now within the standard of 4 times background.

VII. Summary of Compliance Item Review

A review of compliance items, according to in the URDE Radioactive Materials License and Operations Manual, was performed in each area surveyed. Results of this review are indicated below and are detailed on the survey forms attached.

The administration and the personnel involved in the URDE radiation safety program have corrected deficiencies identified during previous monthly audits and continue to make efforts to correct newly identified deficiencies.

Room 05-108

- One area of fixed activity previously identified on the floor (~9000 cpm) had been covered with radioactive caution tape. The current reading (above the tape) is background.

Room 05-124

- Room is in the process of being cleaned up.

Room 05-124A

- The location that was above 4 times background on the floor under the hood is now approximately background.

Room 05-124C
- No comments

Room 05-128
- The last experimentation with radioactive material has recently been completed.

Room 05-135
- There has been a cleanup in this room, and no more radioactive material experiments are taking place in this lab. There are potentially radioactively contaminated instruments and P-32 shields on the benchtops. There is a group of small vials, boxes, and other containers on the bench for the RSO to evaluate for disposal.

Room 05-136
- No comments

Room 03-811
- There are currently thirteen (13) drums of waste in the room, along with a bagged filter and prefilter from room 5-108. One tray with 2 vials and 2 jugs of uranyl acetate is in the room. There is a waste shipment planned for 2-23-05, and some of this material will be removed at that time.

VIII. Follow-up Action Recommendations:

Based on this survey, these follow-up actions are recommended:

- In preparation for closing down of the site, the types of cleanups being performed in rooms 5-135 and 5-108 should be continued.
- The in-storage Ni-63 source in 3-811 should be sent back to the manufacturer
- Care should be taken with the Gas Chromatograph in Room 1-421 (HP 5890 Series II) to ensure that the source is properly accounted for and transported to Trumbull.

09-May-05

UNILEVER RESEARCH US
DENNIS M QUINN
ENVIRONMENTAL SAFETY
45 RIVER ROAD
EDGEWATER NJ 07020

REF: MANIFEST NUMBER: 5159
SHIPMENT NUMBER: AETS-76
SHIPMENT DATE: 04/28/05

CERTIFICATE OF RECYCLING/MATERIALS RE-USE

ON THE ABOVE DATE, YOUR WASTE MATERIAL WAS RECEIVED AT OUR FACILITY FOR THE PURPOSE OF RECYCLING AND OR FUEL BLENDING.

THIS MATERIAL WILL BE DISPOSED OF IN FULL BY RECLAMATION OR REUSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.

THIS ENTIRE PROCESS IS GENERALLY COMPLETED WITHIN A 30-DAY PERIOD FROM THE DATE OF THE SHIPMENT.

Unilever

May 10, 2005

Dennis Quinn, CHP
Radiation Safety Officer
3 Shadow Lane
Hopewell Junction, NY 12533

Dear Dennis,

This letter is to confirm that on the week of April 4, 2005 all labeled radioactive equipment and isotopes were successfully transported from Edgewater, NJ to Trumbull, CT without incident. We received the materials under our NRC License Number 29-30984-01.

Thank you,

John

John Bajor, Ph.D.
Lead Scientist
Skin Global Innovation Center
Unilever Research and Development
40 Merritt Blvd. North
Trumbull, CT 06611

Subject: Re: Confirmation of waste shipment arrival
Date: 5/6/2005, 6:24 AM
From: lmkelly@onyxes.com
To: dqdx@aol.com

Hi Dennis,
The truck made it's deliveries as scheduled with no issues.

The signed NRC manifest from Alaron will be routed through Onyx Flanders (it should come through next week) we will then forward that onto Unilever (I can copy you as you mentioned).

The hazardous waste manifest and NRC manifest will be mailed directly to Unilever from Perma-Fix within 15 days of the shipment arrival at their facility.

I will be on vacation next week just as a heads up, but the information should be available upon my return. Have a great week.
Lauren

"Dennis Quinn" <dqdx@aol.com> To: "Lauren Kelly" <lmkelly@onyxes.com>
cc:
05/05/2005 10:47 PM Subject: Confirmation of waste shipment arrival
Please respond to dqdx

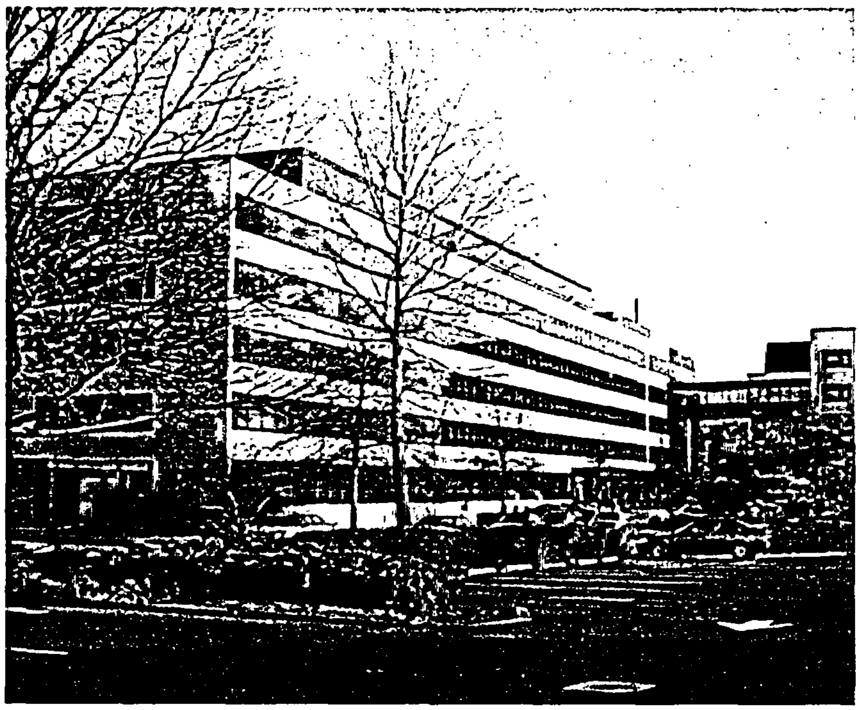
Lauren,
As I'm going through the checklist of things the NRC needs to close out the License at Unilever in Edgewater, I see that they need some kind of written confirmation that the rad materials sent (on the last shipment of 4-26-05) were in fact received at Alaron and Perma-Fix.

Does the waste processor send back anything to you? and if yes, please fax it to me at 845-223-1099. If not, please let me know, and I'll give them a call. If you have any contact names for me, I'd appreciate it.
Thanks,
Dennis
--
Dennis Quinn
DAQ, Inc.
dqdx@aol.com
office: 845-223-1960
fax: 845-223-1099

[redacted]

FINAL STATUS SURVEY REPORT

Unilever Research and Development Edgewater (URDE)
Edgewater, New Jersey
NRC License No. 29-00304-02



Prepared by:

DAQ Inc.
Health and Safety Consultants
Hopewell Junction, New York

May 2005

Table of Contents

List of Appendices

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1. PURPOSE

Unilever Research and Development – Edgewater (URDE) has decided to conclude radioactive work in preparation for turnover of the 45 River Road facilities to new owners. This report provides results from Final Status Surveys (FSS) for radioactivity performed in December 2003 and April 2005. The survey performed in 2003 included locations that had not used radioactive materials for several years. The survey performed in 2005 included those areas in which radioisotope activities did not cease until February 2005, and areas that were not practically accessible due to ongoing operations in 2003.

2. INTRODUCTION AND HISTORICAL REVIEW

The history of radioactive material use at 45 River Road, in Edgewater, New Jersey began with a U.S. Atomic Energy Commission license (No. 29-304-1) dated April 19, 1956. This original license was for a total of 42 millicuries of sealed Strontium-90 sources. Later, up to approximately 20 millicuries each of Sulfur-35 and Carbon-14 in any chemical/physical form was added to the license.

License 29-304-2 was obtained on April 30, 1958, and superseded the original license 29-304-01. Strontium-90 was on the license in a sealed source form until Amendment No. 14 in December 1973. The amounts and forms of radionuclides changed and increased gradually over the years, and the current Amendment No. 33 (September 27, 2004) is representative of the radionuclides that should be considered for decommissioning purposes. The radionuclides approved for use under License 29-304-2, Amendment No. 33 are shown in Table 1.

License 29-304-3 was obtained in February 1962 for experimentation involving human volunteers, with a license limit of up to 10 millicuries of Sulfur-35 and Carbon-14. In subsequent amendments, Nickel-63, Calcium-45, and Phosphorous-32 were added to the license, and allowable amounts were increased slightly. This license was allowed to expire without renewal in February of 1968, because the activities performed under that license were discontinued. All remaining radioactive materials were transferred to the remaining license, No. 29-304-2.

Over the years since the original use of radioactive material in 1956, facility changes have been documented by use of the license amendment process. Reviews of documentation and discussion with facility personnel indicated that contamination was not buried or covered over in the process of facility changes. The Nuclear Regulatory Commission was notified in August 2003 of the intention to cease operations with radioactive materials, and at that time, it was estimated that this cessation of activities would occur in the first quarter of 2005. Radioisotope work at the URDE facilities at 45 River Road, Edgewater, New Jersey was concluded on February 11, 2005. Since that date, the laboratories have been cleaned and all licensed radioactive material has been removed from the site. Decontamination was conducted as necessary, and this Final

Status Survey was conducted using the Multi-Agency Radiological Survey and Site Investigation Manual (MARSSIM) guidance.

The NRC provides guidance regarding decommissioning leading to termination of a license in NUREG-1757, Vol. 1 *Consolidated NMSS Decommissioning Guidance* (NRC 2002). All references to license termination guidance in this document refer to NUREG-1757, Vol. 1, unless otherwise specified.

NUREG-1757 identifies 7 types of facilities based on the potential amount of residual contamination, the location of the contamination, and the complexity of the activities needed to decommission the site. In following the NRC guidance, URDE has made a determination that it most closely meets the description of a Group 2 facility for the following reasons:

- Residual contamination is likely to be less than the "screening criteria" of Appendix B of the NUREG. (Note that the routine URDE contamination criterion of 200 dpm per 100-cm^2 beta-gamma is well below the screening criteria of the NUREG.)
- Contamination that does exist consists primarily of fixed contamination (<10% removable)
- There are no buried structures associated with the radioisotope program.

The radioactive material license does not specifically require a Decommissioning Plan, and there were no new hazards added as part of the decommissioning. Based on this information, URDE did not prepare a Decommissioning Plan.

The Final Status Survey (FSS) has been completed in two phases. Phase 1 was accomplished in December 2003 for Buildings 2 and 6 and for portions of Buildings 1 and 5. The remaining portions of the survey were conducted in April 2005, and include the following areas:

- Building 1, 5th floor
- Building 1, Lab 1-415
- Building 5, 1st floor
- Building 3, Shipping and Receiving area, and waste room 3-811

Survey Unit drawings are included in Appendix D, and more descriptive building drawings are shown in Appendix F. The technical details of the survey design are described in the URDE Final Status Survey Plan (DAQ 2005).

3. PRIOR DECOMMISSIONING ACTIVITIES

A review of site activities was undertaken, including interviews with long-term employees and a previous Radiation Safety Officer, review of historical license amendments, review of survey and logbook documentation, and facility tours. Based on this historical review, it was determined that radioactive material had been used in Building 1, Building 2 (second floor only), Building 5, and Building 6. In addition, Building 3 was used for receiving of the radioactive materials and in one room for radioactive waste storage. One room in Building 66 had previously been used for storage of drums of radioactive waste; however, this room was cleared and Building 66 was demolished. Appendix E contains the release survey for the waste storage room in Building 66.

URDE determined which buildings would be surveyed, and classified each survey unit as MARSSIM class 1, 2, or 3. The survey unit descriptions and classifications are shown in the Final Status Survey Plan (DAQ 2005) and in Table 4. A number of laboratories at the 45 River Road site were added and/or taken out of service as research needs changed from 1956 to 2005. The standard practice was to perform a detailed survey of a laboratory prior to clearance from radioisotope use. If there was a question as to whether or not radioactive material was used, then surveys were performed in those areas as a part of the Final Status Survey.

4. RADIONUCLIDES OF CONCERN

Based on the historical review, all radionuclides that would be of concern for decommissioning in 2005 are listed in Table 1. The most abundant nuclides used over the years have been Hydrogen-3 (H-3, or tritium), and Carbon-14 (C-14).

Table 1. Radionuclides of Concern

Nuclide	Form	URDE Lic. limit mCi	Half Life days	Time since last use (yr)	E-max Beta MeV	gamma energy MeV	approx. 10 half lives
H-3	any	1,000	4.50E+03	current	0.018	none	long
C-14	any	1,000	2.09E+06	current	0.156	none	long
P-32	any	40	1.43E+01	0.5	1.710	none	5 months
P-33	any	40	2.53E+01	0.5	0.249	none	9 months
S-35	any	50	8.72E+01	>1	0.167	none	2 yr, 5 mo.
Cl-36	any	40	1.10E+08	>4	0.709	~none	long
Ca-45	any	40	1.67E+02	>4	0.258	~none	long
Ni-63	any	50	3.65E+04	>4	0.070	none	long
Zn-65	any	40	2.44E+02	>4	0.325	1.120	long
I-125	any	40	5.94E+01	>3	0.036	0.035	1 yr, 8 mo.
Ni-63	foil/plated	100*	3.65E+04	current	0.070	none	long
Sr-90	Sealed	40**	1.04E+04	>30	0.55/2.28	none	long

* Ni-63, 20 mCi/source

** Sr-90 was removed from the license in 1973

5. DATA QUALITY OBJECTIVES

5.1. Step 1: State the Problem

Radioactive material was used within present and former laboratories during research activities in several buildings. The objective of FSS activities is to obtain data of sufficient quality and quantity to support unrestricted release of the Unilever Edgewater facility to support license termination by the U.S. Nuclear Regulatory Commission (NRC).

5.2. Step 2: Identify the Decision

Principal Study Question

Do the radionuclides of concern (ROC) concentrations in URDE buildings exceed applicable levels for unrestricted release?

Decision Statements

The following statements assume that ROC concentrations inside buildings exceed release levels. If ROC concentrations inside laboratories do not exceed the derived concentration guideline limit ($DCGL_W$), the laboratories will satisfy the release criterion.

a. Determine whether survey unit (SU) ROC concentrations inside buildings exceed background concentrations by more than the applicable release criteria.
b. If survey unit ROC concentrations inside buildings exceed background by more than the applicable release criteria, then affected SUs must be remediated to levels satisfying the release criteria.

5.3. Step 3: Identify Inputs to the Decision

This section lists data needs, describes the sources of that data, and discusses the means of obtaining the required data. The following site characteristics must be determined in order to resolve applicable decision statements:

Concentrations of residual radioactive material in the survey units will be determined by means of:

- Direct surface radioactivity measurements,
- Removable activity concentration measurements (liquid scintillation counter results),
- Exposure Rate Surveys, and
- Analysis of debris and material samples

5.4. Step 4: Define the Study Boundaries

The population of interest is the concentrations of ROCs on building surfaces. The population of interest study is horizontally and vertically limited to impacted areas located inside current and former laboratory areas at URDE.

Data collection and analyses must be performed in a time frame to support the turnover of the facility in early 2005. The study will not include the area of former Building 66, which was previously released (1996) and demolished. In December 2003 and early 2004, the areas where radioactive material had been used or stored in the past were surveyed (portions of buildings 1, 2, 3, 5, and 6). Laboratories where radioactive material is currently being used (portions of building 3 and 5) were surveyed later in April 2005 following shutdown of the onsite radioactive material research. Building 1, Floor 5 was surveyed in April 2005 to avoid substantial disruption of ongoing work in 2003-2004. One area in Building 1, Lab 1-415 had fixed contamination identified (December 2003) on the bench top above the release criteria. This area was decontaminated in April 2005 and resurveyed.

Constraints on data collection include inaccessible areas, such as pipe runs between drains and cleanout traps. In these instances, decisions were made based on data collected from the areas where radioactive material may have entered the system, such as drains and hood exhaust vents.

5.5. Step 5: State the Decision Rules

Surface Radioactivity Scan Surveys

If areas of elevated radioactivity are identified during scan surveys, identified areas will be decontaminated as appropriate and re-surveyed. Smear samples were also collected and analyzed.

Residual Radioactivity

If residual radioactivity is found in an isolated area of elevated activity, in addition to residual radioactivity distributed relatively uniformly across the survey unit, the unity rule, also called the Sum of the Ratios (SOR), will be used to ensure that the total dose is within the decommissioning guidance (NRC 2000). When multiple contaminants are present on a site, site radiological conditions are evaluated using the SOR and a $DCGL_W$ of SOR=1.0. The SOR is calculated as follows:

$$SOR = \frac{(C_1)}{(DCGL_1)} + \frac{(C_2)}{(DCGL_2)} + \frac{(C_3)}{(DCGL_3)} + \ldots$$

Where:	$C_{1,2,3..}$	=	Concentration of Radionuclides
	$DCGL_{1,2,3..}$	=	DCGL for that Radionuclide

5.6. Step 6: Define Acceptable Decision Errors

NRC guidance provides a discussion regarding decision errors (NRC 2000). This discussion includes the concept that acceptable error rates, which balance the need to make appropriate decisions with the financial costs of achieving high degrees of certainty.

Errors can be made when making site remediation decisions. The use of statistical methods allows for controlling the probability of making decision errors. In setting error

rates, it is important to balance the consequences of making a decision error against the cost of achieving greater certainty.

Acceptability decisions are often made based on acceptance criteria. If the mean and median concentrations of a contaminant are less than the associated acceptance criteria, for example, the results can usually be accepted. In cases where data results are not so clear, statistically based decisions are necessary. Statistical acceptability decisions, however, are always subject to error. Two possible error types are associated with such decisions.

The first type of decision error, called a Type I error, occurs when the null hypothesis is rejected when it is actually true. The probability of a Type I error is usually denoted by α. Considered in light of the null hypothesis used for this investigation, this error could result in higher potential doses to future site occupants than prescribed by the dose-based criterion. The maximum Type I error rate is 0.05.

The second type of decision error, called a Type II error, occurs when the null hypothesis is not rejected when it is actually false. The probability of a Type II error is usually denoted by β. The power of a statistical test is defined as the probability of rejecting the null hypothesis when it is false. It is numerically equal to $1-\beta$ where β is the Type II error rate. Consequences of Type II errors include unnecessary remediation expense and project delays.

For the purposes of this Final Status Survey, the acceptable error rate for both Type I and Type II errors is five percent (i.e., $\alpha = \beta = 0.05$).

6. SURVEY DESIGN AND METHODOLOGY

Survey design is described in the URDE Final Status Survey Plan, and follows the guidance of the Multi Agency Radiation Survey and Site Investigation Manual (MARSSIM) (NRC 2000). Details of the survey design are presented in the URDE Final Status Survey Plan (DAQ 2005). A summary of this design is provided in the following subsections.

6.1. Determine Impacted or Non-Impacted

An historical review of licensed radioactive material usage at URDE was performed to identify radionuclides used, and which rooms/labs/areas were used or were potentially contaminated. In addition, the historical review identified any labs or buildings that were previously released, with appropriate documentation of release surveys.

Based on past and present license activity and the extent of contamination, the following URDE buildings and floors were deemed to be potentially impacted:

- Building 1 – All Floors (except for admin areas on southern end);

- Building 2 – 2nd Floor only;
- Building 3 – Waste Room and Warehouse Shipping/Receiving Area;
- Building 5 – All floors;
- Building 6 – All areas.

Appendices D and F contain drawings of the applicable floors of Buildings 1, 2, 3, 5, and 6.

Suspected impacted areas were then classified based on contamination potential as per guidance in the MARSSIM sections 2.2, 4.4, 5.5.2, and 5.5.3. (NRC 2000) Namely,

- Class 1: The area may have been contaminated above the release criteria, and it is possible to find radioactivity above the release criteria;
- Class 2: The area had radioactive material use, but it is unlikely to have radioactivity above the release criteria;
- Class 3: The area had some use of radioactive material or was adjacent to a radioactive material use area, but it is very unlikely to have radioactivity above the release criteria.

6.2. Survey Unit Breakdown

The impacted URDE buildings introduced above were split up into survey units based on the classification of each area. A total of 24 survey units were defined within the impacted parts of the URDE property, and one additional survey unit was added (Room 1-415, Class 1) based on fixed contamination detected in the December 2003 survey. A complete list of these survey units is provided in Table 4.

6.3. Release Criteria

The screening criteria of NUREG 1757, Vol. 1 Appendix B are applicable; however, for the purpose of keeping potential radiation doses as low as reasonably achievable (ALARA), lower values will be used. These lower values are the Derived Concentration Guideline Levels (DCGL) as shown in Table 2. If these values are exceeded during the survey, then the area will be remediated, or an evaluation will be performed to ensure that the residual radioactivity is within 25 mrem per year.

For H-3, if the wipe tests are less than 10% of the release criteria for removable contamination, (<1000 dpm from a liquid scintillation counted wipe), the area is considered acceptable for release. An area with less than 100% of the release criteria for C-14 or other radionuclides (<1000 dpm/100 cm^2) is acceptable for release. Table 2 shows the limits used for this survey.

Table 2. Derived Concentration Guideline Levels for Final Status Survey

Radionuclide	Average Fixed Contamination (dpm/100 cm²)	Maximum Fixed Contamination (dpm/100 cm²)	Removable Contamination (dpm/100 cm²)	Volumetric Contamination (pCi/g)*
H-3	N/A	N/A	10,000	N/A
Beta-gamma emitters	5,000	15,000	1,000	As listed in NUREG-1757 Vol. 1 App. B

* Volumetric contamination includes that in paint chips, concrete drillings, drain debris, and ventilation system dust/debris where an area-based contamination concentration is not attainable.

6.4. Survey Methods and Instrumentation

Table 3 shows the instruments used for scoping, remedial support and the Final Status Survey.

6.4.1. Surface Beta Radioactivity Scan Surveys

Building floor surfaces were surveyed utilizing a floor contamination monitoring system, for beta contamination. This cart system utilizes a large-area (approximately 550 cm^2 window area) gas flow proportional detector with P-10 counting gas.

Walls and benchtops were scanned with any of the following detectors, which will have the ability to detect C-14 beta particles:

- Gas proportional detector
- Geiger Mueller
- Beta scintillation detector

The minimum number of fixed-point measurements per survey unit was in accordance with the survey unit's classification as Class 1, 2, or 3. Scan measurement sensitivities are below the release criteria and are calculated as shown in Appendix A.

6.4.2. Fixed-Point Measurements

Fixed-point measurements are defined as static counts performed with a portable instrument at locations of suspected contamination. Fixed-point measurements were at least 1-minute in duration with the instrument placed in scaler mode, or if the instrument did not have scaler capability, a count rate indication was used with the instrument's meter set to "slow response."

The fixed-point (static) survey action level is the DCGL plus the average background specific to the material type being evaluated.

6.4.3. Smear Sample Collection and Analysis

Selected building surfaces had smear samples taken to assess the presence of removable contamination. Smears were taken at every location that a fixed-point measurement was taken and at any other locations deemed necessary based on visual inspections and professional judgment.

6.4.4. Gamma Exposure Rate Measurements

Gamma exposure rate measurements (in units of milliroentgen per hour (mR hr^{-1})) were collected in each survey unit at a distance of 1 meter from the floor with a Micro-R survey meter, or equivalent. Measurements were performed using the "slow" response time constant setting, when applicable.

6.4.5. Systems Surveys

The only service systems investigated under this Final Status Survey were the building ventilation and sink drains. In the URDE complex, ventilation includes supply and exhaust ductwork, ventilation hoods in laboratories (including ducts and junction boxes), and the supply/exhaust fans located in the building penthouses. Surveys included smears for removable contamination and fixed-point measurements in accessible areas, where practicable. Drains were checked for radioactivity by smears, swabs, and/or direct frisk. Drain traps were checked by direct frisk. Release criteria for systems are the same as those being used for building surfaces; see Table 2.

Table 3. Survey Instrumentation

Manufacturer	Model	Detector Type*	Serial No.	Date Calibrated	Dates Used
Bicron	Micro-Rem	PS	B9854	01/31/03	Dec-03
Ludlum	3	Meter	83924	05/08/04	Apr-05
Ludlum	44-9	GM	77858	05/08/04	Apr-05
Ludlum	3	Meter	169906	02/06/04	May-04
Ludlum	44-9	GM	173734	02/06/04	May-04
Ludlum	12	Meter	78710	06/10/04	Apr-05
Ludlum	43-37	GP	PR148949	06/10/04	Apr-05
Ludlum	12	Meter	83334	05/08/04	Apr-05
Ludlum	44-9	GM	PR062139	05/08/04	Apr-05
Ludlum	44-2	NaI	A83334	05/08/04	Apr-05
Ludlum	16	Meter	118197	03/15/03	Dec-03
Ludlum	44-94	GM	PR118540	03/15/03	Dec-03
Ludlum	2224-1	Meter	162425	04/15/03	Dec-03
Ludlum	43-93	PS	182403	04/15/03	Dec-03
Ludlum	2350	Meter	105641	04/26/03	Dec-03
Ludlum	43-68	GP	PR160117	04/26/03	Dec-03
Ludlum	2360	Meter	177117	12/08/03	Dec-03
Ludlum	43-37	GP	89939	12/08/03	Dec-03
Ludlum	2360	Meter	141322	06/10/04	Apr-05
Ludlum	43-68	GP	PR160117	06/10/04	Apr-05
Wallac	1415	LSC	4150043	12/07/04	2003 and 2005

* Type:
GM = Geiger Mueller Detector
GP = Gas Proportional
PS = Plastic Scintillator
NaI = Sodium Iodide Scintillator
LSC = Liquid Scintillation Counter

7. SURVEY RESULTS

Principal Study Question

Do the radionuclides of concern (ROC) concentrations in URDE buildings exceed applicable levels for unrestricted release?

Answer (Status after completion of Final Status Survey, as of April 30, 2005):

No concentrations exceed the applicable DCGLs in Table 2. These levels are set below the screening criteria in NUREG 1757, Vol. 1.

For information, the following areas were identified during the scoping survey or Final Status Survey as having residual radioactivity above the Maximum or Average Fixed Contamination limits of Table 2. Each of the listed laboratory rooms was decontaminated and was surveyed using the Final Status Survey protocol.

1. *Building 1, Lab 415 was determined to have fixed C-14 contamination on two locations on a laboratory bench top. This was verified to be fixed contamination only, and the two locations were shielded (plastic) to prevent personnel exposure. In April 2005, the two bench top areas were decontaminated as follows:*
    a. *Area was set up with a Plexiglas™ enclosure, attached to a HEPA vacuum cleaner*
    b. *Inside the Plexiglas™ enclosure, a combination of abrasive techniques was used, including a needle gun and a portable wire wheel.*
    c. *The bench top was abraded to a depth of less than 1/16 inch over an area of approximately six square feet, then vacuumed and wiped down with wet rags.*
    d. *After the decontamination, a Final Status Survey was taken on the bench top and the rest of the Laboratory (1-415). Results were less than the DCGLs of* Table 2.

2. *Building 5, Lab 5-136 had fixed C-14 radioactivity on the concrete floor and cinder block wall, and this constituted about eight square feet of fixed contamination. The sink in that same room had previously been used as a radioactive disposal sink, and elevated levels were detected in the stainless steel sink, and in the PVC drain piping. The concrete wall and floor, and the stainless steel sink were decontaminated as follows:*
    a. *For the concrete floor and wall decontamination, the area was set up with a Plexiglas™ enclosure, attached to a HEPA vacuum cleaner*
    b. *Inside the Plexiglas™ enclosure, a combination of abrasive techniques was used, including a needle gun, sandblast unit, and a portable wire wheel.*

c. *For the stainless steel sink decontamination, abrasive scrubbing was performed using a Scotchbrite™ type of material. In addition, the Plexiglas™ enclosure, HEPA vacuum, sandblast unit, and portable wire wheel were used.*
d. *The drainpipe trap and about 12 feet of the drainpipe were removed and disposed of as radioactive waste.*
e. *After the decontamination, a Final Status Survey was taken on the floor, walls, sink, drain piping and the rest of Room 5-136. Results were less than the DCGLs of* Table 2.

3. *The Final Status Survey indicated three small areas of fixed contamination (less than 0.25 square feet each) on the floor in the Class 1 survey units (one area each in Lab 5-135, 5-128, and 5-108). The two in Labs 5-135 and 5-128 were removed using a standard cleaning solution and wet rags. The one spot in 5-108 was eliminated by removing a small (less than 2 square inches) piece of vinyl floor covering. After the decontamination, a Final Status Survey was taken on the floor and the rest of the Laboratories, and results were less than the DCGLs of* Table 2.

Table 4. URDE Survey Units and Final Status Survey Results

Survey Unit No.	Bldg No.-Floor	Survey Unit Information & Comments	S.U. Class	Floor Scan Results	Static Count β maximum dpm/100cm²	Removable β maximum dpm/100cm²	Wall and Surface Scan Results	Area γ Reading micro-R/hr	Overall Results
1-1-01	1-1	Entire Floor. Stairs and elevators on all elevations of Building 1 are included as part of this survey unit.	3	200-400 cpm - Sat	757	9	Sat	5-8	Sat
1-2-01	1-2	North section of floor.	2	200-450 cpm - Sat	1100	9	Sat	5-8	Sat
1-2-02	1-2	South section of floor.	3	350-400 cpm - Sat	1300	9	Sat	5-8	Sat
1-3-01	1-3	All except those in SU 1-3-02	3	350-800 cpm - Sat (Note 4)	1471	11	Sat	6	Sat
1-3-02	1-3	300A, 301A, 310B, 312, 312A, 312B, 312C, 314, 320, 320A, 320B, corridor 300	2	250-450 cpm - Sat	2157	13	Sat	5-7.5	Sat
1-4-01	1-4	North section of floor to end of Room 425D (on east side) & Elevator #2 on west. Also includes Room 414C.	2	Sat	1580	6	Sat	5-5.5	Sat
1-4-02	1-4	South section of 4th floor. Everything except those in SU 1-4-01.	3	300-400 cpm - Sat	1471 Note 1	9	Sat	4	Sat Note 1
1-4-03	1-4	Laboratory 1-415	1	Sat	4892 Note 1	22 Note 1	Sat	Sat	Sat Note 1
1-5-01	1-5	North section of floor to intersection of 528A/526 on west side & 527A/531A on east. Includes room 520.	2	Sat	1262	20	Sat	8-13	Sat
1-5-02	1-5	South section of 5th floor. Everything except those in SU 1-5-01.	3	Sat	1020	15	Sat	8-11	Sat
1-Sys-01	1	Bldg 1 Ventilation System	N/A	Sat	N/A	Sat Note 5	N/A	N/A	Sat
2-2-01	2-2	North section of floor. Stairs and elevators on all elevations of Building 2 are included as part of this survey unit.	2	200-1000 cpm - Sat	571	11	Sat	Sat	Sat
2-2-02	2-2	South	3	Sat	600	8	Sat	3-5	Sat
2-Sys-01	2	Bldg 2 Ventilation System	N/A	Note 2	Note 2	27	Note 2	N/A	Sat
3-1-01	3-1	811 Room. Storage of radioactive materials; survey performed after last shipment on 4/26/05.	1	800 –1,200 cpm – Sat	406	13	Sat	5.5-7	Sat
3-1-02	3-1	Warehouse shipping and receiving area.	2	1000-1600 cpm - Sat	579	12	Sat	Sat	Sat

Survey Unit No.	Bldg No.- Floor	Survey Unit Information & Comments	S.U. Class	Floor Scan Results	Static Count β maximum dpm/100cm²	Removable β maximum dpm/100cm²	Wall and Surface Scan Results	Area γ Reading micro-R/hr	Overall Results
5-1-01	5-1	5-108, 5-124 (entire suite of rooms), 5-128, 5-135, 5-136. Current use of radioactive materials.	1	800-1200 cpm - Sat	3345	17	Sat	8-9	Sat Note 3
5-1-02	5-1	All except those in Survey Unit 5-1-02. Stairs and elevators on all elevations of Building 5 are included as part of this survey unit.	2	900-1400 cpm - Sat	640	15	Sat	8-11	Sat
5-2-01	5-2	Entire Floor.	2	Sat	1863	12	Sat	Sat	Sat
5-3-01	5-3	Entire Floor.	3	Sat	1373	6	Sat	Sat	Sat
5-4-01	5-4	North section of floor.	2	Sat	1291	6	Sat	Sat	Sat
5-4-02	5-4	South section of floor.	3	Sat	376	6	Sat	Sat	Sat
5-Sys-01	5	Bldg 5 Ventilation System	N/A	N/A	N/A	Sat Note 5	N/A	N/A	Sat
6-1-01	6-1	Entire floor.	2	300-500 cpm - Sat	1843	9	Sat	3-4	Sat
6-Sys-01	6	Bldg 6 Ventilation System	N/A	N/A	N/A	Sat Note 5	N/A	N/A	Sat

* Sat = Results indicate that residual radioactivity does not exceed applicable levels for unrestricted release; in the case of the floor surveys, "Sat" indicates that there were no readings that exceeded the investigation level of 500 net cpm. In the case of wall and surface surveys, there were no readings that exceeded the investigation level for the instrument in use, generally set at 250 net cpm.

- Note 1: Room 1-415 indicated fixed C-14 contamination above the limits on bench top (Dec. 2003); max removable contamination was 761 dpm/100cm² (inside a drawer), then immediately decontaminated to a maximum of 13 dpm/smear. Areas of fixed contamination were shielded with plastic sheeting, and the bench top was later remediated (April 2005). A new class 1 survey unit was added for Room 1-415.
- Note 2: Ventilation system has been out of service for several years; smears of the exhaust plenums were taken.
- Note 3: Some contamination was found as part of the scoping survey or final status survey. Area was decontaminated and the entire room/lab resurveyed using MARSSIM protocol.
- Note 4: Up to 800 cpm on red terracotta tile.
- Note 5: 15 smears were taken of the exhausts of ventilation systems (Bldg 1, Bldg 1 Annex, Bldg 2, Bldg 6) and a sample of filter media was taken from Bldg 5 exhaust. All samples indicated very low activity (<20 dpm/smear) and the filter indicated natural background radionuclides.

8. RADIOACTIVE MATERIAL DISPOSITION

Radioactive materials were cleaned out of the laboratory spaces in preparation for transfer of materials and personnel to a different Unilever facility in Trumbull, Connecticut. Radioactive instruments and materials were sent to the Trumbull facility (US NRC License No. 29-30984-01) on April 4, 2005 via Radiac Environmental Services. The final waste shipment was made through a broker, Onyx Environmental Services, to approved waste disposal/processing facilities: Perma-Fix of Florida, Inc., and Alaron Corporation. The final shipment was made on April 26, 2005.

Two Hewlett Packard Gas Chromatographs were taken out of service, and there was no longer a need for the two electron capture detectors (Ni-63 sources) contained in the instruments. These electron capture detectors were returned to Agilent Technologies, Inc., of Wilmington, Delaware. These two Ni-63 sources were as follows:

- Serial No. K1165, 15 mCi Ni-63, date = April 1995 (leak checked on 2-14-05; results indicated 8 dpm gross beta activity)
- Serial No. S10664, 15 mCi Ni-63, date = April 1988 (leak checked on 3-21-05; results indicated <9 dpm)

In addition, there were 2 polonium static eliminators that were taken out of service, and they were returned to the vendor, NRD, LLC of Grand Island, NY. One was 200 uCi Po-210, model IC200, and the other was 500 uCi Po-210, model 2U500.

In all of the above cases, the receiving facility possessed the appropriate license to accept the radioactive material. Attachments to NRC Form 314 contain proof of receipt of the radioactive material for the last shipments from the site. The waste storage room was surveyed following the last shipment of radioactive materials.

9. CONCLUSIONS

Twenty-five survey units were surveyed in December 2003 and April 2005. The results of the scanning surveys, static beta-gamma measurements, and the smear samples for removable contamination were evaluated for the presence of H-3, C-14, and other radionuclides of concern. No removable contamination was identified above the limits of Table 2 in any of the survey areas. After decontamination as described in the report, all readings indicated results below the criteria for fixed contamination, removable contamination, and volumetric contamination, as listed in Table 2.

Based on the findings of this Final Status Survey, residual radioactivity is less than the limits in Table 2, and Unilever recommends that the NRC clear the site for unrestricted use.

10. REFERENCES

(DAQ 2005) URDE Final Status Survey Plan, December 2003, Cabrera Services, Inc., Revised March 2005, DAQ, Inc.

(NRC, 2000) NUREG-1575, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), U.S. Nuclear Regulatory Commission, August 2000.

(NRC 2002) NUREG-1757, Volume 1, Consolidated Nuclear Material Safety and Safeguards (NMSS) Decommissioning Guidance, U.S. Nuclear Regulatory Commission, August 2002.

(NRC 2002a) USNRC Materials License 07-28762-01, Amendment No. 11, for Agilent Technologies, Inc., Wilmington, DE, November 2002.

(NRC 2004a) USNRC Materials License 29-30984-01, for Conopco, Inc., d/b/a Unilever HPC-NA, Trumbull, CT, March 2005.

(NRC 2004b) USNRC Materials License 29-00304-02, Amendment No. 33, for Conopco, Inc., d/b/a Unilever research & Development – Edgewater, September 2004.

(NYSDOL 2004) NY State Department of Labor Radioactive Materials License 1391-1811, Amendment No. 3, for NRD, LLC, Grand Island, NY, July 2004.

Appendix A

SCAN MINIMUM DETECTABLE CONCENTRATIONS (SCAN MDC)

A.1 INTRODUCTION

A radiological Final Status Survey (FSS) at Unilever Research and Development - Edgewater (URDE) includes scanning surveys of select building surfaces for various radionuclides of concern. This requires developing scanning sensitivities or scan minimum detectable concentrations (MDCs) for the instrumentation that will be used. The scan MDC can be estimated by using the methodology in MARSSIM[1] Section 6.7.2.1.

A.2 OBJECTIVE

The specific objective of this technical memorandum is to estimate the scan MDCs for a 100 cm2 gas proportional detector (Ludlum 43-68) and a gas-proportional floor monitor (Ludlum 43-37) to measure beta emitters on selected structural materials in the buildings. This is accomplished utilizing the methodology and approach documented in MARSSIM (Section 6.7.2.1) for scanning of beta emitters. Carbon-14 (C-14) is the radionuclide of concern for which this calculation will be performed. Other radionuclides, such as Phosphorus-32 and Phosphorus-33, are higher energy and the survey instrumentation would be more sensitive to higher energy beta emitters. Tritium (H-3) will not be checked via scans, but will be surveyed using smears, so no scan calculation is performed for tritium.

A.3 ESTIMATION OF MINIMUM DETECTABLE COUNT RATE

The minimum detectable count rate (MDCR) is dependent upon several factors including surveyor performance, instrument sensitivity, distribution of contamination, etc.

A.3.1 Ludlum Model 43-68 or Equivalent

A.3.1.1 Determination of Number of Source Counts

The MDCR is calculated by obtaining the minimum detectable number of source counts (S_i) in a given time interval, *i*. S_i is calculated by using equation 6-8 in MARSSIM as:

$$S_i = d' \sqrt{b_i}$$

Where: d' = is the detectability value associated with the desired performance selected from Table 6-5 in MARSSIM
b_i = background counts during interval, i

The number of background counts will fluctuate with the type of structural material due to the varying concentration of naturally occurring radioactive material present. Based on the background rates for the 43-68 gas proportional detector at the Unilever facility, a typical background count rate of 250 counts pre minute will be used.

[1] NRC, 2001, NUREG-1575, Rev. 1, *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)*

It is assumed that during a typical scanning survey an elevated source of radioactivity will remain under the probe for one second. The width of the detector is 10 cm. This corresponds to a scan speed of 10 cm per second and assumes that elevated radioactivity is a point source. Therefore, the number of background counts in the observation interval of one second when scanning brick is calculated as:

$$b_i = (250\,\text{cpm})(1\,\text{second})\left(\frac{\text{minute}}{60\,\text{seconds}}\right) = 4.17\,\text{counts}$$

The value of d' is selected from Table 6.5 in MARSSIM and is based upon the acceptable true and corresponding false positive proportions or rates during scanning. For the purposes of the scoping survey work plan, a 95% confidence level will be used for correctly detecting the presence of radioactivity, with an allowance for 60% false positive detection. Having a higher percentage of false positives does not require increased sampling, but rather further investigation by either slowing the scan speed in the location of interest or performing an integrated count. A higher false positive value is actually conservative because background locations are investigated as though they contained residual radioactivity. The ramification of increasing the false positive proportion is that survey scanning time is increased. The value for d' in Table 6-5 of MARSSIM for the confidence levels specified above is 1.38. Therefore, the minimum number of source counts, when scanning, is calculated as:

$$S_i = 1.38\sqrt{4.17} = 2.82\,\text{counts}$$

A.3.1.2 Calculation of MDCR

The MDCR is calculated by using equation 6-9 in MARSSIM.

$$\text{MDCR} = \text{S}_i\,\frac{60}{\text{i}}$$

As stated in above, it is assumed that during a typical scanning survey an elevated source of radioactivity will remain under the probe for one second. Therefore, when scanning, the MDCR is calculated as:

$$MDCR = (2.82\ counts)\left(\frac{60\ \text{sec.}}{1\ \text{sec.}\,\text{min.}}\right) = 169\ cpm$$

A.3.1.3 Estimation of Scan MDC

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[2] NRC, 1997, NUREG-1507, *Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions*

The scan MDC is determined from the Minimum Detectable Count Rate (MDCR) by applying necessary conversion factors that account for surveyor performance, detector efficiency, probe area, etc. The scan MDC is calculated by using equation 6-10 in MARSSIM as:

$$Scan\ MDC(dpm/100cm^2) = \frac{MDCR}{\sqrt{p}\,\epsilon_i \epsilon_s \frac{probe\ area}{100\ cm^2}}$$

Where: MDCR = minimum detectable count rate
e_i = instrument efficiency
e_s = surface efficiency
p = surveyor efficiency

NUREG-1507 recommends surveyor efficiency values between 0.75 and 0.5. To be conservative, 0.5 is chosen. The efficiency for the Model 43-68 probe for Carbon-14 is about 6%, although certain instruments had higher efficiencies. For conservatism, a value of 6% is used. In addition, a value of 0.7 is assumed for the surface efficiency, so the combined surface and instrument efficiency is conservatively chosen as 4.2% or 0.042. The physical window area of the Model 43-68 is 126 cm^2, with an active portion of 100 cm^2. The Scan MDC is thus calculated as:

$$Scan\ MDC = \frac{169\ cpm}{\sqrt{0.5}\left(0.042\frac{c}{d}\right)\left(\frac{126\ cm^2}{100\ cm^2}\right)} = 4517\ dpm/100cm^2$$

The above calculation/approach was repeated for calculation of the scan MDC for a period of investigation during the scan, where the scant time is considered to be 5 seconds per probe area. The surveyor efficiency is assumed to increase to 0.7 during this phase. The corresponding scan MDC for the investigation phase is 3068 dpm/100cm^2. The conservatisms used in these calculations assure that the instrumentation will be able to meet the Derived Concentration Guideline Level (DCGL) of 5000 dpm/100cm^2 (see Table 3 of the main report).

A.3.2 Floor Monitor, Ludlum 43-37 Probe, or Equivalent

An estimate of Scan MDC is discussed for Ludlum 43-37 floor monitor probe. The 43-37 gas proportional floor monitor has a detector window area of approximately 550 cm^2. The scan MDC can be calculated in a similar manner as above, with consideration given to the larger detection area of the Model 43-37 to that of the Model 43-68.

D.2.1 Determination of Number of Source Counts

The MDCR is calculated as above by obtaining the minimum detectable number of source counts (S_i) in a given observation interval, *i*. The number of background counts will fluctuate with the type of structural material due to the

varying concentration of naturally occurring radioactive material present. Based on the background rates for the 43-37 gas proportional detector at the Unilever facility, a typical background count rate of 1200 counts pre minute will be used.

$$\textit{Typical Background} = 1200\ cpm$$

The observation interval, *i* can be estimated based on an assumed a scan rate of 10 cm per second (as in the case above) and considering the width of the floor monitor detector (16 cm).

$$i = \frac{Width}{Rate} = \frac{10cm}{10cm/\sec} = 1.0\sec$$

Therefore, the number of background counts in the observation interval of 1.6 seconds when scanning concrete floor is calculated as:

$$b_i = (1200\,\text{cpm})(1.0\,\text{sec})\left(\frac{\text{minute}}{60\,\text{sec}}\right) = 20\,\text{counts}$$

Utilizing a value for d' of 1.38, as above, the minimum number of source counts, when scanning concrete floor, is calculated as:

$$S_i = 1.38\sqrt{20} = 6.17\,\text{counts}$$

D.3.2.2 ***Calculation of MDCR***

The MDCR is calculated as above as:

$$MDCR = (6.17\ counts)\left(\frac{60\,\text{sec.}}{1.0\,\text{sec. min.}}\right) = 370\ cpm$$

D.3.2.3 ***Estimation of Scan MDC***

An instrument efficiency of 6% is used, and a value of 0.7 is assumed for the surface efficiency, so the combined surface and instrument efficiency is conservatively chosen as 4.2% or 0.042. The physical window area of the Model 43-37 is approximately 550 cm^2. The Scan MDC is thus calculated as:

$$Scan\ MDC(dpm/100cm^2) = \frac{MDCR}{\sqrt{p}\,\epsilon_i \epsilon_s\ (1)}$$

$$Scan\ MDC = \frac{370\ cpm}{\sqrt{0.5}\left(0.042\frac{c}{d}\right)(550cm2/100cm2)} = 2267\ dpm/100cm^2$$

Appendix B

SURVEY UNIT SAMPLING AND ANALYSIS MATRIX

					FSS Sample Collection Minimum Number and Type (see Notes page for descriptions and assumptions)					FSS Sample Analysis Radiological (see Notes page for descriptions and assumptions)			
Survey Unit No.	Building No.	Floor	Survey Unit Information & Comments	SU Class	Surface Scan Survey	Static beta-gamma count	Removable Contam (Smears)	Gamma Exposure Rate	System Sample	Surface Scan Survey	Static beta-gamma count	Removable Contam (Smears)	System Sample
1-1-01	1	1	Entire Floor. Stairs and elevators on all elevations of Building 1 are included as part of this survey unit.	3	c	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
1-2-01	1	2	North section of floor.	2	b	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
1-2-02	1	2	South section of floor.	3	c	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
1-3-01	1	3	All except those in SU 1-3-02	3	c	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
1-3-02	1	3	300A, 301A, 310B, 312, 312A, 312B, 312C, 314, 320, 320A, 320B, corridor 300	2	b	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
1-4-01	1	4	North section of floor to end of Room 425D (on east side) & Elevator #2 on west. Also includes Room 414C.	2	b	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
1-4-02	1	4	South section of 4th floor. Everything except those in SU 1-4-01.	3	c	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
1-5-01	1	5	North section of floor to intersection of 528A/526 on west side & 527A/531A on east. Includes room 520.	2	b	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
1-5-02	1	5	South section of 5th floor. Everything except those in SU 1-5-01.	3	c	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
1-Sys-01	1	All	Bldg 1 Ventilation System	n/a	cc	•	•	•	g	h	i	j,k	j,k
2-2-01	2	2	North section of floor. Stairs and elevators on all elevations of Building 2 are included as part of this survey unit.	2	b	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
2-2-02	2	2	South	3	c	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
2-Sys-01	2	All	Bldg 2 Ventilation System	n/a	cc	•	•	•	g	h	i	j,k	j,k
3-1-01	3	1	811 Area. Current storage of radioactive materials.	1	a	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
5-1-01	5	1	5-108, 5-124 (entire suite of rooms), 5-128, 5-135, 5-136. Most recent use of radioactive materials.	1	a	(17) d	(17) e	(1) f	g	h	i	j,k	j,k

					FSS Sample Collection Minimum Number and Type (see Notes page for descriptions and assumptions)					FSS Sample Analysis Radiological (see Notes page for descriptions and assumptions)			
Survey Unit No.	Building No.	Floor	Survey Unit Information & Comments	SU Class	Surface Scan Survey	Static beta-gamma count	Removable Contam (Smears)	Gamma Exposure Rate	System Sample	Surface Scan Survey	Static beta-gamma count	Removable Contam (Smears)	System Sample
5-1-02	5	1	All except those in Survey Unit 5-1-02. Stairs and elevators on all elevations of Building 5 are included as part of this survey unit.	2	b	(17) d	(17) e	(1) f	g	h	i	j,k	j,k
5-2-01	5	2	Entire Floor.	2	b	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
5-3-01	5	3	Entire Floor.	3	c	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
5-4-01	5	4	North section of floor.	2	b	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
5-4-02	5	4	South section of floor.	3	c	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
5-Sys-01	5	All	Bldg 5 Ventilation System	n/a	cc	*	*	*	g	h	i	j,k	j,k
6-1-01	6	1	Entire floor.	2	b	(17) d	(17) e	(2) f	g	h	i	j,k	j,k
6-Sys-01	6	All	Bldg 6 Ventilation System	n/a	cc	*	*	*	g	h	i	j,k	j,k

TABLE NOTES

a. Perform 100% scan survey on floor, benchtops, and lower wall surfaces (up to 6'), 10% scan on upper wall surfaces (> 6'), and 10% scan on accessible ceiling areas.
b. Perform 25% scan survey on floor, benchtops, and lower wall surfaces (up to 6'). Upper walls (> 6') will be scanned only as accessible from the floor elevation.
c. Perform 10% scan survey on floor, benchtops, and lower wall surfaces.
cc. Perform localized scan surveys as accessibility allows. At a minimum, scan areas in close proximity to fixed-point measurements and smear locations.
d. Fixed, static-count measurements will be performed at systematic or random locations (depending upon SU classification) in the quantities listed in the table with a alpha/beta sensitive instrument. A minimum of (1) measurement per room should be performed, with locations added if systematic grid pattern excludes area. An additional static measurement will be performed at the location of the highest scan survey result. See FSS Plan for applicable count times and MDA requirements.
e. Smears for removable contamination will be performed at systematic or random locations (depending upon SU classification) in the quantities listed in the table. An additional biased smear will be performed at the location of the highest scan survey result.
f. Perform general area dose rate measurement within all rooms or areas, 1 meter from floor. General; guideline of (1) measurement per Class 1 and minimum of (2) per Class 2 or Class 3, depending on size.
g. Collect representative sample of all systems in each SU (e.g. accessible ventilation ducting, hoods, and drains) if suspected to be impacted. Swipes, scrapings, and material samples should include those in (e) plus residues, sediments, dried liquids, and/or other media present due to past operations. Samples may be composited if individual sample quantities are small.
h. Gross beta measurement performed.
i. All smear samples will be counted for gross beta and H-3/C-14 contamination via liquid scintillation counting.
j. Systems samples of sufficient volume will be screened with the LSC.
k. 5 % of all samples will be sent to an offsite laboratory for QC verification. (Note that this requirement will be accomplished by sending all samples to a vendor lab.)
* Scope of survey to be determined based on accessibility.

Appendix C

FINAL STATUS SURVEY
FIXED POINT SURVEY RESULTS

URDE Final Status Survey Results: Fixed Point Measurements, Building 1, Floors 1, 2, and 3

Surveyors: D. Quinn J. Weismann D. Del Corso J. Dabbs M. Meyer	**Instr/Probe #1:** Ludlum 2224-1 / 43-93 **Serial No(s):** 162425 / PR 182403 **Efficiency:** 7.00% (Note 3) **Cal Due Date:** 4/15/04	**Instr/Probe #2:** Ludlum 2350 / 43-68 **Serial No(s):** 105641 / 160117 **Efficiency:** 6.1% (C-14) **Cal Due Date:** 4/26/04	**Instr/Probe #2A:** Ludlum 2350 / 43-68 **Serial No(s):** 141322 / 160117 **Efficiency:** 11.6% (C-14) **Cal Due Date:** 6/10/05 Inst. 2A Used in 2005 surveys

All Count times = 1 minute

Survey Date	12/16/2003			12/16/2003			12/16/2003			12/17/2003			12/17/2003		
S.U. Number	1-1-01			1-2-01			1-2-02			1-3-01[4]			1-3-02		
SU Classification	3			2			3			2			3		
SU Bkg (cpm)	#1	171		#1	171		#1	171		#1	250		#1	171	
	#2	232		#2	232		#2	232		#2	268		#2	268	
Units	cpm	dpm/100 cm^2	Notes	cpm	dpm/100 cm^2	Notes	cpm	dpm/100c m^2	Notes	cpm	dpm/100 cm^2	Notes	cpm	dpm/100 cm^2	Notes
Fixed Point Location															
-01	260	458	2	191	286	1	195	343	1	304	771	1	192	300	1
-02	207	-408	2	148	-329	1	190	271	1	183	-957	1	322	2157	1
-03	196	-588	2	243	1029	1	241	1000	1	193	-814	1	191	286	1
-04	167	-1062	2	178	100	1	237	943	1	239	-157	1	169	-29	1
-05	241	147	2	149	-314	1	208	529	1	242	-114	1	190	271	1
-06	198	386	1	170	-14	1	262	1300	1	295	643	1	254	1186	1
-07	191	286	1	214	614	1	177	86	1	256	86	1	239	971	1
-08	219	686	1	172	14	1	239	971	1	353	1471	1	193	314	1
-09	224	757	1	205	486	1	202	443	1	238	-171	1	177	86	1
-10	222	729	1	172	14	1	188	243	1	206	-629	1	203	457	1
-11	199	-539	2	248	1100	1	228	814	1	258	114	1	179	114	1
-12	205	486	1	177	86	1	218	671	1	251	14	1	194	329	1
-13	190	-686	2	183	171	1	191	286	1	236	-200	1	170	-14	1
-14	228	-65	2	206	500	1	258	1243	1	255	71	1	206	500	1
-15	156	-214	1	168	-43	1	162	-129	1	252	29	1	216	643	1
-16	203	-474	2	178	100	1	212	586	1	240	-143	1	226	786	1
-17	221	-180	2	161	-143	1	220	700	1	252	29	1	192	300	1
-18	n/a			n/a			n/a			n/a			n/a		
-19	n/a			n/a			n/a			n/a			n/a		
-20	n/a			n/a			n/a			n/a			n/a		
-21	n/a			n/a			n/a			n/a			n/a		
SU Mean Net Activity (dpm/100cm^2)		-17			215			606			3			509	
SU Median Activity (dpm/100cm^2)		-65			100			586			14			314	
Std Deviation (1s)		558			412			403			576			539	
SU Maximum (dpm/100cm^2)		757			1100			1300			1471			2157	
Ludlum 43-93 MDA (dpm/100cm^2)		1140			1140			1140			1367			1140	
Ludlum 43-68 MDA (dpm/100cm^2)		1509			1509			1509			1617			1617	
DCGL (dpm/100cm2)		5000			5000			5000			5000			5000	
Maximum Reading, %t of limit		15%			22%			26%			29%			43%	

Notes:

1 Ludlum 2224-1/43-93 used. Daily background performed on similar surface to survey area
2 Ludlum 2350/43-68 used. Daily background performed on concrete.
3 43-93 Efficiency for C-14 de-rated to 7% from 21.7% calculated for Tc-99.
4 Floor of SU 1-3-01 was red ceramic tile with elevated ambient background level.
5 Inst 2A used: Ludlum 2360 + 43-68, 141322/160117
6 Biased point; benchtop had been decontaminated

URDE Final Status Survey Fixed Point Measurements, Building 1, Floors 4 and 5

Surveyors: D. Quinn	**Inst/Probe #1:** Ludlum 2224-1 / 43-93	**Instr./Probe #2:** Ludlum 2350 / 43-68	**Instr./Probe #2A:** Ludlum 2350 / 43-68
J. Weismann	**Serial No(s):** 162425 / PR 182403	**Serial No(s):** 105641 / 160117	**Serial No(s):** 141322 / 160117
D. Del Corso	**Efficiency:** 5.00% (Note 3)	**Efficiency:** 6.1% (C-14)	**Efficiency:** 11.6% (C-14)
J. Dabbs	**Cal Due Date:** 4/15/04	**Cal Due Date:** 4/26/04	**Cal Due Date:** 6/10/05
M. Meyer			

All Count times = 1 minute

Survey Date	12/17/2004			12/17/2004			4/25/2005			4/8/2005			4/8/2005		
S.U. Number	1-4-01			1-4-02			1-4-03			1-5-01			1-5-02		
SU Classification	2			3			1 (extra SU, room 1-415)								
SU Bkg (cpm)	#1	171		#1	171		#2A	160		#2A	174		#2A	174	
	#2	268		#2	268		#2			#2			#2		
Units	cpm	dpm/ 100cm²	Notes	cpm	dpm/ 100cm²	Notes	cpm	dpm/ 100cm²	Notes	cpm	dpm/ 100cm²	Notes	cpm	dpm/ 100cm²	Notes
Fixed Point Location															
-01	166	-100	1	323	899	2	208	415	5	124	-432	5	238	553	5
-02	159	-240	1	288	327	2	238	674	5	202	242	5	292	1020	5
-03	250	1580	1	347	1291	2	262	882	5	295	1046	5	229	475	5
-04	196	500	1	349	1324	2	266	916	5	288	985	5	126	-415	5
-05	219	960	1	358	1471	2	238	674	5	242	588	5	79	-821	5
-06	215	880	1	342	1209	2	198	328	5	230	484	5	139	-303	5
-07	227	1120	1	313	735	2	226	570	5	221	406	5	131	-372	5
-08	231	1200	1	315	768	2	239	683	5	204	259	5	219	389	5
-09	191	400	1	325	931	2	223	545	5	209	303	5	140	-294	5
-10	237	1320	1	328	980	2	213	458	5	320	1262	5	256	709	5
-11	249	1560	1	314	752	2	214	467	5	242	588	5	275	873	5
-12	231	1200	1	214	-882	2	231	614	5	204	259	5	175	9	5
-13	216	900	1	187	-1324	2	221	527	5	159	-130	5	204	259	5
-14	189	360	1	327	964	2	244	726	5	186	104	5	120	-467	5
-15	202	620	1	276	131	2	250	778	5	166	-69	5	220	398	5
-16	216	900	1	303	572	2	237	666	5	156	-156	5	225	441	5
-17	240	1380	1	208	-980	2	242	709	5	162	-104	5	189	130	5
-18	211	800	1	149	-440	1	227	579	5	175	9	5	n/a		
-19	191	400	1	137	-680	1	277	1011	5,6		n/a		n/a		
-20	177	120	1	162	-180	1	726	4892	5,6		n/a		n/a		
-21	200			n/a				n/a							
SU Mean Net Activity (dpm/100cm²)	793			393				856			314			152	
SU Median Activity (dpm/100cm²)	890			743				670			259			259	
Std Deviation (1s)	526			853				965			455			525	
SU Maximum (dpm/100cm²)	1580			1471				4892			1262			1020	
Ludlum 43-93 MDA (dpm/100cm²)	1596			1596				1546			1609			1609	
Ludlum 43-68 MDA (dpm/100cm²)	1617			1617				61			61			61	
DCGL (dpm/100cm2)	5000			5000				5000			5000			5000	
Maximum Reading, %t of limit	32%			29%				98%			25%			20%	

Notes:

1. Ludlum 2224-1/43-93 used. Daily background performed on similar surface to survey area
2. Ludlum 2350/43-68 used. Daily background performed on concrete.
3. 43-93 Efficiency for C-14 de-rated to 5% from 21.7% calculated for Tc-99.
4. Floor of SU 1-3-01 was red ceramic tile with elevated ambient background level.
5. Inst 2A used: Ludlum 2360 + 43-68, 141322/160117
6. Biased point; benchtop had been decontaminated

URDE Final Status Survey Fixed Point Measurements, Building 2

Surveyors:	
D. Quinn	Inst./Probe #1: Ludlum 2224-1 / 43-93
J. Weismann	Serial No(s): 162425 / PR 182403
D. Del Corso	Efficiency: 7.00% (Note 3)
	Cal Due Date: 4/15/2004
	All Count times = 1 minute

Survey Date		12/12/2004			12/12/2004	
Survey Unit Number		2-2-01			2-2-02	
SU Classification		3			2	
SU Background (cpm)	#1	163		#1	163	
	#1A	325		#1A	325	
Units	cpm	dpm/100cm^2	Notes	cpm	dpm/100cm^2	Notes
Fixed Point Location						
-01	144	-271	1	150	-186	1
-02	179	229	1	138	-357	1
-03	131	-457	1	340	214	2
-04	142	-300	1	168	71	1
-05	127	-514	1	367	600	2
-06	168	71	1	189	371	1
-07		-2329	1	169	86	1
-08	138	-357	1		-2329	1
-09	169	86	1	196	471	1
-10	152	-157	1	141	-314	1
-11	148	-214	1	184	300	1
-12	163	0	1	177	200	1
-13	203	571	1		-2329	1
-14	186	329	1	167	57	1
-15	158	-71	1	145	-257	1
-16	137	-371	1	158	-71	1
-17	163	0	1		-2329	1
SU Mean Net Activity (dpm/100cm^2)		-221			-341	
SU Median Activity (dpm/100cm^2)		-157			57	
Std Deviation (1s)		616			985	
SU Maximum (dpm/100cm^2)		571			600	
Mean + 2s (dpm/100cm^2)		1011			1629	
Ludlum 43-93 MDA (dpm/100cm^2)		1114			1114	

Notes

1 Ludlum 2224-1/43-93 used. Daily background performed on similar surface to survey area

2 The main hallway in SU 2-2-02 contained a patch of concrete flooring with higher ambient background levels than surrounding concrete. Locations -03 & -05 affected.

3 43-93 Efficiency for C-14 de-rated to 7% from 21.7% calculated for Tc-99.

URDE Final Status Survey Fixed Point Measurements, Building 3, Rooms 3-811 and Shipping/Receiving Area

Surveyors: D. Quinn
J. Dabbs
M. Meyer

All Count times = 1 minute

Instrument/Probe #2A: Ludlum 2350 / 43-68
Serial Number(s): 141322 / 160117
Efficiency: 11.6% (C-14)
Cal Due Date: 6/10/2005
Inst. Used in 2005 surveys

Survey Date		4/26/2005			4/11/2005	
Survey Unit Number		3-1-01			3-1-02	
SU Classification		1			2	
SU Background (cpm)	#2A	160		#2A	127	
Units	cpm	dpm/100cm^2	Notes	cpm	dpm/100cm	Notes
Fixed Point Location						
-01	199	337	1,2	102	-216	1,3
-02	177	147	1,2	194	579	1,3
-03	169	78	1,2	192	562	1,3
-04	190	259	1,2	161	294	1,3
-05	172	104	1,2	160	285	1,3
-06	177	147	1,2	94	-285	1,3
-07	177	147	1,2	172	389	1,3
-08	180	173	1,2	153	225	1,3
-09	207	406	1,2	130	26	1,3
-10	174	121	1,2	151	207	1,3
-11	160	0	1,2	117	-86	1,3
-12	188	242	1,2	130	26	1,3
-13	173	112	1,2	141	121	1,3
-14	198	328	1,2	108	-164	1,3
-15	165	43	1,2	131	35	1,3
-16	190	259	1,2	127	0	1,3
-17	166	52	1,2	143	138	1,3
SU Mean Net Activity (dpm/100cm^2)		174			126	
SU Median Activity (dpm/100cm^2)		147			121	
Std Deviation (1s)		114			249	
SU Maximum (dpm/100cm^2)		406			579	
Mean + 2s (dpm/100cm^2)		402			624	
Ludlum 43-68 MDA (dpm/100cm^2)		668			599	

Notes:
1 Ludlum 2360/43-68 used. Daily background performed on similar surface to survey area
2 Waste Room 3-811, listed as Class 1, but no contamination known to have been detected
3 Shipping and Receiving, listed as Class 2, no contamination known to have been detected

URDE Final Status Survey Fixed Point Measurements, Building 5

Surveyors: D. Quinn
J. Weismann
D. Del Corso
J. Dabbs
M. Meyer

Instrument/Probe #1: Ludlum 2224-1 / 43-93
Serial Number(s): 162425 / PR 182403
Efficiency: 7.0% (Note 3)
Cal Due Date: 4/15/2004

Instrument/Probe #2: Ludlum 2350 / 43-68
Serial Number(s): 105641 / 160117
Efficiency: 6.1% (C-14)
Cal Due Date: 4/26/2004

Instrument/Probe #2A: Ludlum 2350 / 43-6:
Serial Number(s): 141322 / 160117
Efficiency: 11.6% (C-14)
Cal Due Date: 6/10/2005
Inst. Used in 2005 surveys

All Count times = 1 minute

Survey Date	4/11/2005			4/8/2005			12/19/2003			12/19/2003			12/19/2003			12/19/2003		
SU Number	5-1-01			5-1-02			5-2-01			5-3-01			5-4-01			5-4-02		
SU Classification	1			1			2			3			2			3		
SU Bkg (cpm)	#2A	127		#2A	230		#2	262		#1	152		#1	152		#1	152	
	#2			#2			#2A	400		#1A	248		#1A	248		#1A	248	
Units	cpm	dpm/ $100cm^2$	Notes	cpm	dpm/ $100cm^2$	Notes	cpm	dpm/ $100cm^2$	Notes	cpm	dpm/ $100cm^2$	Notes	cpm	dpm/ $100cm^2$	Notes	cpm	dpm/ $100cm^2$	Notes
Fixed Point Location																		
-01	173	398	6	250	173	6	219	-703	2,4	263	245	1,5	220	-458	1,5	247	-16	1,5
-02	144	147	6	242	104	6	483	1356	2,5	248	0	1,5	221	-441	1,5	271	376	1,5
-03	249	1054	6	281	441	6	449	801	2,5	228	-327	1,5	166	-1340	1,5	254	98	1,5
-04	148	182	6	244	121	6	462	1013	2,5	279	507	1,5	327	1291	1,5	181	-1095	1,5
-05	144	147	6	237	61	6	443	703	2,5	211	-605	1,5	198	-817	1,5	223	-408	1,5
-06	192	562	6	256	225	6	461	997	2,5	225	-376	1,5	277	474	1,5	246	-33	1,5
-07	177	432	6	267	320	6	286	392	2,4	217	-507	1,5	259	180	1,5	197	-833	1,5
-08	128	9	6	225	-43	6	432	523	2,5	325	1258	1,5	267	310	1,5	263	245	1,5
-09	305	1538	6	238	69	6	514	1863	2,5	306	948	1,5	205	-703	1,5	205	-703	1,5
-10	120	-61	6	262	277	6	502	1667	2,5	222	-425	1,5	197	-833	1,5	209	-637	1,5
-11	244	1011	6	200	-259	6	476	1242	2,5	272	392	1,5	288	654	1,5	238	-163	1,5
-12	280	1322	6	208	-190	6	474	1209	2,5	235	-212	1,5	214	-556	1,5	269	343	1,5
-13	258	1132	6	263	285	6	483	1356	2,5	263	245	1,5	263	245	1,5	262	229	1,5
-14	262	1167	6	232	17	6	464	1046	2,5	332	1373	1,5	196	-850	1,5	235	-212	1,5
-15	221	812	6	189	-354	6	369	-507	2,5	312	1046	1,5	244	-65	1,5	235	-212	1,5
-16	284	1357	6	221	-78	6	338	-1013	2,5	194	-882	1,5	233	-245	1,5	271	376	1,5
-17	290	1409	6	236	52	6	370	-490	2,5	246	-33	1,5	210	-621	1,5	236	-196	1,5
-18	258	1132	6	304	640	6	447	768	2,5									
-19	292	1426	6				479	1291	2,5									
-20	514	3345	6															
-21	351	1936	6															
SU Mean Net Activity (dpm/$100cm^2$)		974			103			711			156			-222			-167	
SU Median Activity (dpm/$100cm^2$)		1054			86			997			0			-441			-163	
Std Deviation (1s)		789			246			826			682			671			445	
SU Maximum (dpm/$100cm^2$)		3345			640			1863			1373			1291			376	
Mean + 2s (dpm/$100cm^2$)		2552			595			2362			1521			1120			722	
Ludlum 43-93 MDA (dpm/$100cm^2$)		990			1314			1398			1362			1362			1362	
Ludlum 43-68 MDA (dpm/$100cm^2$)		61			61			1962			1558			1558			1558	

Notes:
1. Ludlum 2224-1/43-93 used.
2. Ludlum 2350/43-68 used.
3. 43-93 Efficiency for C-14 de-rated to 7% from 21.7% calculated for Tc-99.
4. Measurement taken on soapstone countertop in laboratory.
5. Tile surfaces within Building 5 exhibited higher ambient background levels (Tile background shown as 1A or 2A)
6. Inst 2A used: Ludlum 2360 + 43-68, 141322/160117

URDE Final Status Survey Fixed Point Measurements, Building 6

Surveyors:	D. Quinn	Instrument/Probe #1:	Ludlum 2224-1 / 43-93
	J. Weismann	Serial Number(s):	162425 / PR 182403
	D. Del Corso	Efficiency:	7.00% (Note 3)
		Cal Due Date:	4/15/2004

All Count times = 1 minute

Survey Date		12/23/2003	
Survey Unit Number		6-1-01	
SU Classification		2	
SU Background (cpm)	#1	171	

Units	cpm	dpm/100cm^2	Notes
Fixed Point Location			
-01	173	29	1
-02	150	-300	1
-03	180	129	1
-04	188	243	1
-05	175	57	1
-06	146	-357	1
-07	266	1357	1
-08	120	-729	1
-09	190	271	1
-10	206	500	1
-11	164	-100	1
-12	161	-143	1
-13	180	129	1
-14	300	1843	1
-15	178	100	1
-16	167	-57	1
-17	213	600	1

SU Mean Net Activity (dpm/100cm^2)	210
SU Median Activity (dpm/100cm^2)	100
Std Deviation (1s)	615
SU Maximum (dpm/100cm^2)	1843
Mean + 2s (dpm/100cm^2)	1441
Ludlum 43-93 MDA (dpm/100cm^2)	1140

Notes

1 Ludlum 2224-1/43-93 used. Daily background performed on similar surface to survey area

2 Ludlum 2350/43-68 used. Daily background performed.

3 43-93 Efficiency for C-14 de-rated to 7% from 21.7% calculated for Tc-99.

Appendix D

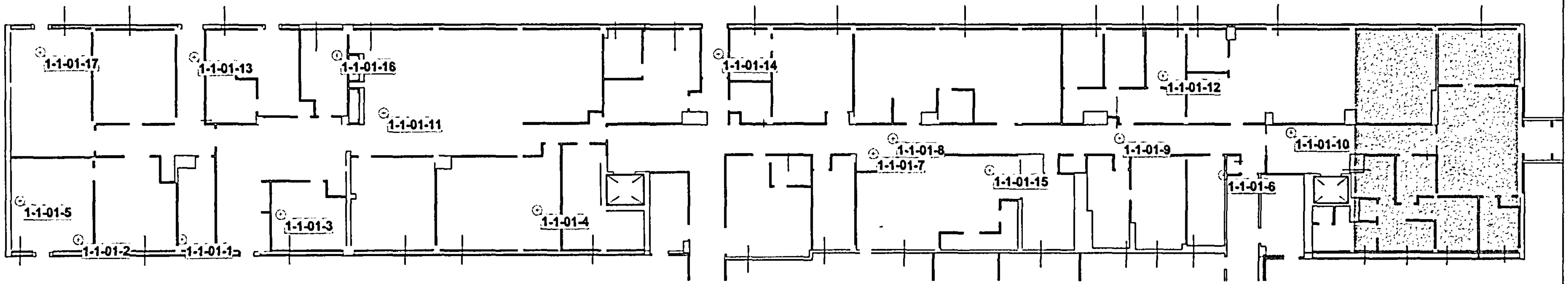
UNILEVER FINAL STATUS SURVEY

SURVEY UNITS AND FIXED POINT LOCATIONS

URUS Final Status Survey

Building 1 - 1st Floor - Class 3

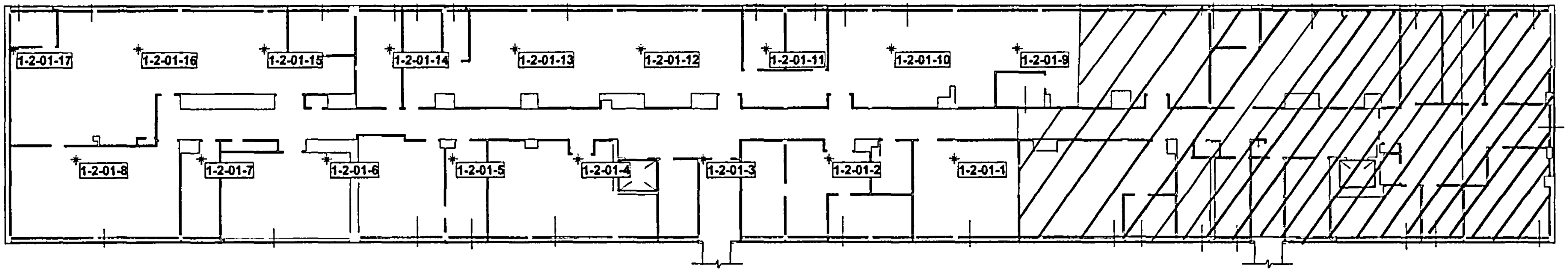
Survey Unit 1-1-01



URUS Final Status Survey

Building 1 - 2nd Floor - Class 2

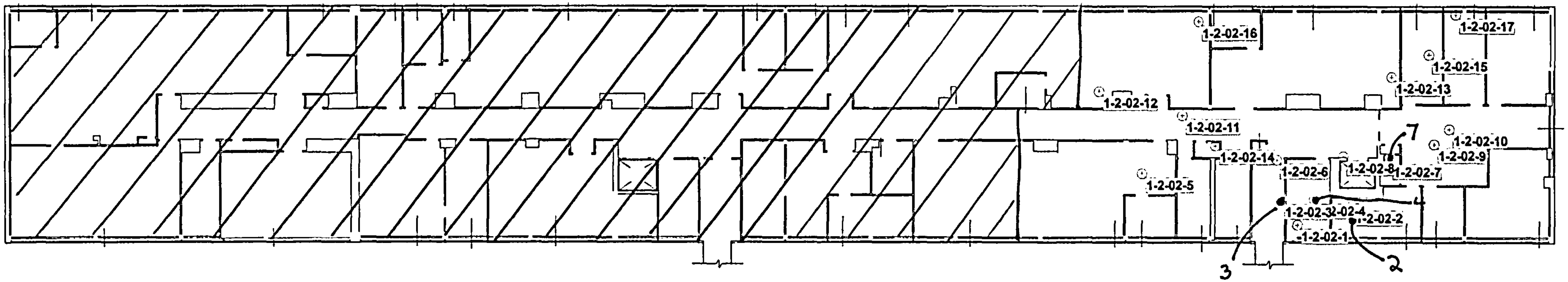
Survey Unit 1-2-01



URUS Final Status Survey

Building 1 - 2nd Floor - Class 3

Survey Unit 1-2-02

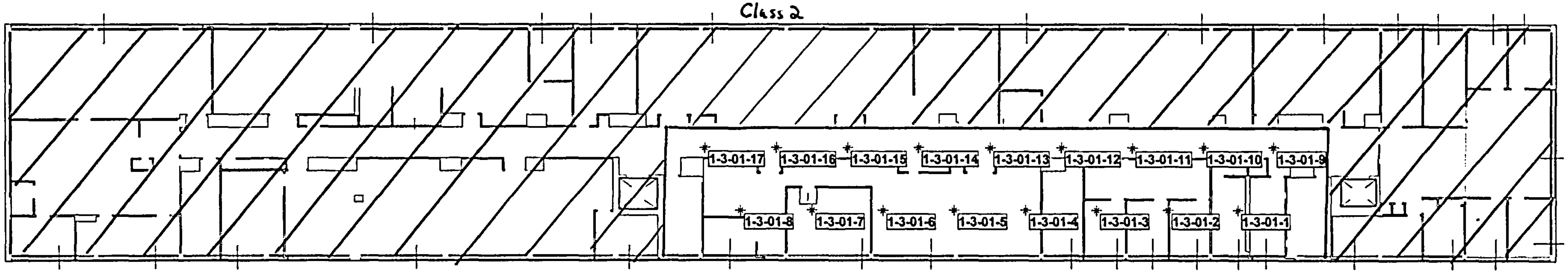


URUS Final Status Survey

Building 1 - 3rd Floor

Survey Unit 1-3-01

Class 2

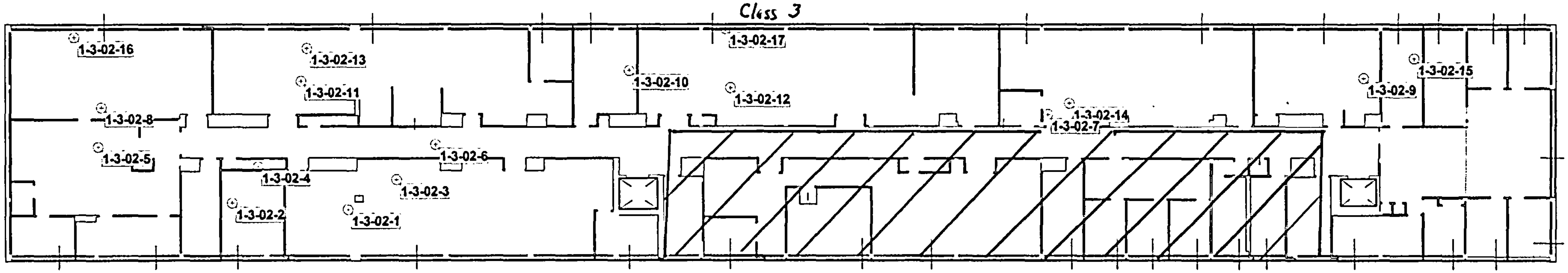


URUS Final Status Survey

Building 1 - 3rd Floor

Survey Unit 1-3-02

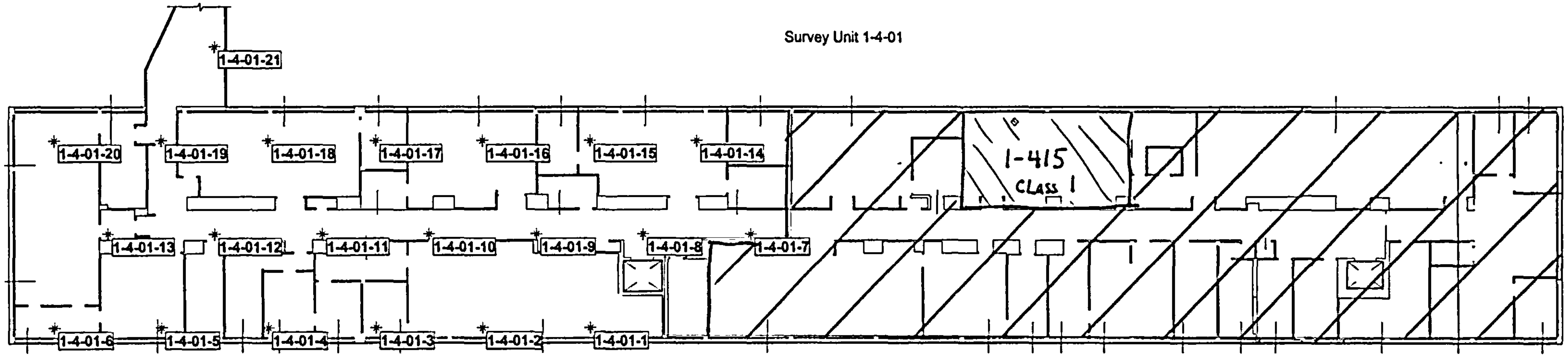
Class 3



URUS Final Status Survey

Building 1 - 4th Floor - Class 2

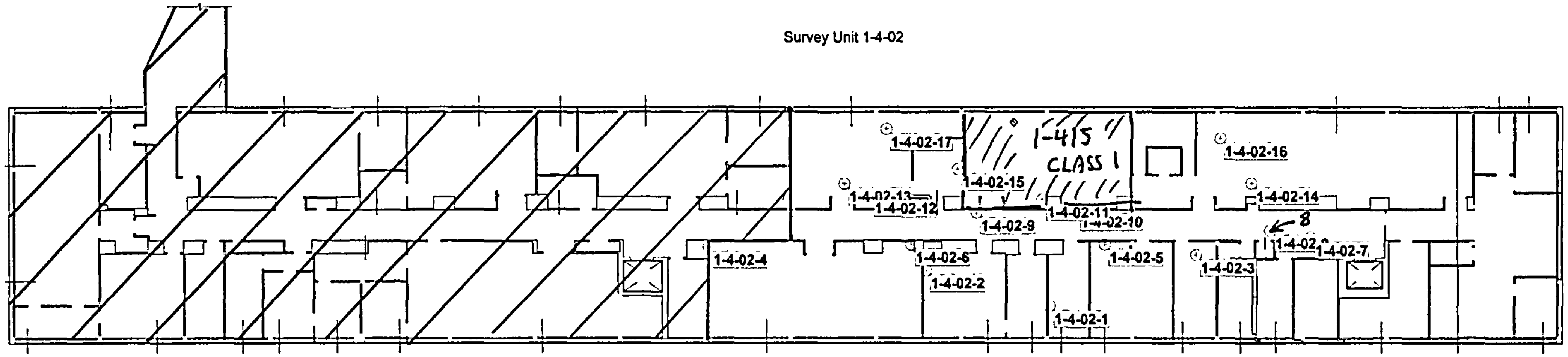
Survey Unit 1-4-01



URUS Final Status Survey

Building 1 - 4th Floor - Class 3

Survey Unit 1-4-02

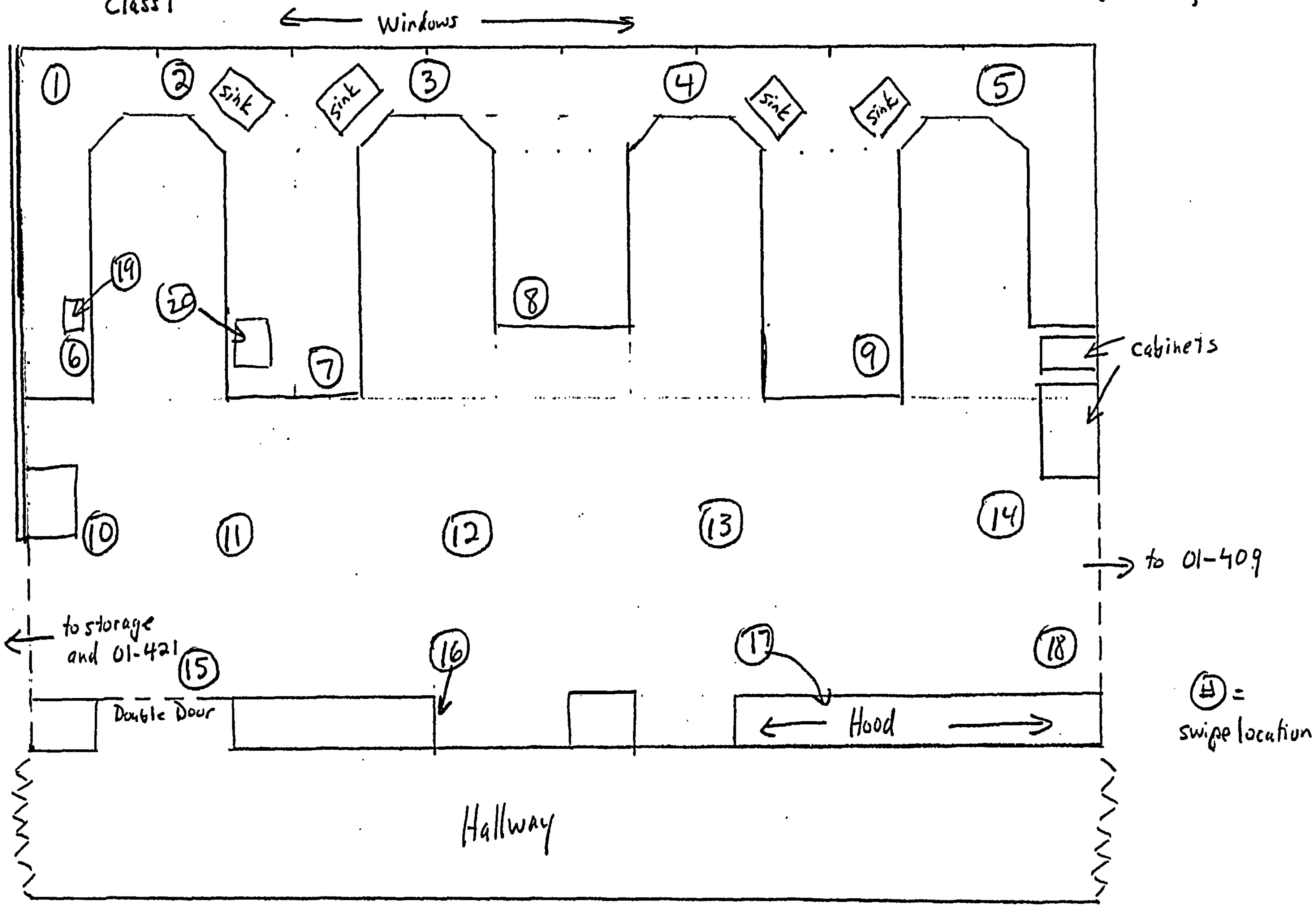


Bldg 1, Floor 4
Class 1

Room 1-415 Survey

Unilever Research + Development
Edgewater, NJ

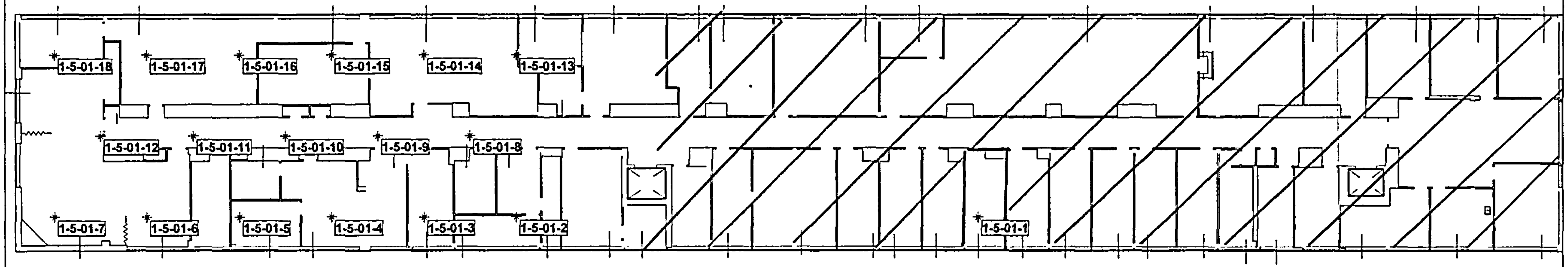
5-26-04



URUS Final Status Survey

Building 1 - 5th Floor - Class 2

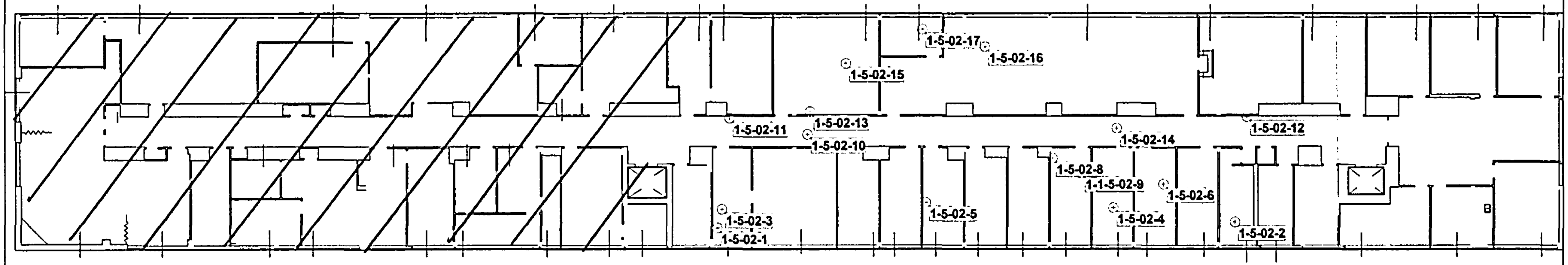
Survey Unit 1-5-01



URUS Final Status Survey

Building 1 - 5th Floor - Class 3

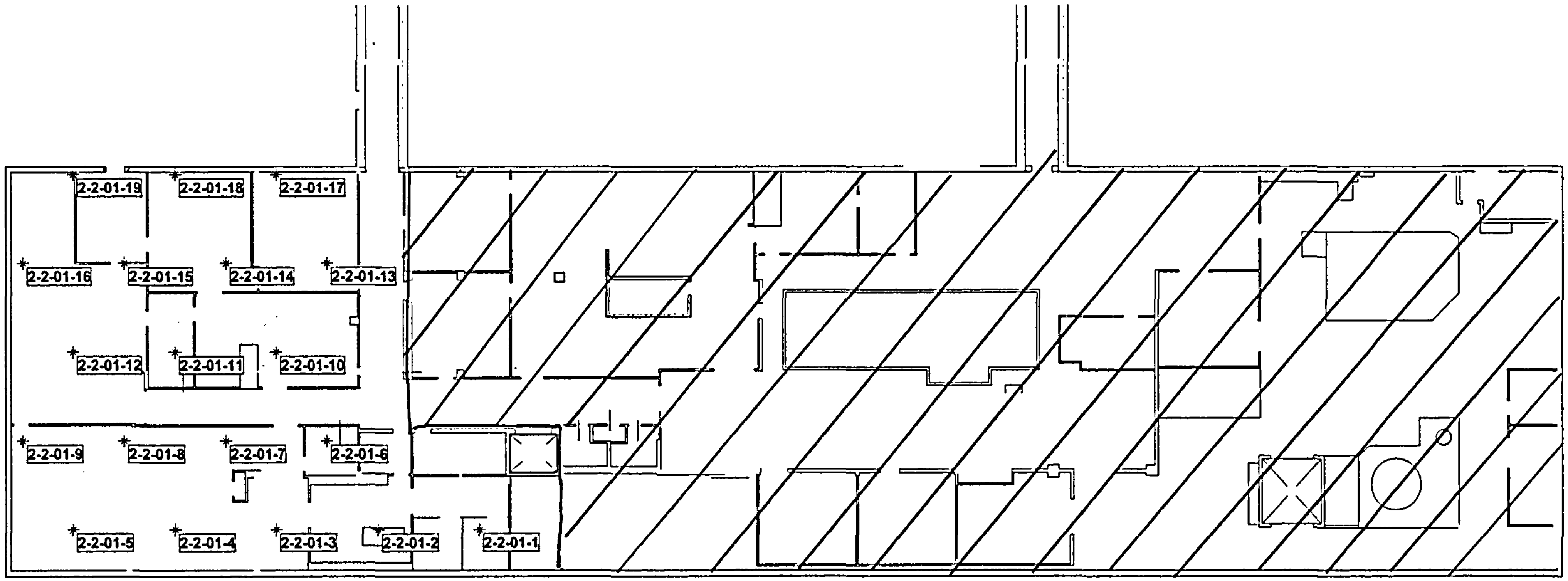
Survey Unit 1-5-02



URUS Final Status Survey Plan

Building 2 - 2nd Floor - Class 2

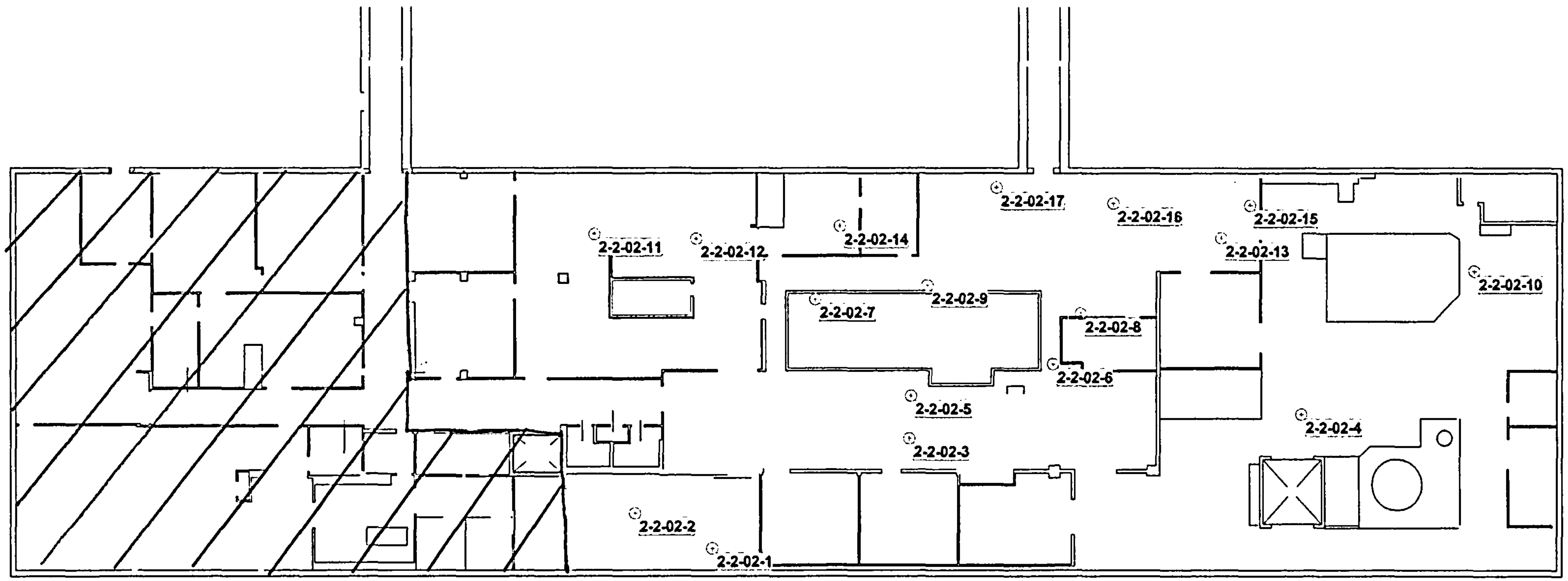
Survey Unit 2-2-01

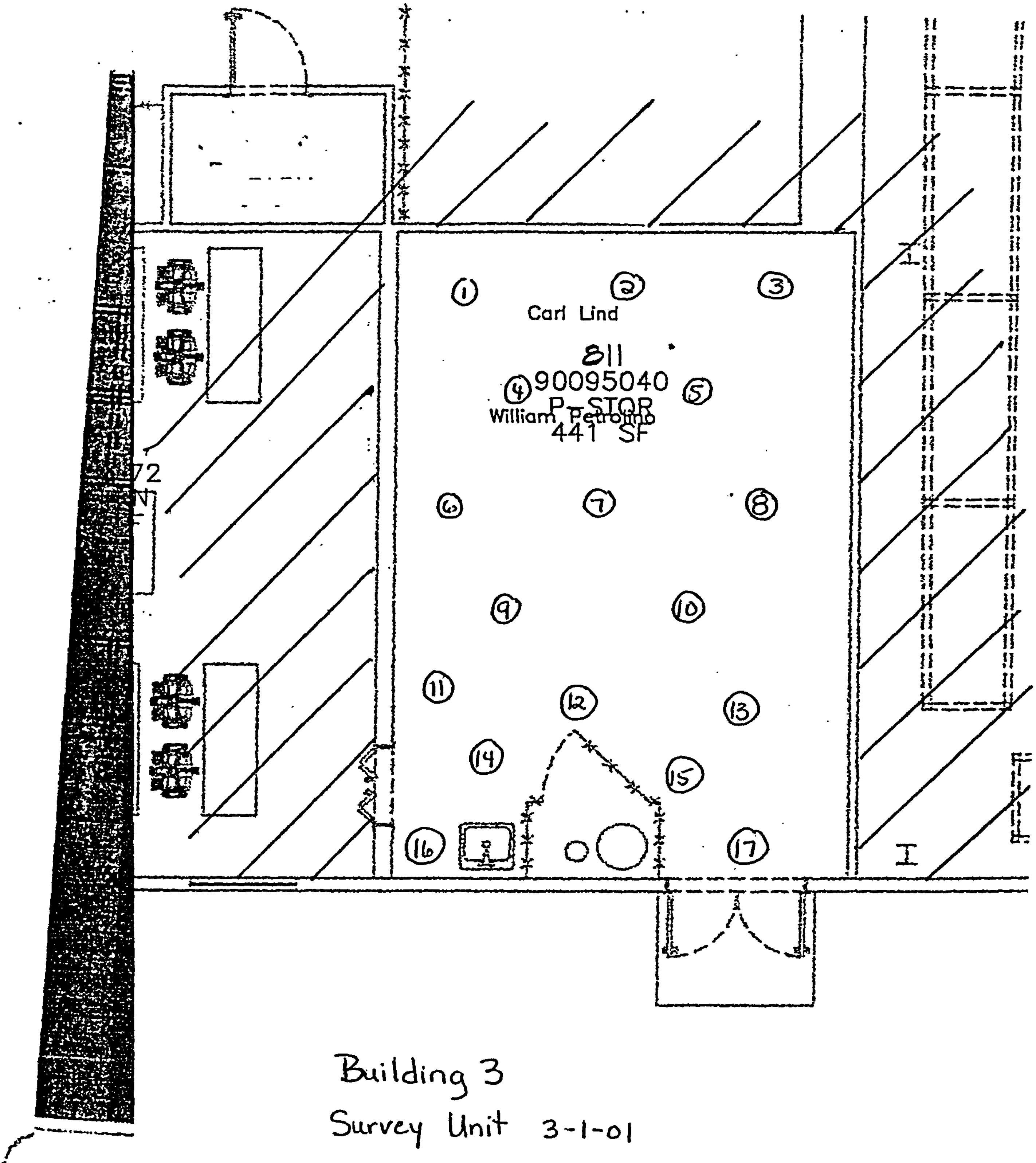


URUS Final Status Survey Plan

Building 2 - 2nd Floor - Class 3

Survey Unit 2-2-02

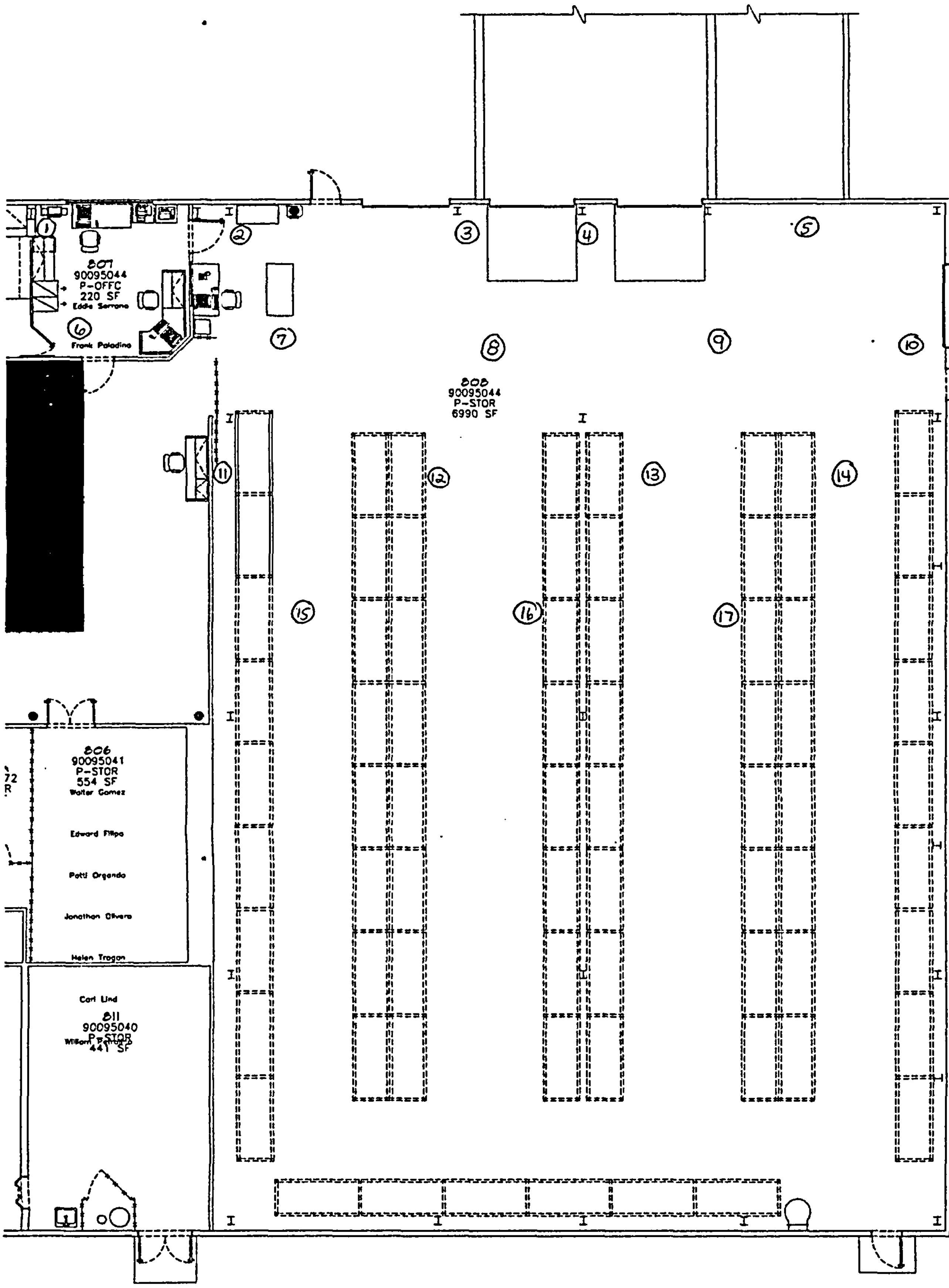




Building 3

Survey Unit 3-1-01

Class 1

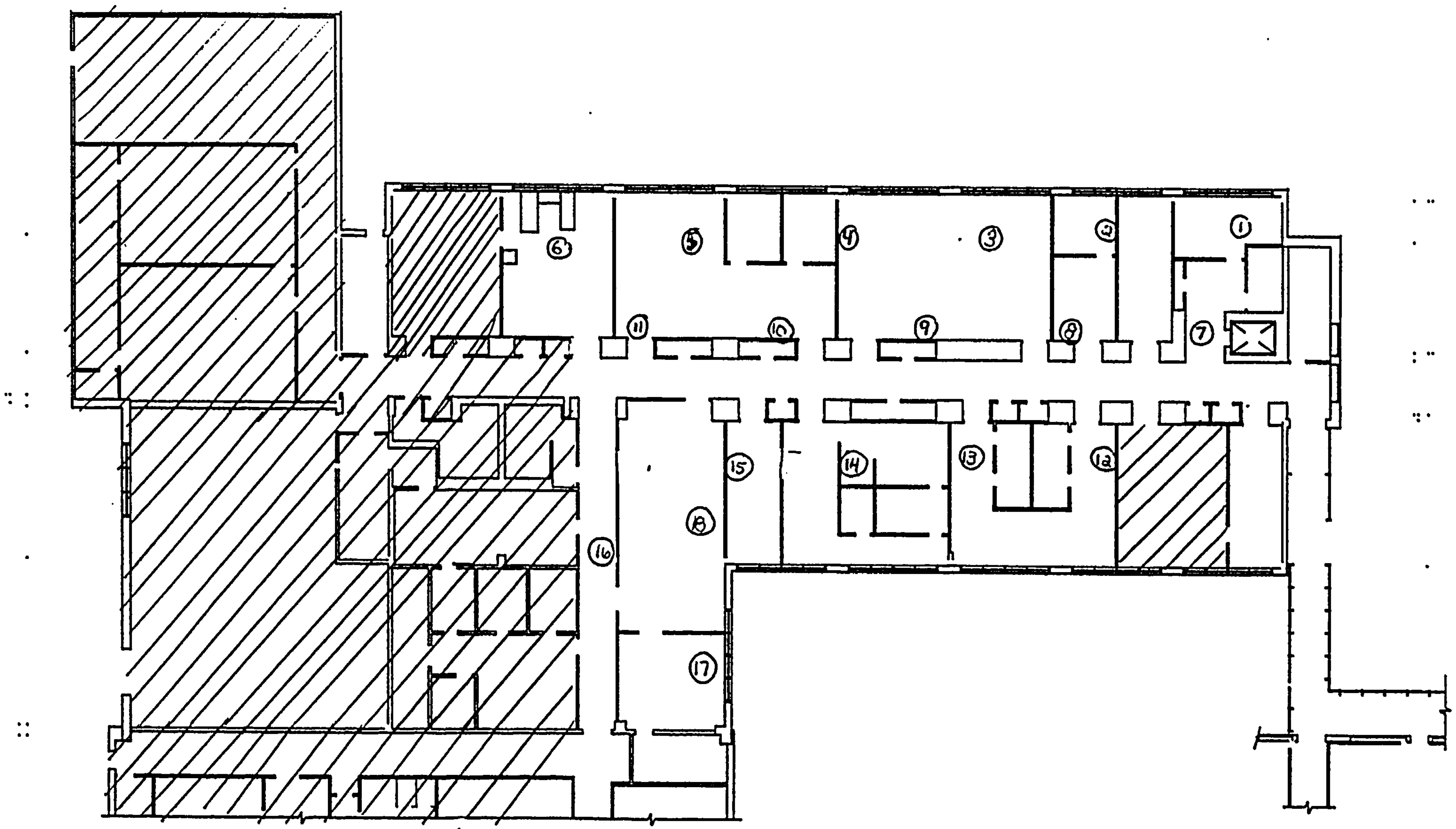


Building 3

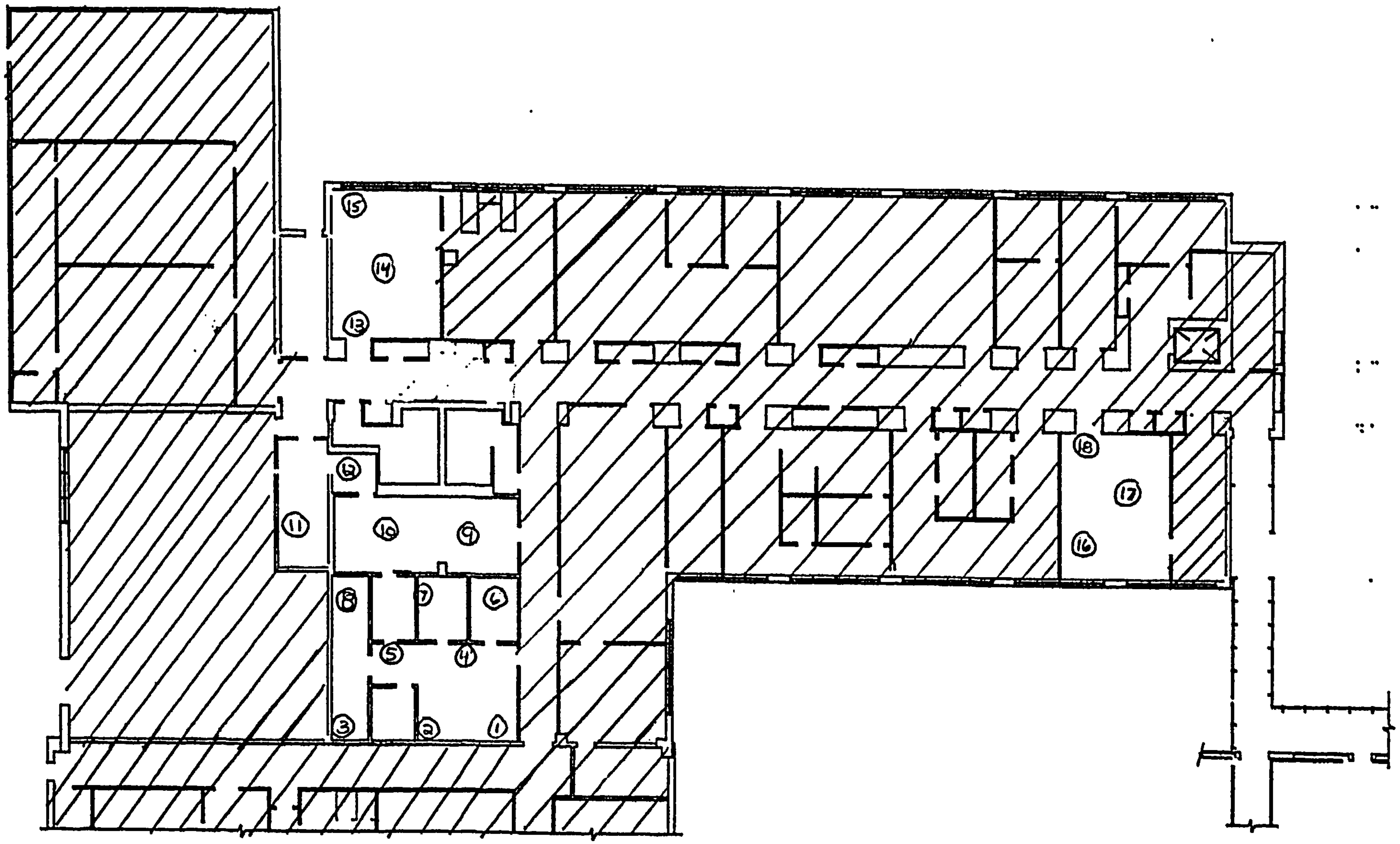
Survey Unit 3-1-02

Class 2

Note: only front portion of warehouse
ever had radioactive materials (packaged)
Scan was performed on entire warehouse.



Building 5
Survey Unit 5-1-02
Class 2

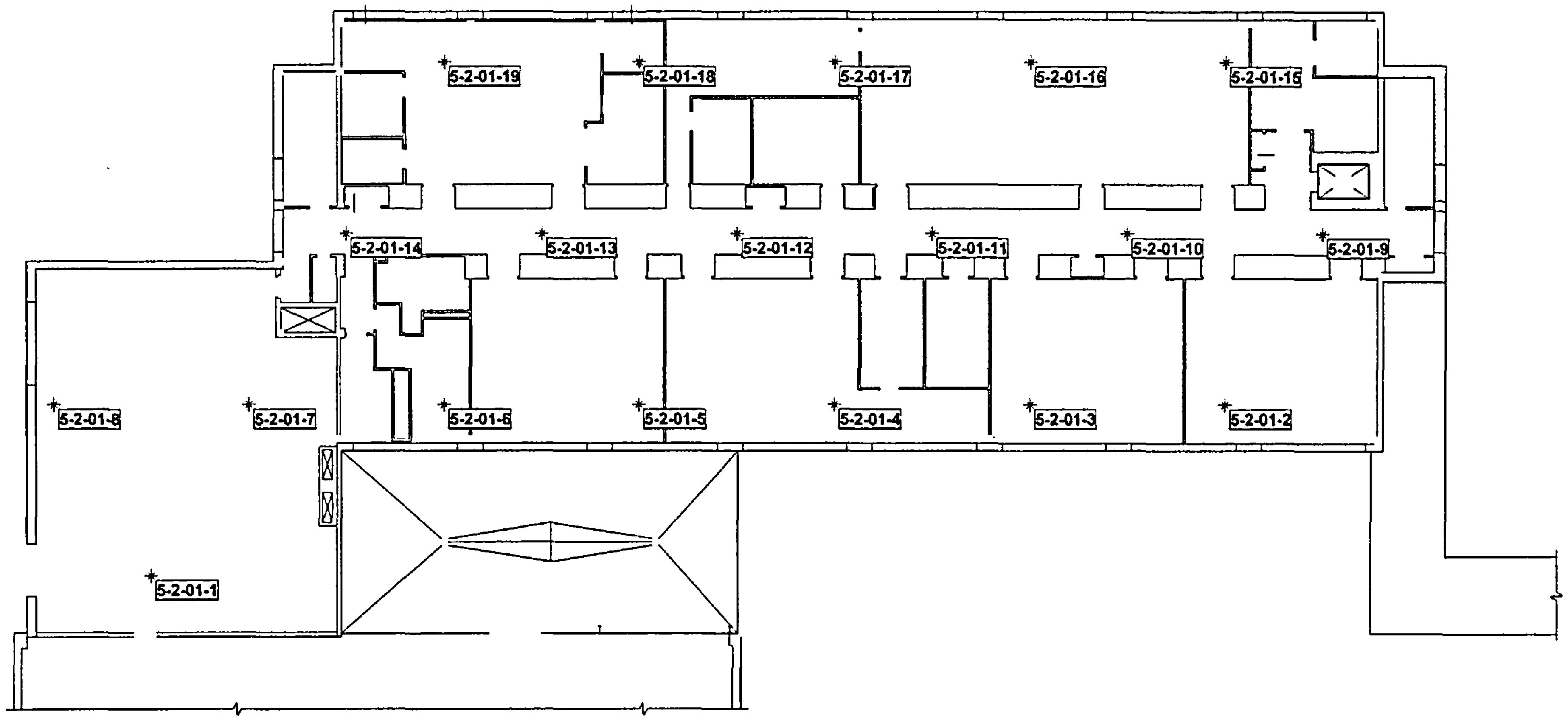


Building 5
Survey Unit 5-1-01
Class 1

URUS Final Status Survey Plan

Building 5 - 2nd Floor - Class 2

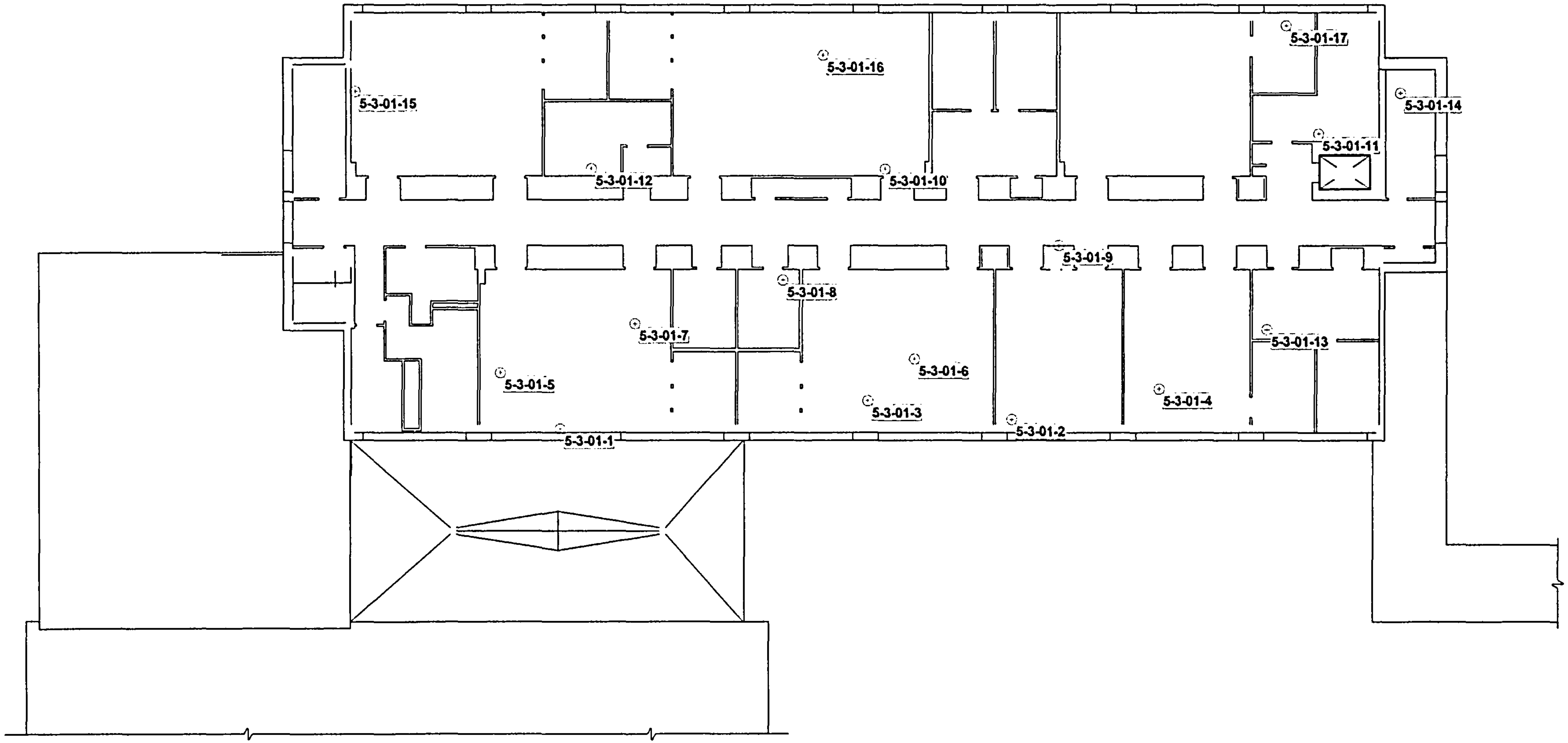
Survey Unit 5-2-01



URUS Final Status Survey

Building 5 - 3rd Floor - Class 3

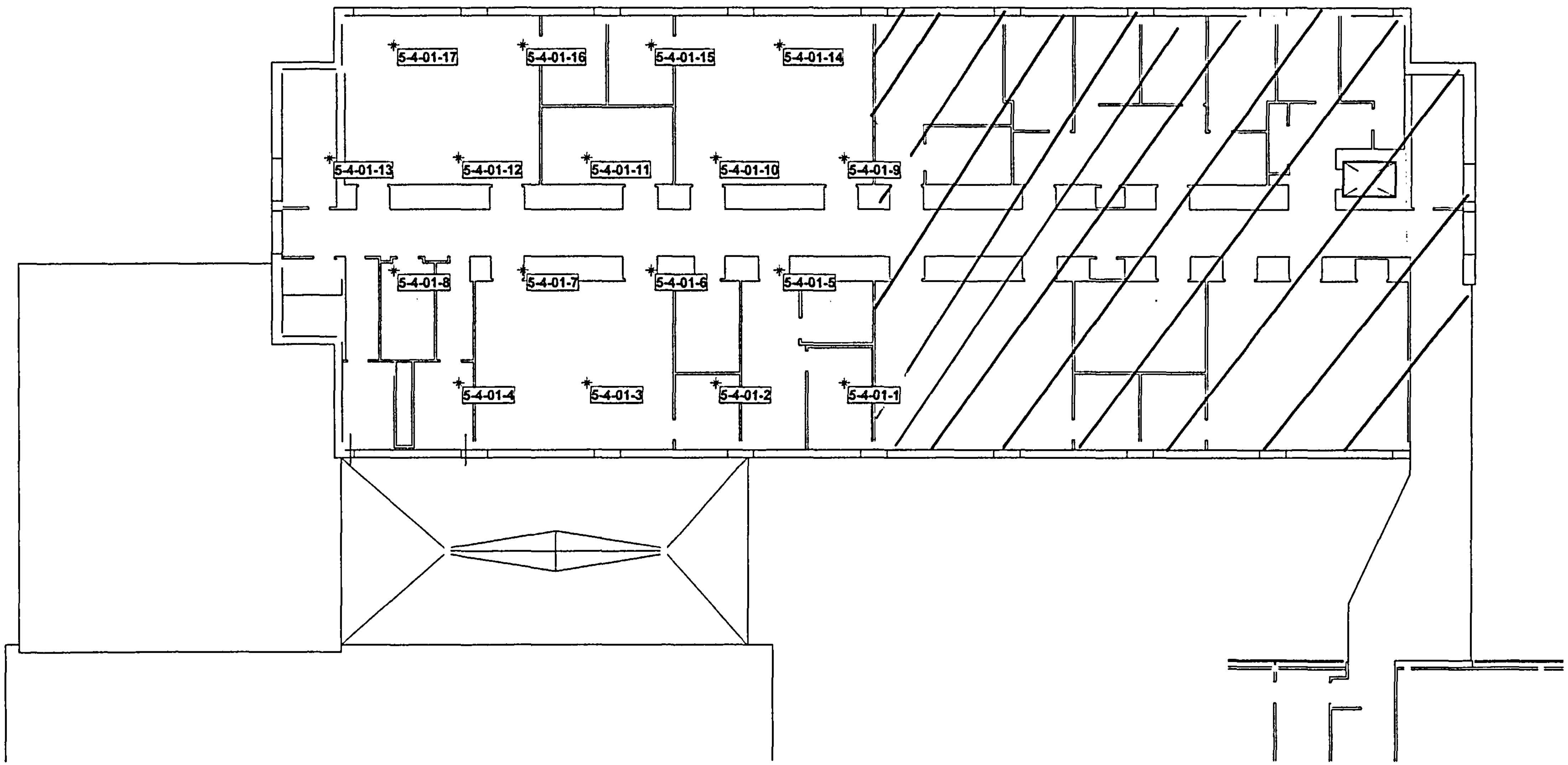
Survey Unit 5-3-01



URUS Final Status Survey

Building 5 - 4th Floor - Class 2

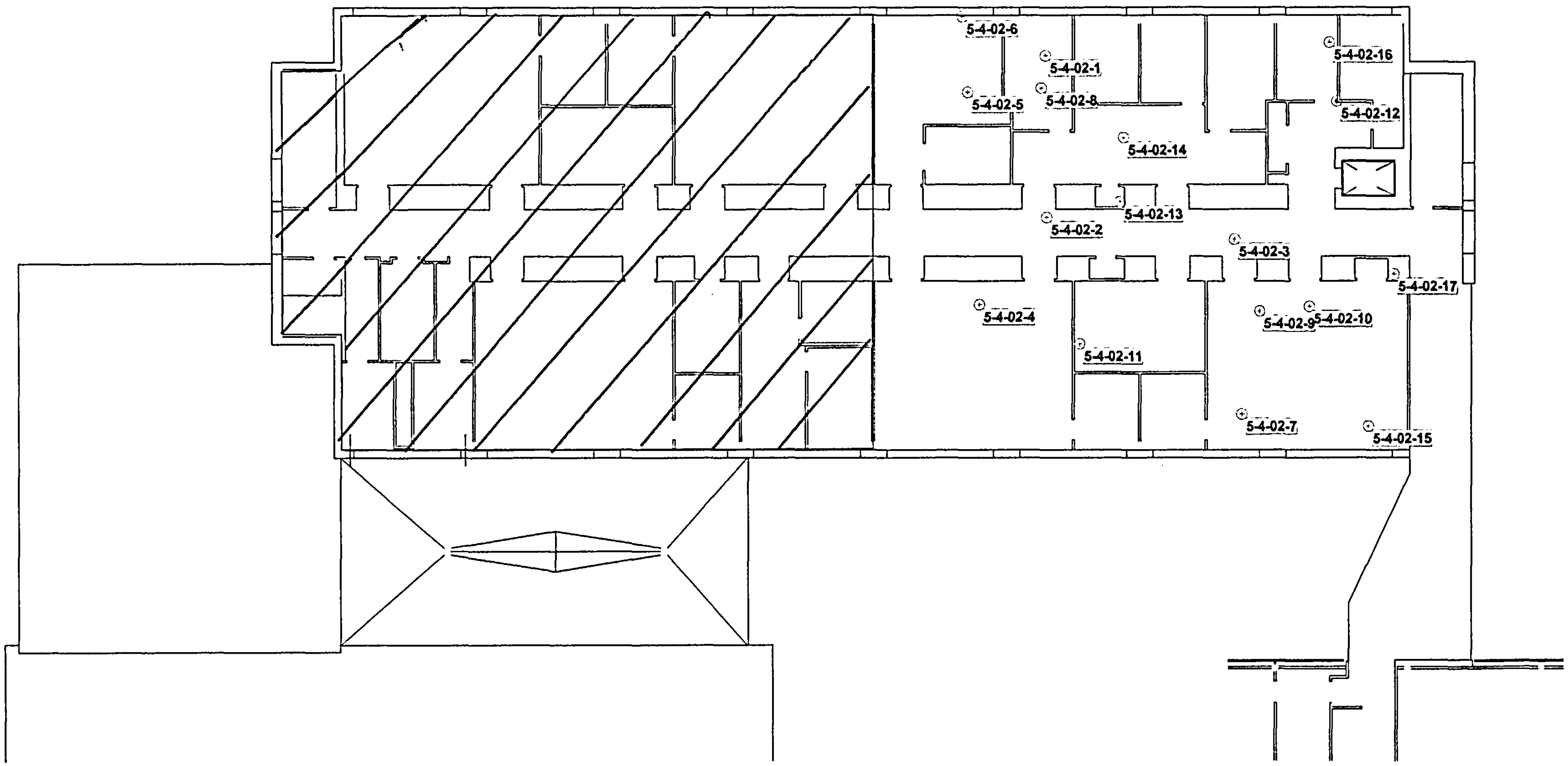
Survey Unit 5-4-01



URUS Final Status Survey

Building 5 - 4th Floor - Class 3

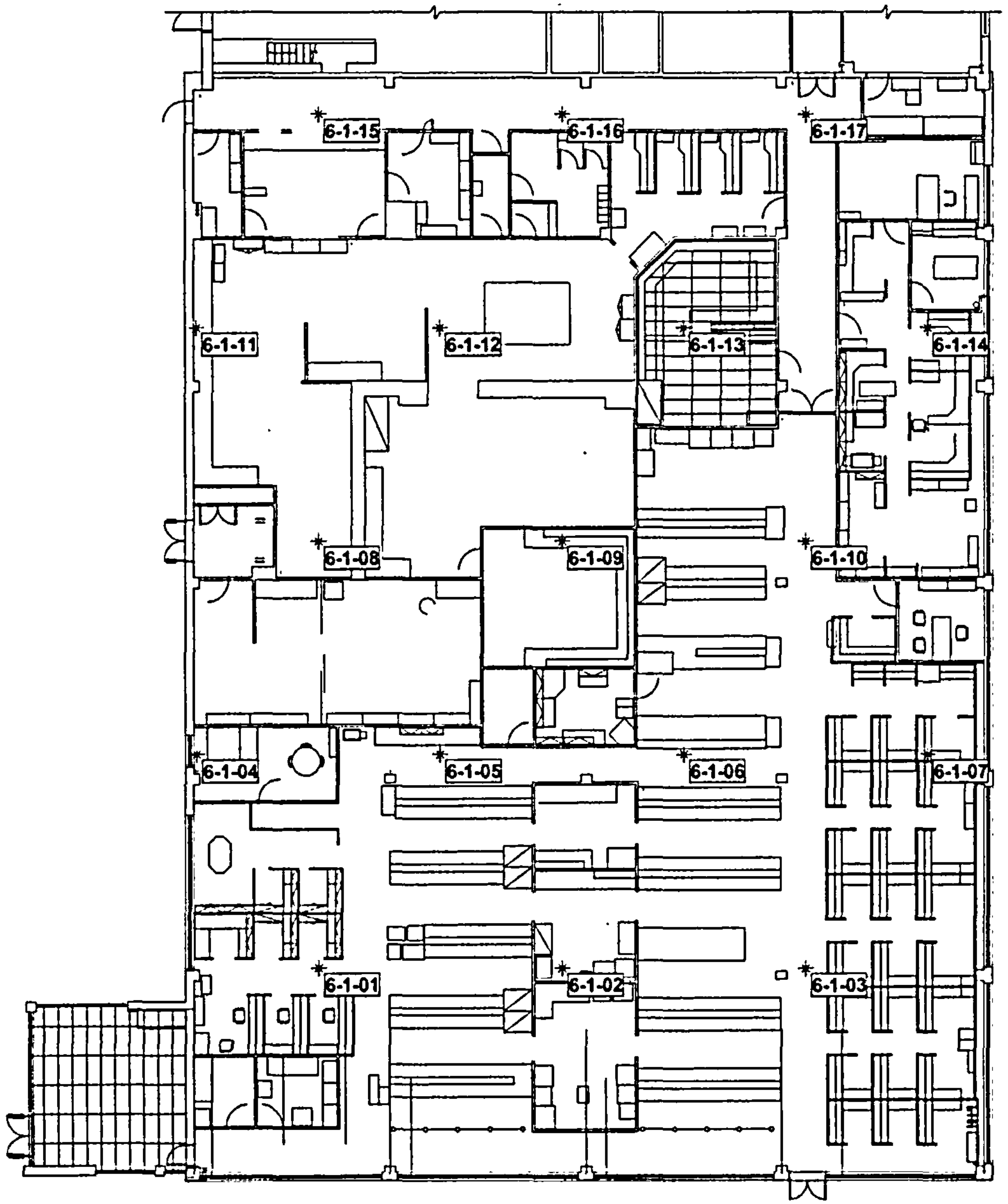
Survey Unit 5-4-02



URUS Final Status Survey

Building 6 - Class 2

Survey Unit 6-1-01



Appendix E

UNILEVER BUILDING 66

WASTE STORAGE ROOM

RELEASE SURVEY

TELEDYNE
BROWN ENGINEERING
Environmental Services

Waste Room
in Bldg 66

DECOMMISSIONING SURVEY

FOR

UNILEVER RESEARCH U.S.

EDGEWATER, NEW JERSEY

JULY 1996

Diahann McFarlane

Survey Date: July 8, 1996
Report Date: July 22, 1996

TELEDYNE BROWN ENGINEERING
Environmental Services
50 Van Buren Avenue
Westwood, New Jersey 07675

TELEDYNE
BROWN ENGINEERING
Environmental Services
50 VAN BUREN AVENUE
P.O. BOX 1235
WESTWOOD, NEW JERSEY 07675-1235
(201) 664-7070 FAX (201) 664-5586

July 22, 1996

Mr. Jack T. Roque
Unilever Research U.S.
Edgewater Laboratory
45 River Road
Edgewater, NJ 07020

Dear Mr. Roque:

On July 8, 1996, Diahann McFarlane of Teledyne Brown Engineering - Environmental Services performed a decommissioning survey in the Waste room at your facility located in Edgewater, New Jersey.

The survey consisted of radiation monitoring for both direct and removable radioactive contamination. Direct radiation surveys were conducted with an Eberline Instrument PAC-4G-3 gas proportional survey meter (serial number 3709; calibrated 4/22/96) designed to reveal the presence of beta radiation. Areas are reported as being contaminated if the count rate exceeds twice the background count rate of the meter.

Removable radioactive contamination surveys consisted of smear samples taken by wiping approximately 200 cm^2 of surface area with an absorbant material at representative areas of the laboratories. Smears were analyzed by liquid scintillation counting using a Packard Tri-Carb Model 1600 TR Liquid Scintillation Analyzer (S/N-404131). It is our practice to include with every group of approximately 200 samples a background and standards (H-3 and C-14) traceable to the National Institute of Standards and Technology. The results of the survey is enclosed. The background for the smears that were analyzed was 4 cpm for H-3 with the efficiency being 64.54, and 13 cpm for C-14 with an efficiency of 96.30.

The acceptable limits of surface contamination, as defined by the U.S. Nuclear Regulatory Commission's publication "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses by Byproduct, Source or Special Nuclear Material", are presented in Table 1. No areas were found to exceed these limits.

If you have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

TELEDYNE BROWN ENGINEERING
Environmental Services

Diahann McFarlane

Diahann McFarlane, Health Physics Tech.
Radiological Services Department

Enc.

TELEDYNE
BROWN ENGINEERING
Environmental Services

TABLE OF CONTENTS

TABLE 1

ACCEPTABLE SURFACE CONTAMINATION LEVELS

NUCLIDES[a]	AVERAGE[b c f]	MAXIMUM[b d f]	REMOVABLE[b e f]
A. U-nat, U-235, U-238 and decay products	5,000 dpm α/100 cm^2	15,000 dpm α/100 cm^2	1,000 dpm α/100 cm^2
B. Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm^2	300 dpm/100 cm^2	20 dpm/100 cm^2
C. Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1,000 dpm/100 cm^2	3,000 dpm/100 cm^2	200 dpm/100 cm^2
D. Beta -gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above	5,000 dpm $\beta\gamma$/100 cm^2	15,000 dpm $\beta\gamma$/100 cm^2	1,000 dpm $\beta\gamma$/100 cm^2

[a]Where surface contamination by both alpha and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

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

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

[d]The maximum contamination level applies to an area of not more than 100 cm^2.

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

[f]The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

TELEDYNE
BROWN ENGINEERING
Environmental Services

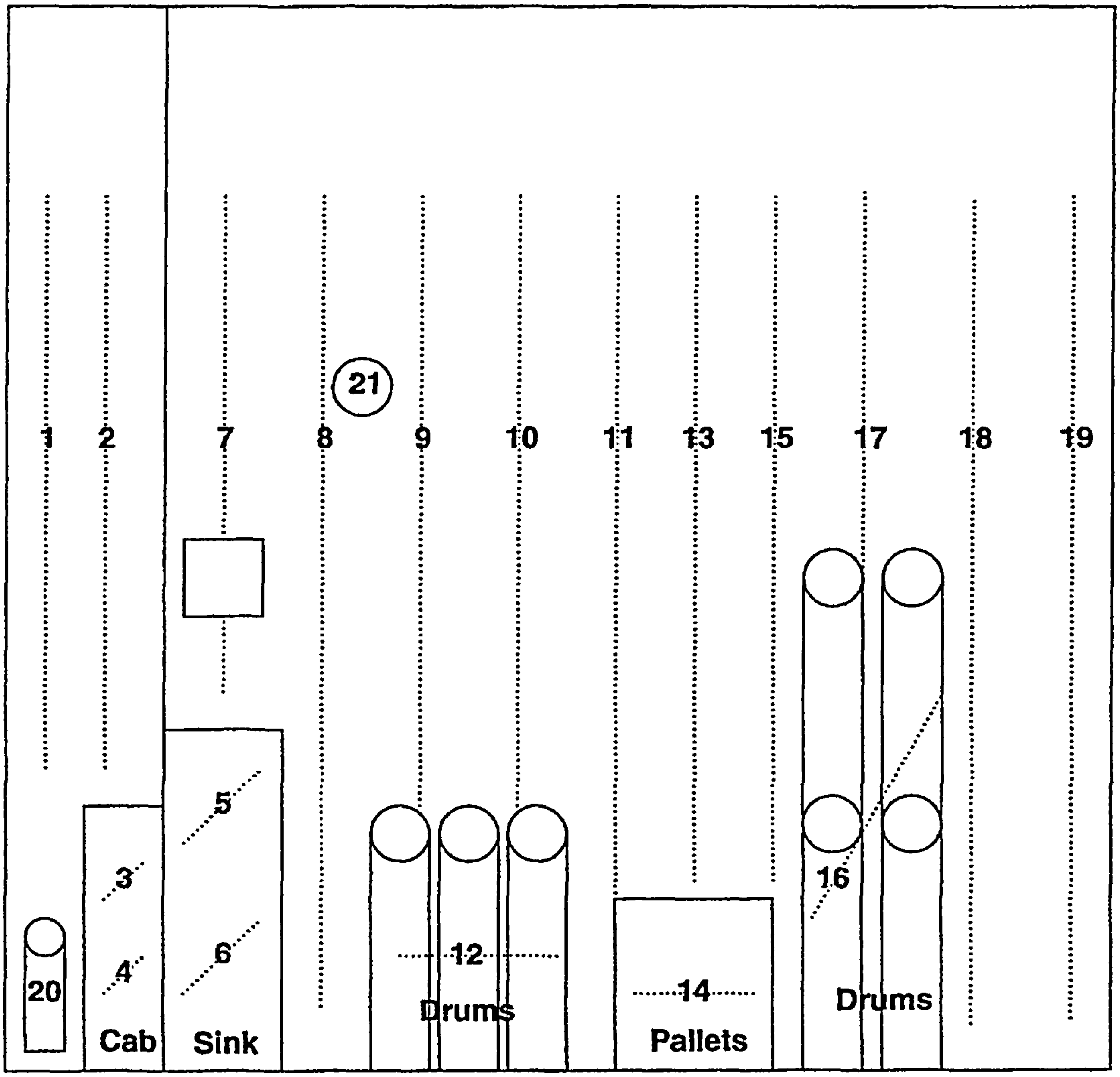
SMEAR RESULTS BY LIQUID SCINTILLATION COUNTING

LOCATION: Waste Room - View A

SMEAR No.	Low Energy Beta Activity dpm/sample	Low Energy Beta Activity dpm/100cm²
1	<50	<25
2	<50	<25
3	<50	<25
4	<50	<25
5	<50	<25
6	<50	<25
7	<50	<25
8	<50	<25
9	<50	<25
10	<50	<25
11	<50	<25
12	<50	<25
13	<50	<25
14	<50	<25
15	<50	<25
16	<50	<25
17	<50	<25
18	<50	<25
19	<50	<25
20	<50	<25
21	<50	<25

View A

TELEDYNE
BROWN ENGINEERING
Environmental Services



TELEDYNE
BROWN ENGINEERING
Environmental Services

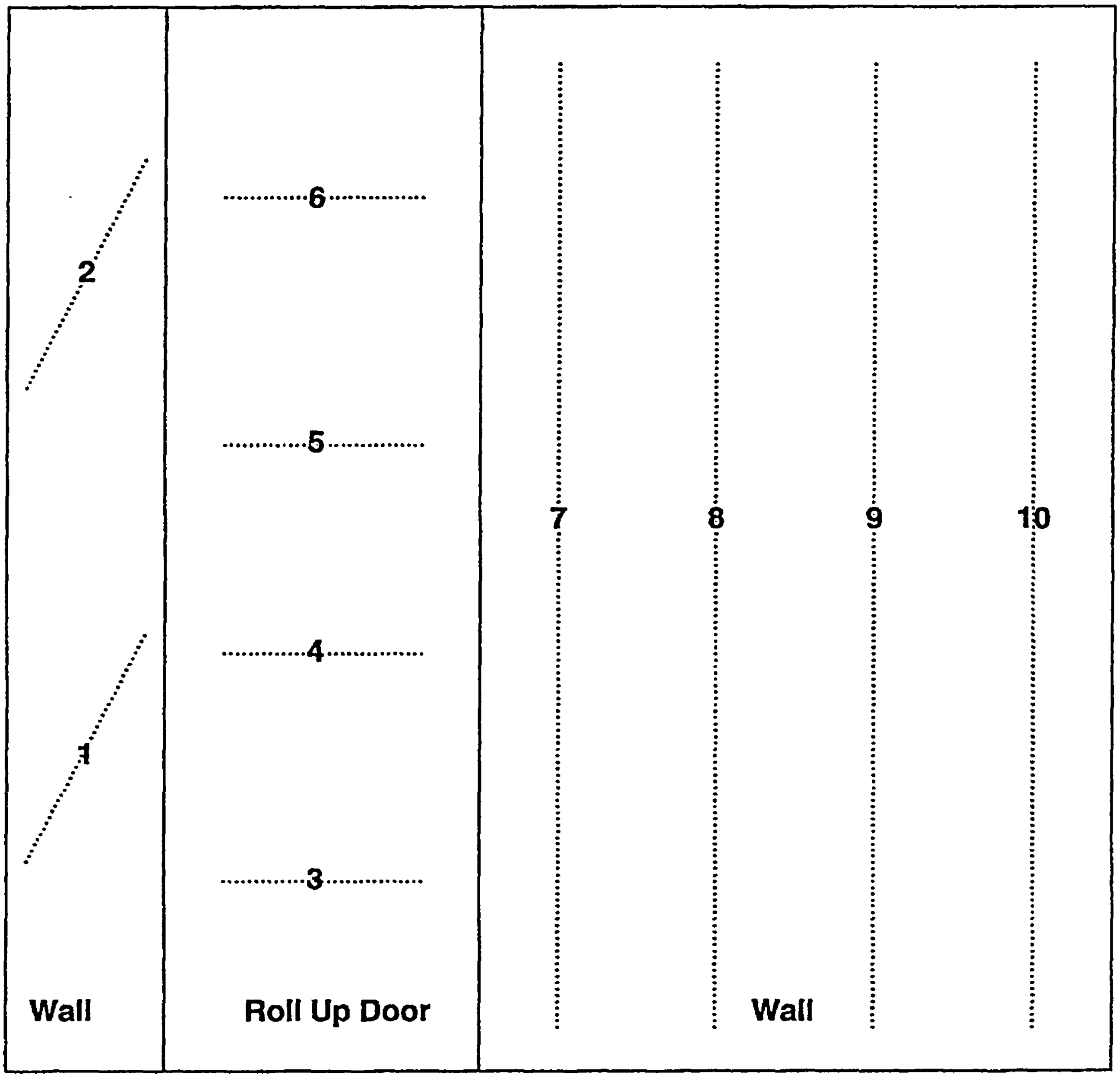
SMEAR RESULTS BY LIQUID SCINTILLATION COUNTING

LOCATION: Waste Room - View B

SMEAR No.	Low Energy Beta Activity dpm/sample	Low Energy Beta Activity dpm/100cm^2
1	<50	<25
2	<50	<25
3	<50	<25
4	<50	<25
5	<50	<25
6	<50	<25
7	<50	<25
8	<50	<25
9	<50	<25
10	<50	<25

View B

TELEDYNE BROWN ENGINEERING Environmental Services



TELEDYNE
BROWN ENGINEERING
Environmental Services

SMEAR RESULTS BY LIQUID SCINTILLATION COUNTING

LOCATION: Waste Room - View C

SMEAR No.	Low Energy Beta Activity dpm/sample	Low Energy Beta Activity dpm/100cm^2
1	<50	<25
2	<50	<25
3	<50	<25
4	<50	<25
5	<50	<25
6	<50	<25
7	<50	<25
8	<50	<25
9	<50	<25
10	<50	<25
11	<50	<25
12	<50	<25
13	<50	<25
14	<50	<25
15	<50	<25
16	<50	<25
17	<50	<25
18	<50	<25
19	<50	<25
20	<50	<25

Appendix F

UNILEVER RESEARCH AND DEVELOPMENT - EDGEWATER

BUILDING DRAWINGS

THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE

THAT CAN BE VIEWED AT THE RECORD TITLED:

"Building 6, Floor 1"

WITHIN THIS PACKAGE.....

D-01

THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE

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"Building 5, Floor 4"

DRAWING NO. FP-4

WITHIN THIS PACKAGE.....

D-02

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"Building 5, Floor 3 "

DRAWING NO. FP-3

AGE.....

D-03

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"Building 5, Floor 2"

DRAWING NO. FP-2

WITHIN THIS PACKAGE.....

D-04

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"Building 5, Floor 1"

DRAWING NO. FP-1

WITHIN THIS PACKAGE.....

D-05

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THAT CAN BE VIEWED AT THE RECORD TITLED:

"Building 3, Floor 1
-Shipping & Receiving,

Building 3, Floor 1
-Waste Room 3-811"

WITHIN THIS PACKAGE.....

D-06

THIS PAGE IS AN
OVERSIZED
DRAWING OR
FIGURE

THAT CAN BE VIEWED AT
THE RECORD TITLED:

"Building 2, Floor 2"

WITHIN THIS PACKAGE.....

D-07

THIS PAGE IS AN
OVERSIZED
DRAWING OR
FIGURE

THAT CAN BE VIEWED AT
THE RECORD TITLED:

"Building 1, Floor 5"
DRAWING NO. FP-5

WITHIN THIS PACKAGE.....

D-08

THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE

THAT CAN BE VIEWED AT THE RECORD TITLED:

"Building 1, Floor 4 "

WITHIN THIS PACKAGE.....

D-09

THIS PAGE IS AN
OVERSIZED
DRAWING OR
FIGURE

THAT CAN BE VIEWED AT
THE RECORD TITLED:

"Building 1, Floor 3"

WITHIN THIS PACKAGE.....

D-10

THIS PAGE IS AN
OVERSIZED
DRAWING OR
FIGURE

THAT CAN BE VIEWED AT
THE RECORD TITLED:

"Building 1, Floor 2"

WITHIN THIS PACKAGE.....

D-11

THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE

THAT CAN BE VIEWED AT THE RECORD TITLED:

"Building 1, Floor 1"

WITHIN THIS PACKAGE.....

D-12

FedEx. PRIORITY OVERNIGHT TUE
emp: 367073 23MAY05
Deliver By: 24MAY05
A2
TRK# 8408 3425 5372 FORM 0215
PHL
19406 -PA-US Z9 KPDA

FedEx. Express USA Airbill FedEx Tracking Number 8408 342 ... 0215 Recipient's Copy

RECIPIENT: PEEL HERE

1 From This portion can be removed for Recipient's records.
Date 5/23/05 FedEx Tracking Number 840834255372
Sender's Name Anthony K. Mills Phone 203 381-4296
Company UNILEVER HPC USA
Address 40 MERRITT BLVD
Dept./Floor/Suite/Room
City TRUMBULL State CT ZIP 06611-5413

2 Your Internal Billing Reference

3 To
Recipient's Name Licensing Assistant Section Phone
~~Nuclear Materials Safety Branch~~
Company U.S. Nuclear REgulatory ~~Commission - Region 1~~
Address
To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.
Address 475 Allendale Road
Dept./Floor/Suite/Room
City King of Prussia State PA ZIP 19406-1415

8408 3425 5372

4a Express Package Service — Packages up to 150 lbs. Delivery commitment may be later in some areas.
☑ FedEx Priority Overnight — Next business morning
☐ FedEx Standard Overnight — Next business afternoon
☐ FedEx First Overnight — Earliest next business morning delivery to select locations
☐ FedEx 2Day — Second business day
☐ FedEx Express Saver — Third business day
FedEx Envelope rate not available. Minimum charge: One-pound rate

4b Express Freight Service — Packages over 150 lbs. Delivery commitment may be later in some areas.
☐ FedEx 1Day Freight* — Next business day
☐ FedEx 2Day Freight — Second business day
☐ FedEx 3Day Freight — Third business day
* Call for Confirmation:

5 Packaging — * Declared value limit $500
☐ FedEx Envelope*
☐ FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
☑ Other

6 Special Handling — Include FedEx address in Section 3.
☐ SATURDAY Delivery — Available only for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
☐ HOLD Weekday at FedEx Location — Not available for FedEx First Overnight
☐ HOLD Saturday at FedEx Location — Available only for FedEx Priority Overnight and FedEx 2Day to select locations
Does this shipment contain dangerous goods? One box must be checked.
☐ No ☐ Yes As per attached Shipper's Declaration ☐ Yes Shipper's Declaration not required ☑ Dry Ice Dry Ice, 9, UN 1845 ___ x ___ kg
Dangerous Goods (including Dry Ice) cannot be shipped in FedEx packaging. ☐ Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below. Obtain Recip. Acct. No. ☐
☐ Sender Acct. No. in Section 1 will be billed. ☐ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

Total Packages	Total Weight		Total Charges
			Credit Card Auth.

†Our liability is limited to $100 unless you declare a higher value. See the FedEx Service Guide for details.

8 Release Signature Sign to authorize delivery without obtaining signature.
By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.
Questions? Visit our Web site at fedex.com
or call 1.800.Go.FedEx® 800.463.3339.
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447

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

5/23/2005, and to inform you that the initial processing which includes an administrative review has been performed.

Termination 29-00304-01

☒ There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

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

____.

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

Your action has been assigned **Mail Control Number** 137195.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.

NRC FORM 532 (RI)
(6-96)

Sincerely,
Licensing Assistance Team Leader

: (FOR LFMS USE)
: INFORMATION FROM LTS
: --------------------

BETWEEN:

License Fee Management Branch, ARM
and
Regional Licensing Sections

: Program Code: 03620
: Status Code: 0
: Fee Category: 3M
: Exp. Date: 20060228
: Fee Comments: ______________
: Decom Fin Assur Reqd: Y

::

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED
   Applicant/Licensee: CONOPCO, INC.
   Received Date: 20050524
   Docket No: 3005233
   Control No.: 137195
   License No.: 29-00304-02
   Action Type: Termination

2. FEE ATTACHED
   Amount: /
   Check No.: /

3. COMMENTS

Signed Rebecca Junod
Date 6/21/2005

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 ______________