



Bristol-Myers Squibb Company

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2005-08-11

P.O. Box 191, New Brunswick, NJ 08903-0191 732-227-5000

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MYSBZ

August 29, 2005

Ms. Betsy Ullrich
US NRC Region I
475 Allendale Road
King of Prussia, PA 19406

03005222

RE: DOCKET 03-005222
AMENDMENT REQUEST FOR RADIOACTIVE MATERIAL LICENSE #29-00139-02

Dear Ms. Ullrich:

E. R. Squibb & Sons LLC, a division of Bristol-Myers Squibb Company, has been granted radioactive material license #29-00139-02 which authorizes possession and use of radioactive materials at four New Jersey facilities: the New Brunswick facility (at One Squibb Drive, New Brunswick, NJ), the Lawrenceville facility (at Route 206 and Provinceline Road, Lawrenceville, NJ), the Hopewell facility (at 311 Pennington-Rocky Hill Road, Pennington, NJ) and the Hamilton facility (at Three Hamilton Health Place, Hamilton, NJ). E.R. Squibb & Sons ceased all licensed activity at the Hamilton facility in April 2005.

E.R. Squibb & Sons hereby requests an amendment to its license for the unconditionally release of the Hamilton facility from license control. A final status survey of this facility was completed by AME and is enclosed for your review. The results of this survey document that affected areas of the facility satisfy the requirements for decommissioning.

If you require additional information, please contact Michael Vala at Michael.vala@bms.com or (732) 227-5096.

Thank you for your assistance.

Sincerely,

Michael J. Vala, CHP
Radiation Safety Officer/Manager, EHS

Cc: J. Coakley
L. Fedele
M. Koza

137626

NUCLEAR MATERIALS-002



**Antkowiak and Mahoney
Enterprises, Inc.**

FINAL STATUS SURVEY
for
Bristol Myers Clinical Research Center
Hamilton, New Jersey

Prepared by



**Antkowiak and Mahoney
Enterprises, Inc.**

3 Valley Court
Chester, NY 10918
845 406-1917



Antkowiak and Mahoney
Enterprises, Inc.

FINAL STATUS SURVEY
for
Bristol Myers Clinical Research Center
Hamilton, New Jersey

Survey Date:

July 2005

Surveys performed by:

Joel Antkowiak
Robert Mahoney

Report prepared by:

Joel Antkowiak

Reviewed and Approved by: _____

Date: _____

8/8/05



Introduction

This report documents the decommissioning survey results of the radioactive materials use areas of the Bristol Myers Squibb Clinical Research Center (BMS) facility in Hamilton, New Jersey. BMS ceased all licensed operations at the site in early 2005. The facility is a shared facility with Robert Wood Johnson (RWJ) and all future licensed activities will be performed under the RWJ NRC license.

There are 3 radioisotopes that were used at the facility: carbon-14, tritium, and iodine-125. Iodine was only used in radioimmunoassay kits. Carbon-14 and tritium were used sparingly. Therefore, no residual contamination was expected to be found.

The decommissioning project was managed and performed by Antkowiak and Mahoney Enterprises, Inc. (AME). The AME task manager for this project was Joel Antkowiak. The surveys were performed in July 2005 by Joel Antkowiak and Robert Mahoney.

Objective

The purpose of this project is to survey the radioactive materials use areas of the BMS facility to demonstrate levels of residual radioactivity sufficiently low to release the building for unrestricted use. There are 6 rooms that are of concern: 150, 162, 164, 180, 195C and 242. As a precaution, the hallways throughout the laboratory area were also surveyed. The surveys were performed by Antkowiak and Mahoney Enterprises, Inc. (AME) under the Bristol Myers Squibb radioactive materials license in order to meet the release criteria of Regulatory Guide 1.86 for the isotopes of concern.

Survey Methodology

The following equation was used to determine the minimum detectable activity of each instrument used:

$$MDA = \frac{2.71 + 4.65 \sqrt{Br \times t}}{t \times E \times A/100}$$

where:

- MDA = activity in dpm/100 cm²
- Br = background rate in counts per minute
- t = counting time in minutes
- E = detector efficiency in counts per disintegration (4π)
- A = probe area or area wiped in cm²



Direct Radioactive Contamination Surveys

Surveys were performed using guidance provided in NUREG 1575, "Multi-Agency Radiation Survey and Site Investigation Manual", or MARSIMM. All decommissioning surveys consisted of 100% scans of the floors, bench tops, drawers and cabinets in the room. Walls were surveyed to a height of six feet.

Measurements of direct radiation were made on all laboratory surfaces using the instruments described in table 1. The survey meter and detectors were checked for operational viability each day prior to use and following re-charging of the gas proportional detectors. This included battery and high voltage checks as well as a one minute count of a dedicated check source to ensure that the detection efficiency of the meter was within a predetermined range. Scans were conducted by moving the probe at a rate of one to two probe widths per second less than 1 centimeter from the surface being surveyed. The audio output of the meter was used to identify areas of contamination.

Table 1: Instruments Used

Instrument	Serial Number	Minimum Detectable Activity
Ludlum Model 12 w/Model 43-68 probe	195030 PR 178507	500 - 550 dpm/100 cm ²
Ludlum Model 12 w/Model 43-68 probe	193772 PR 178433	500 - 550 dpm/100 cm ²
Ludlum Model 12 w/Model 43-37-1 probe Floor Monitor	193772 PR 136363	175 - 200 dpm/100 cm ²
Keithley Model 36155	36025	0.01 mR/hr (10 µR/hr)
Ludlum Model 12 w/Model 44-92 probe	193772 PR 178541	For 20 minute scalar readings, <100 dpm/100 cm ²

In addition to the 100% surface scans, 1 minute scalar readings were taken at locations that were determined based on the level of survey that was required of the area (level 1, level 2, or level 3). All areas are considered to be class II for this survey. The results of these measurements are presented in Appendix II.



Survey for Removable Radioactive Contamination

Sampling for removable activity was conducted by wiping approximately 100 cm² area with a two inch diameter dry filter paper. The samples were then placed directly into a scintillation vial in a specific location of a uniquely identified rack or tray. The position numbers are then described on the scintillation counter log sheet. The samples remain in the specified container and position throughout sample preparation and analysis. This reduces the risk of mislabeling or cross contamination among the many samples taken during this project.

The samples were analyzed by setting three energy windows on the liquid scintillation counter. The low energy channel (channel 1) is set for optimal tritium efficiency, the second window (channel 2) is set for optimal carbon-14 efficiency, and the third window (channel 3) is set for higher energy beta emitters. Because of the potential for I-125 contamination, the samples were counted for 5 minutes to reduce the minimum detectable activity for the counter.

Each day samples are analyzed, NIST traceable tritium and carbon-14 sources are also analyzed at the end of each "batch". The daily counts for both tritium and carbon-14 were within the specified ranges. The minimum detectable activity (MDA) for the counter used (Beckman model 5000 TD; serial number 7040372) is as follows:

Channel 1 MDA = 19 dpm

Channel 2 MDA = 13 dpm

Channel 3 MDA = 12 dpm

For purposes of free release of the rooms, the removable activity exhibited in all three channels is combined to determine compliance with the release criteria. The results are presented in Appendix I.

Additional Sampling

In addition to the smear samples taken at the locations indicated on the diagrams, samples were also taken on all equipment that was in the rooms. The equipment will be left behind for the use of RWJ personnel. The results of these equipment surveys are presented in a separate report. All equipment was found to be free of radioactive contamination.



Survey Results – Final Status

No areas exceeded the background radiation exposure rate.

No removable radioactive contamination was found in the rooms surveyed.

No direct radioactive contamination was found in the rooms surveyed.

The final survey results for each of the surveyed areas are presented in Appendices I and II. Copies of the meter calibration certificates are presented in Appendix III.

Understanding the Appendices

The appendices presenting the results of the removable contamination surveys show diagrams of each area surveyed. On each diagram, if two smears are shown to be taken on one item (drawers, cabinet, etc.), the odd numbered smear was taken on the outside of the item. The inside is represented by the even numbered smear.

The appendices that present the data from the scaler measurements refer to the numbers of the smear on the pictures of Appendix I as appropriate. For example, reading number one taken in Room 162, view A corresponds to the location represented in the picture for the removable activity. For Class II rooms, there is approximately 1 reading for every 4 removable samples. Where readings are indicated on drawers and cabinets, the odd numbered reading was taken on the outside of the item, and the even numbered reading represents the inside. For drawers and cabinets, the inside reading was taken inside the drawer, or on the shelf nearest, the location of the number on the diagram.



**Antkowiak and Mahoney
Enterprises, Inc.**

Appendix I

Removable Activity

Diagrams of Surveyed Areas with Smear Results

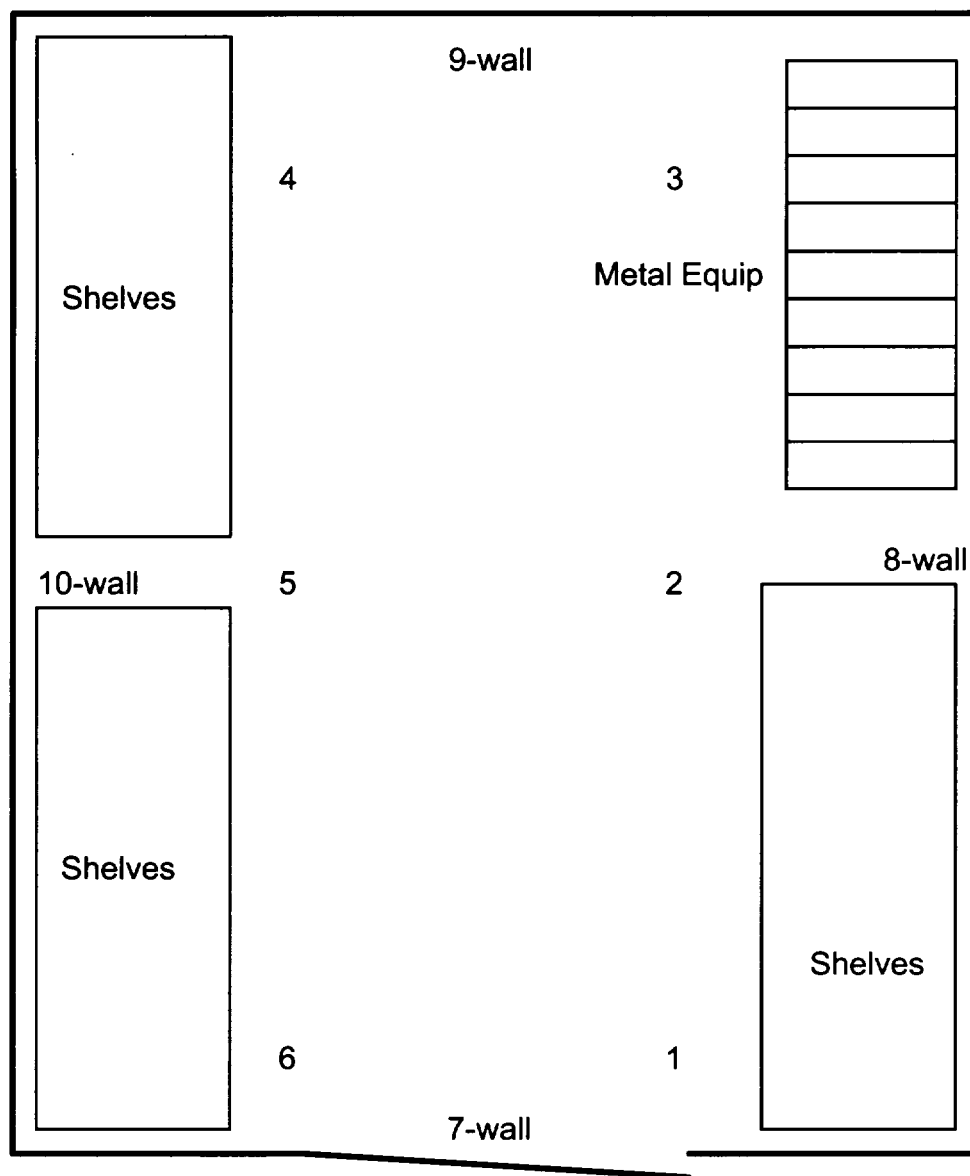
Room: 150 Main View-Back Room

Name:

Notes:



Arthuris and Mahoney
Enterprises, Inc.



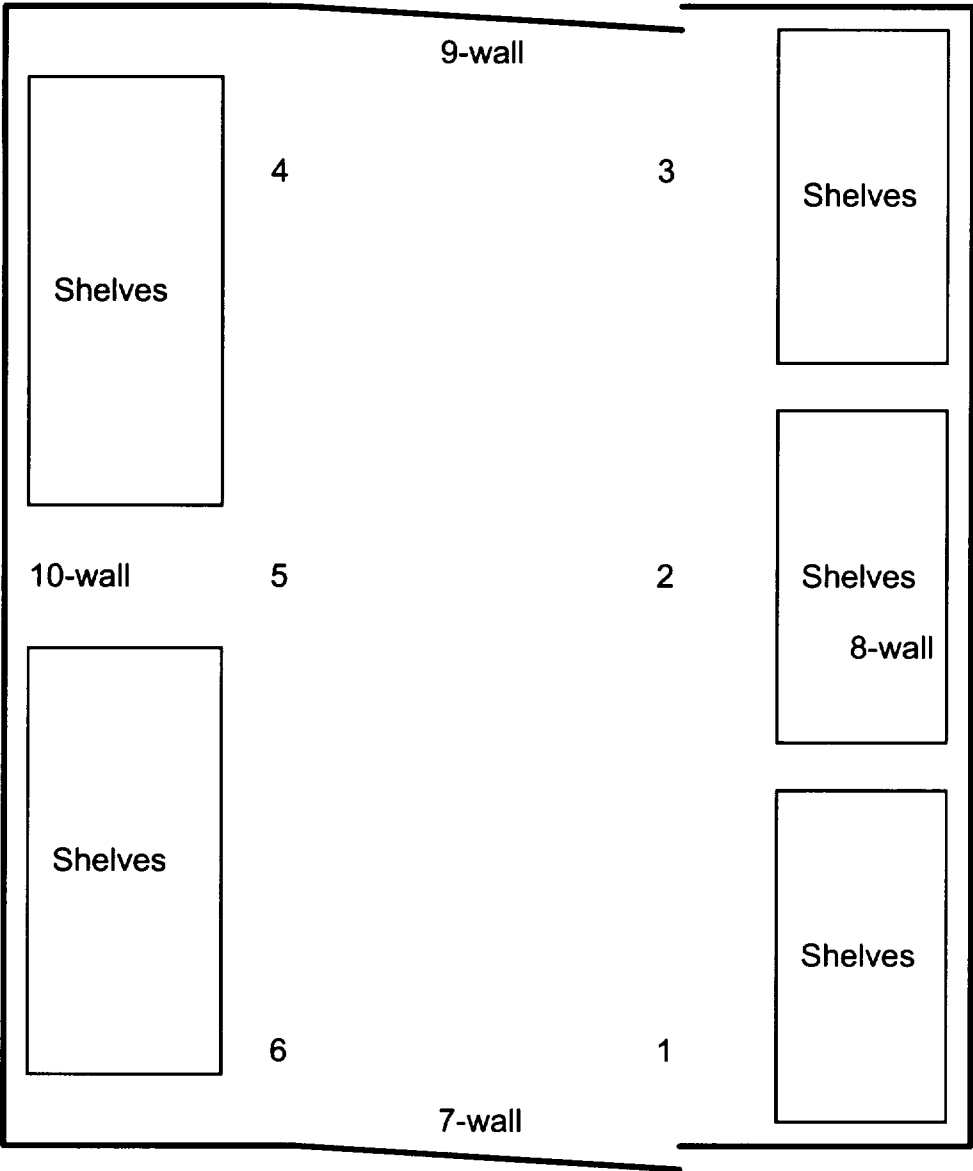
Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA				
2	<MDA	<MDA	<MDA				
3	<MDA	<MDA	<MDA				
4	<MDA	<MDA	<MDA				
5	<MDA	<MDA	<MDA				
6	<MDA	<MDA	<MDA				
7	<MDA	<MDA	<MDA				
8	<MDA	<MDA	<MDA				
9	<MDA	<MDA	<MDA				
10	<MDA	<MDA	<MDA				

Room: 150 Main View-Front Room

Name:

Notes:



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA				
2	<MDA	<MDA	<MDA				
3	<MDA	<MDA	<MDA				
4	<MDA	<MDA	<MDA				
5	<MDA	<MDA	<MDA				
6	<MDA	<MDA	<MDA				
7	<MDA	<MDA	<MDA				
8	<MDA	<MDA	<MDA				
9	<MDA	<MDA	<MDA				
10	<MDA	<MDA	<MDA				

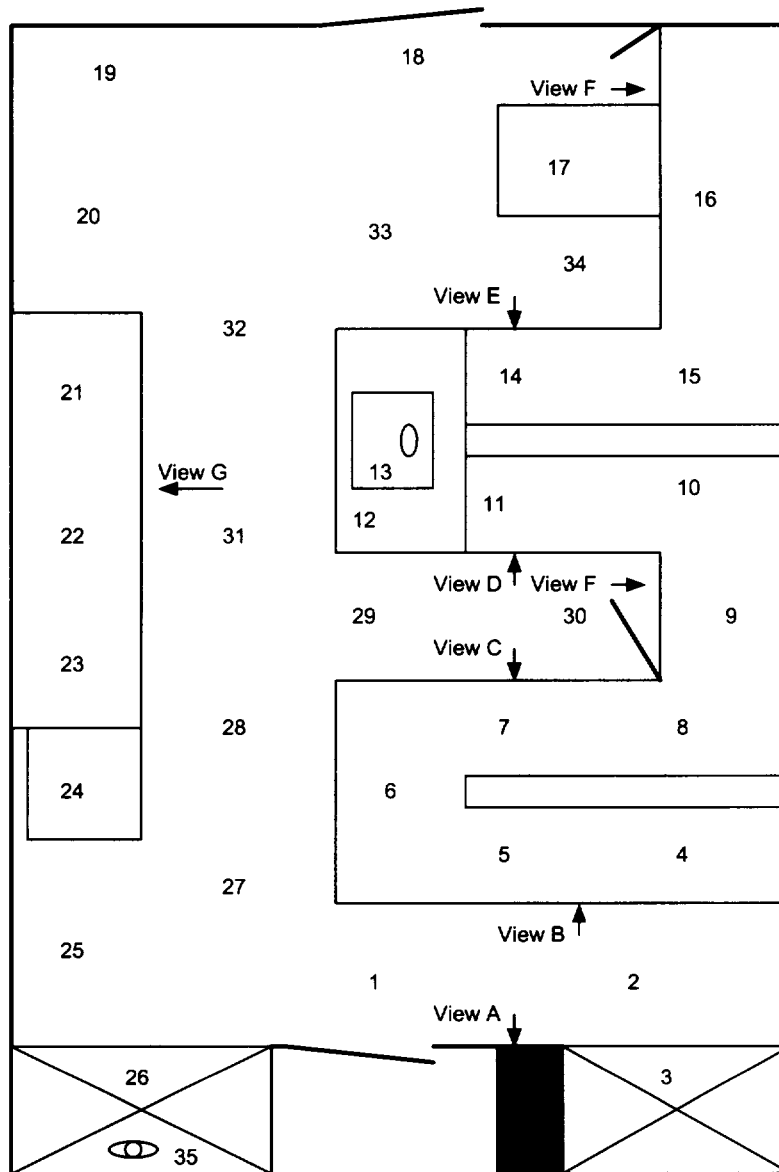
Room: 162 Main View

Name:

Notes: Part 1, smears 1 through 20



Autodesk and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA	12	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA	13	<MDA	<MDA	<MDA
4	<MDA	<MDA	<MDA	14	<MDA	<MDA	<MDA
5	<MDA	<MDA	<MDA	15	<MDA	<MDA	<MDA
6	<MDA	<MDA	<MDA	16	<MDA	<MDA	<MDA
7	<MDA	<MDA	<MDA	17	<MDA	<MDA	<MDA
8	<MDA	<MDA	<MDA	18	<MDA	<MDA	<MDA
9	<MDA	<MDA	<MDA	19	<MDA	<MDA	<MDA
10	<MDA	<MDA	<MDA	20	<MDA	<MDA	<MDA

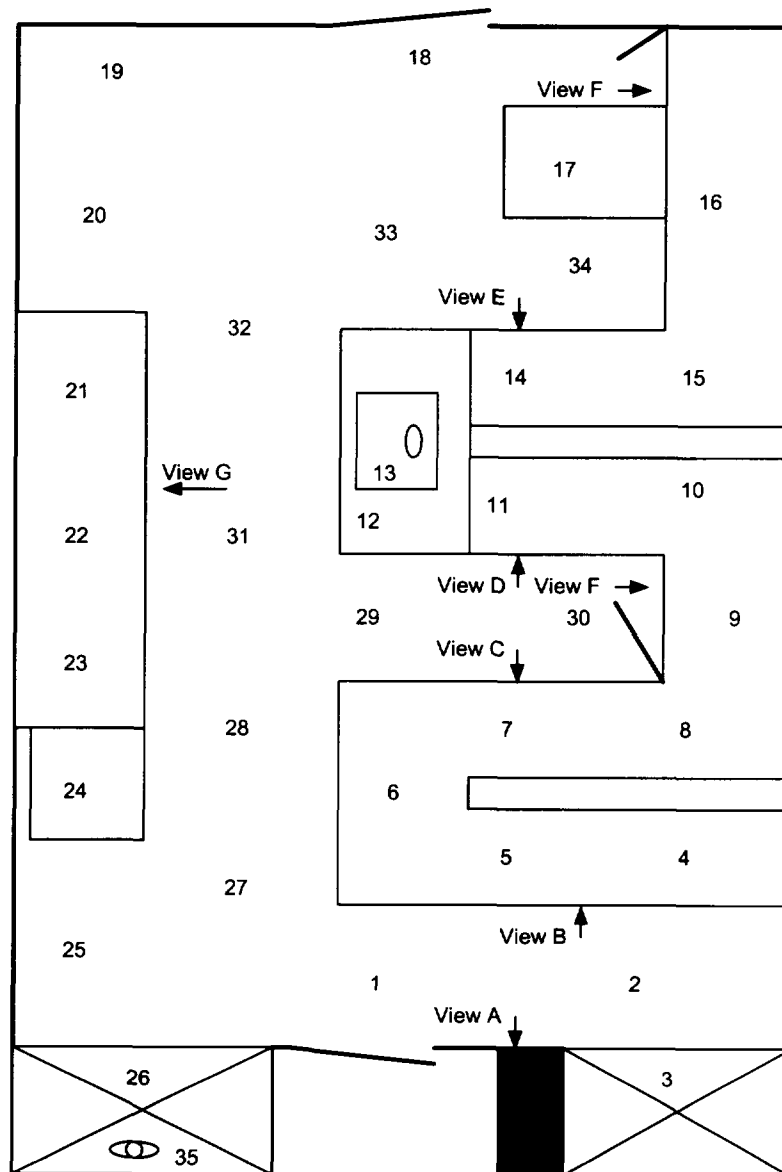
Room: 162 Main View

Name:

Notes: Part 2, smears 21 through 34



Antekwik and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
21	<MDA	<MDA	<MDA				
22	<MDA	<MDA	<MDA				
23	<MDA	<MDA	<MDA				
24	<MDA	<MDA	<MDA				
25	<MDA	<MDA	<MDA				
26	<MDA	<MDA	<MDA				
27	<MDA	<MDA	<MDA				
28	<MDA	<MDA	<MDA				
29	<MDA	<MDA	<MDA				
30	<MDA	<MDA	<MDA				

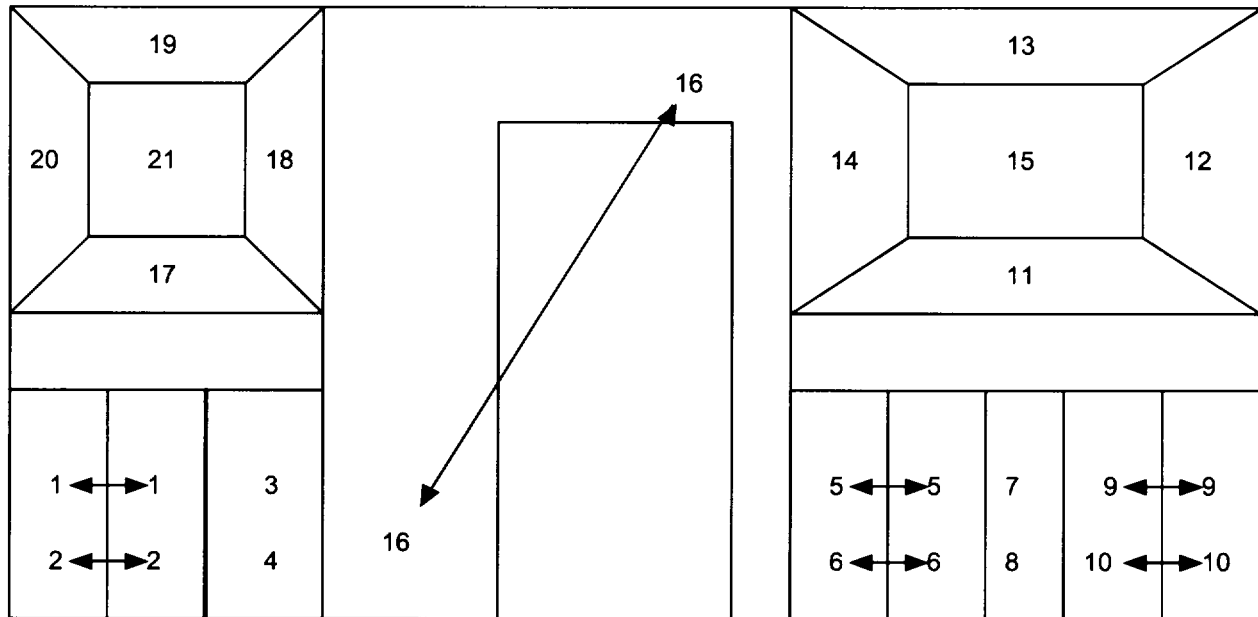
Room: 162 View A

Name:

Notes: Smear # 21 is <MDA in all three channels.



Arthur J. and Mahoney
Enterprises, Inc.



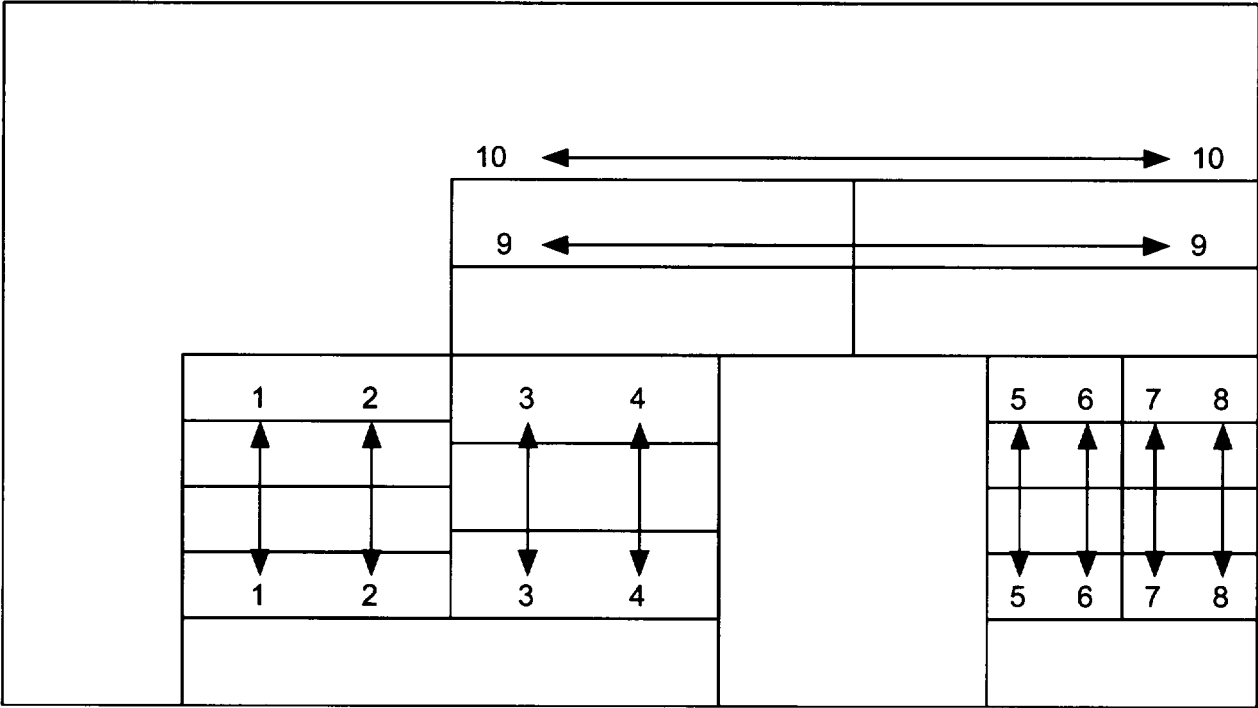
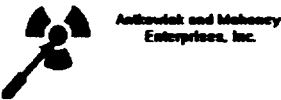
Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA	12	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA	13	<MDA	<MDA	<MDA
4	<MDA	<MDA	<MDA	14	<MDA	<MDA	<MDA
5	<MDA	<MDA	<MDA	15	<MDA	<MDA	<MDA
6	<MDA	<MDA	<MDA	16	<MDA	<MDA	<MDA
7	<MDA	<MDA	<MDA	17	<MDA	<MDA	<MDA
8	<MDA	<MDA	<MDA	18	<MDA	<MDA	<MDA
9	<MDA	<MDA	<MDA	19	<MDA	<MDA	<MDA
10	<MDA	<MDA	<MDA	20	<MDA	<MDA	<MDA

Room: 162 View B

Name:

Notes:



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA				
2	<MDA	<MDA	<MDA				
3	<MDA	<MDA	<MDA				
4	<MDA	<MDA	<MDA				
5	<MDA	<MDA	<MDA				
6	<MDA	<MDA	<MDA				
7	<MDA	<MDA	<MDA				
8	<MDA	<MDA	<MDA				
9	<MDA	<MDA	<MDA				
10	<MDA	<MDA	<MDA				

Notes:



**Autokrat and Mahoney
Enterprises, Inc.**

	1	2	
	↑	↑	
	↓	↓	
1	2		

[illegible]

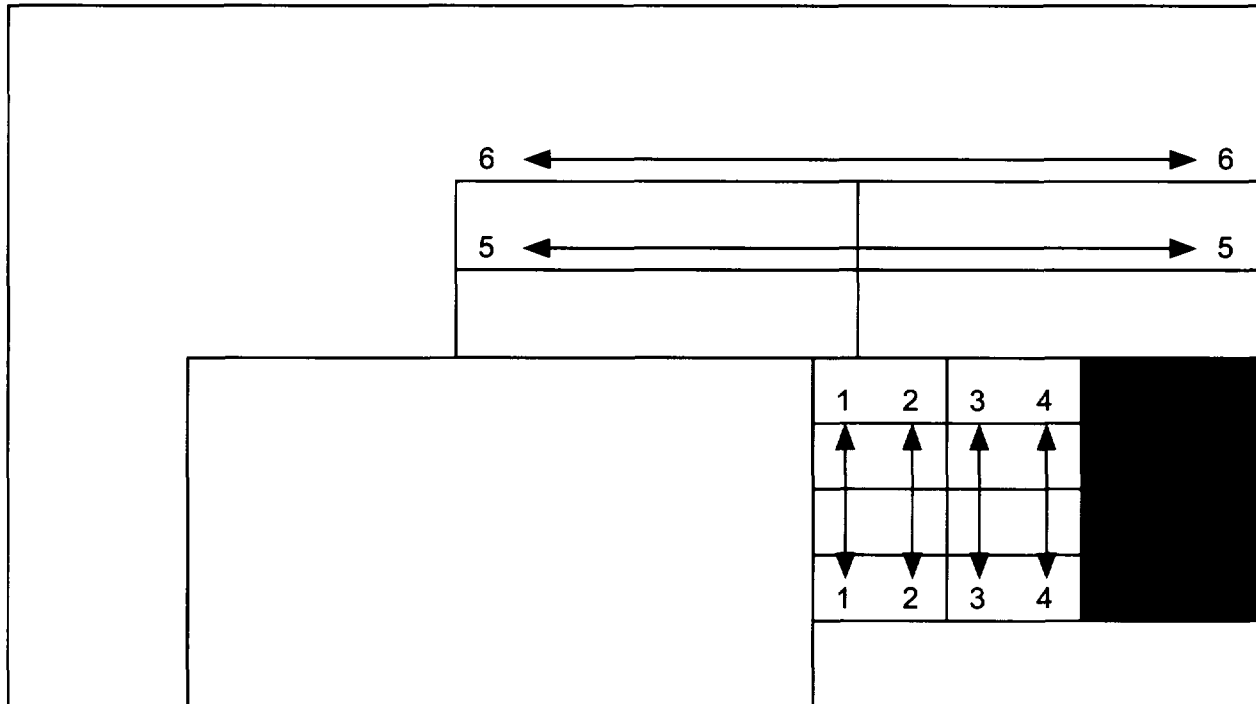
Room: 162 View D

Name:

Notes:



Andrew and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA				
2	<MDA	<MDA	<MDA				
3	<MDA	<MDA	<MDA				
4	<MDA	<MDA	<MDA				
5	<MDA	<MDA	<MDA				
6	<MDA	<MDA	<MDA				

Notes:

**Antkowiak and Mahoney
Enterprises, Inc.**[illegible][illegible]

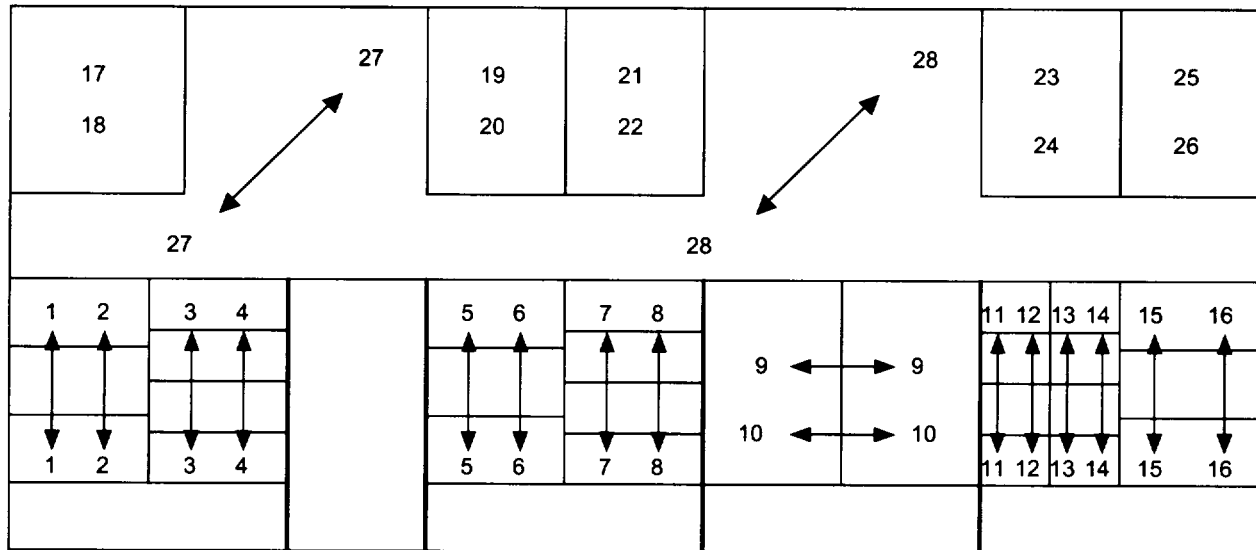
Room: 162 View F

Name:

Notes: Part 1, smears 1 through 20.



Antkowiak and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA	12	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA	13	<MDA	<MDA	<MDA
4	<MDA	<MDA	<MDA	14	<MDA	<MDA	<MDA
5	<MDA	<MDA	<MDA	15	<MDA	<MDA	<MDA
6	<MDA	<MDA	<MDA	16	<MDA	<MDA	<MDA
7	<MDA	<MDA	<MDA	17	<MDA	<MDA	<MDA
8	<MDA	<MDA	<MDA	18	<MDA	<MDA	<MDA
9	<MDA	<MDA	<MDA	19	<MDA	<MDA	<MDA
10	<MDA	<MDA	<MDA	20	<MDA	<MDA	<MDA

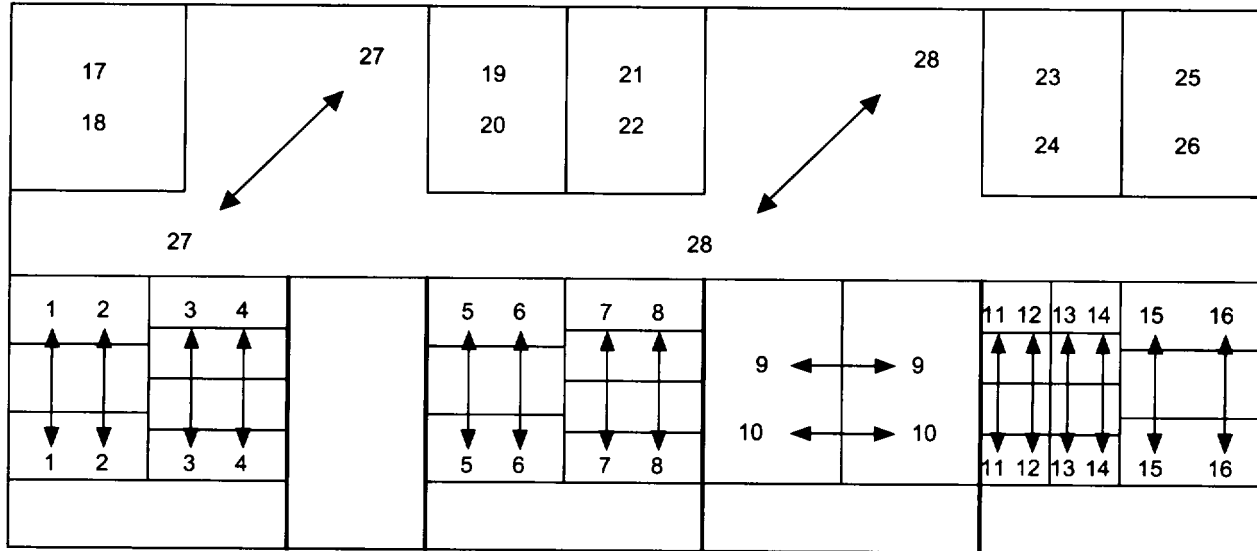
Room: 162 View F

Name:

Notes: Part 2, smears 21 through 28



Audubon and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
21	<MDA	<MDA	<MDA				
22	<MDA	<MDA	<MDA				
23	<MDA	<MDA	<MDA				
24	<MDA	<MDA	<MDA				
25	<MDA	<MDA	<MDA				
26	<MDA	<MDA	<MDA				
27	<MDA	<MDA	<MDA				
28	<MDA	<MDA	<MDA				

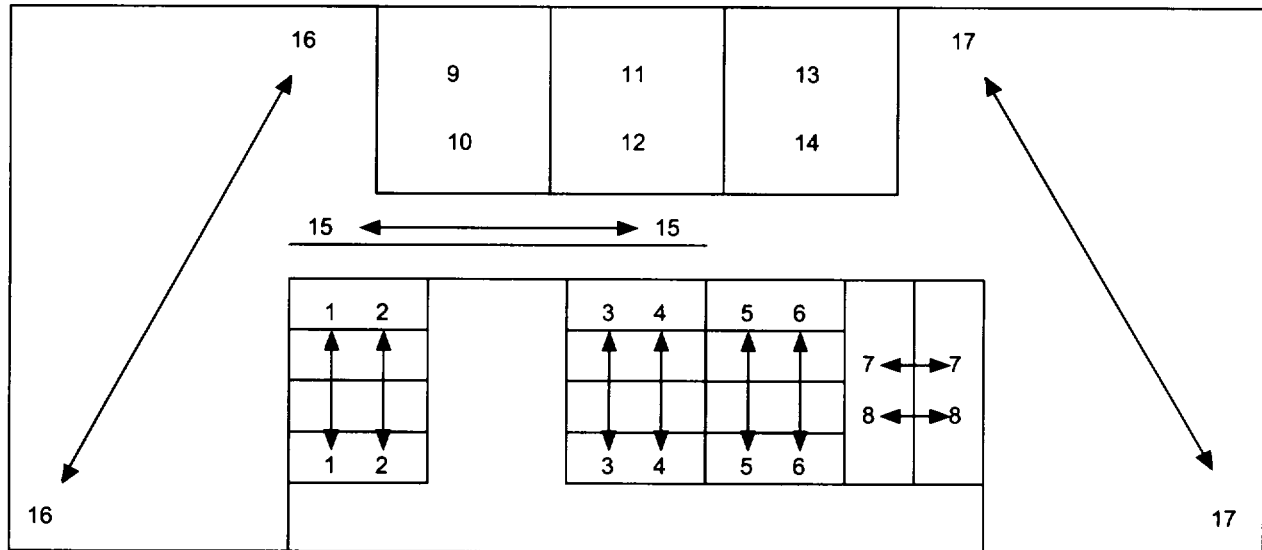
Room: 162 View G

Name:

Notes:



Andrew and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA	12	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA	13	<MDA	<MDA	<MDA
4	<MDA	<MDA	<MDA	14	<MDA	<MDA	<MDA
5	<MDA	<MDA	<MDA	15	<MDA	<MDA	<MDA
6	<MDA	<MDA	<MDA	16	<MDA	<MDA	<MDA
7	<MDA	<MDA	<MDA	17	<MDA	<MDA	<MDA
8	<MDA	<MDA	<MDA				
9	<MDA	<MDA	<MDA				
10	<MDA	<MDA	<MDA				

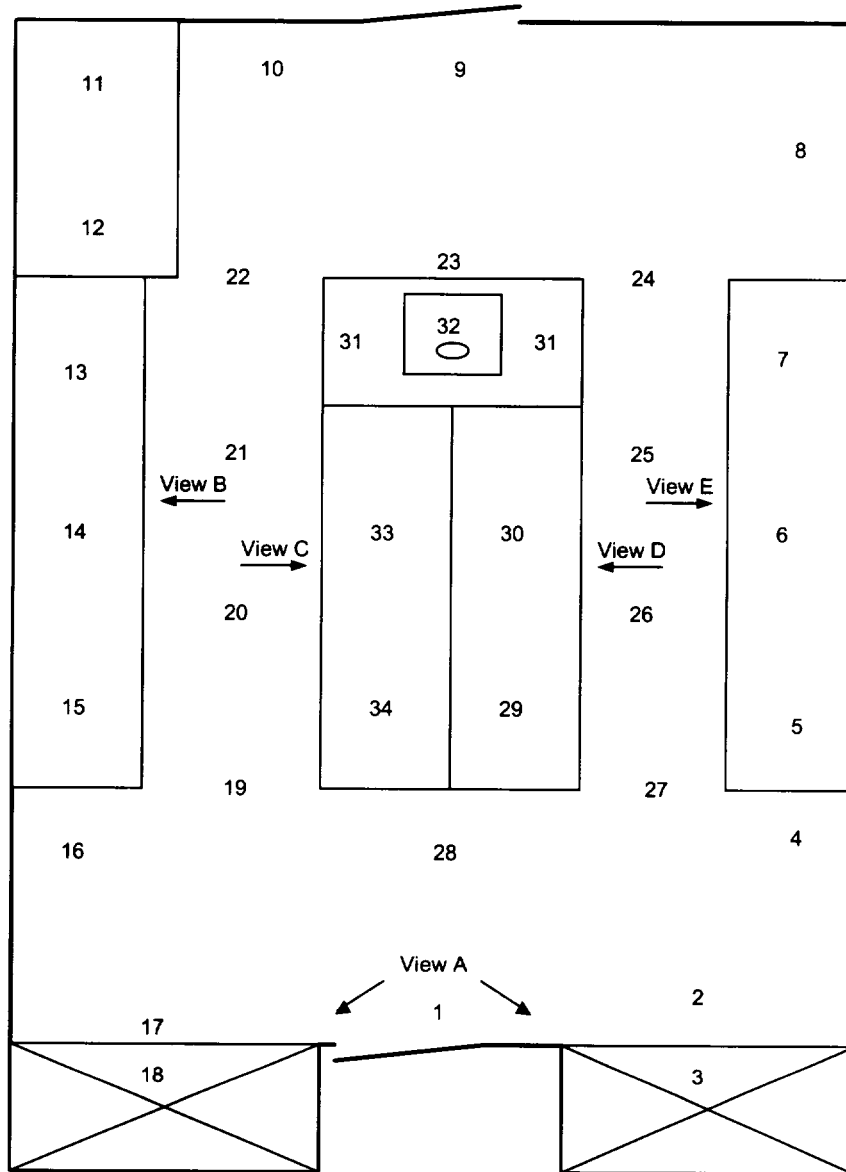
Room: 164 Main View

Name:

Notes: Part 1, smears 1 through 20



Andrusch and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA	12	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA	13	<MDA	<MDA	<MDA
4	<MDA	<MDA	<MDA	14	<MDA	<MDA	<MDA
5	<MDA	<MDA	<MDA	15	<MDA	<MDA	<MDA
6	<MDA	<MDA	<MDA	16	<MDA	<MDA	<MDA
7	<MDA	<MDA	<MDA	17	<MDA	<MDA	<MDA
8	<MDA	<MDA	<MDA	18	<MDA	<MDA	<MDA
9	<MDA	<MDA	<MDA	19	<MDA	<MDA	<MDA
10	<MDA	<MDA	<MDA	20	<MDA	<MDA	<MDA

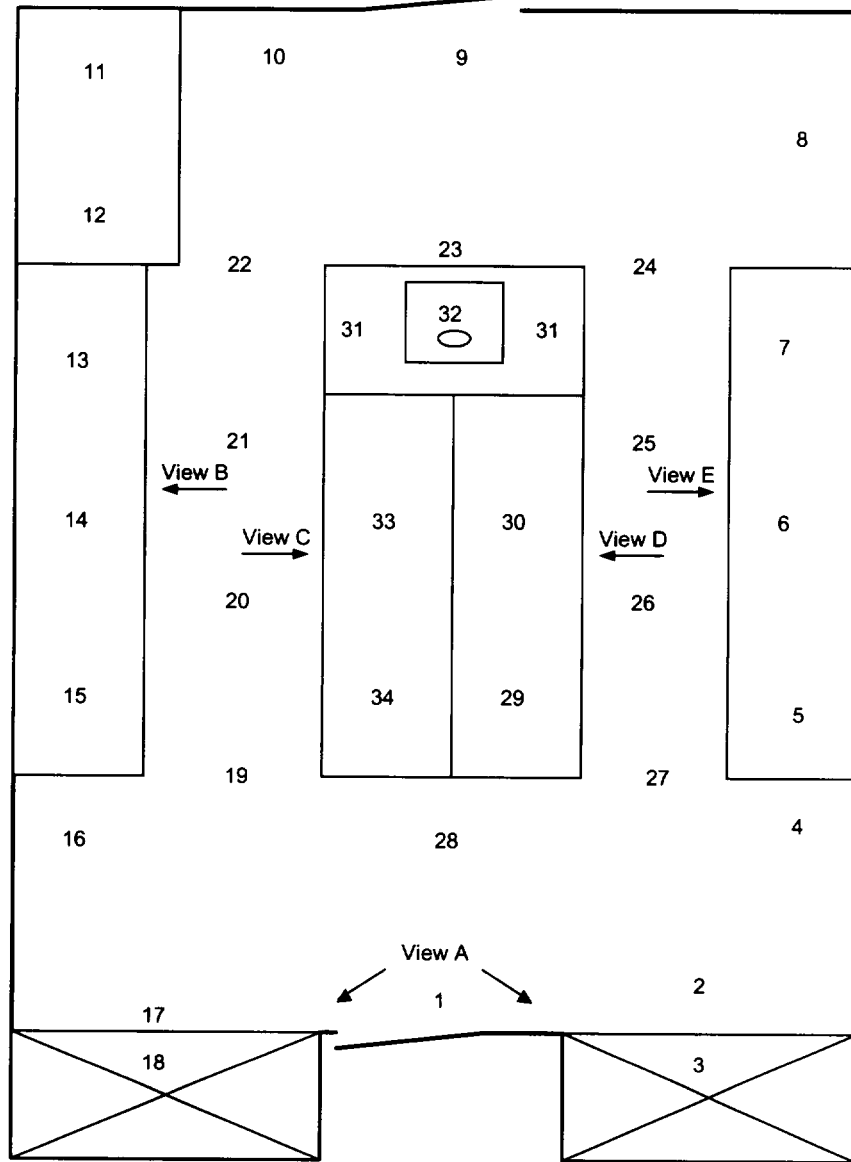
Room: 164 Main View

Name:

Notes: Part 2, smears 21 through 34



Andrusch and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
21	<MDA	<MDA	<MDA	31	<MDA	<MDA	<MDA
22	<MDA	<MDA	<MDA	32	<MDA	<MDA	<MDA
23	<MDA	<MDA	<MDA	33	<MDA	<MDA	<MDA
24	<MDA	<MDA	<MDA	34	<MDA	<MDA	<MDA
25	<MDA	<MDA	<MDA				
26	<MDA	<MDA	<MDA				
27	<MDA	<MDA	<MDA				
28	<MDA	<MDA	<MDA				
29	<MDA	<MDA	<MDA				
30	<MDA	<MDA	<MDA				

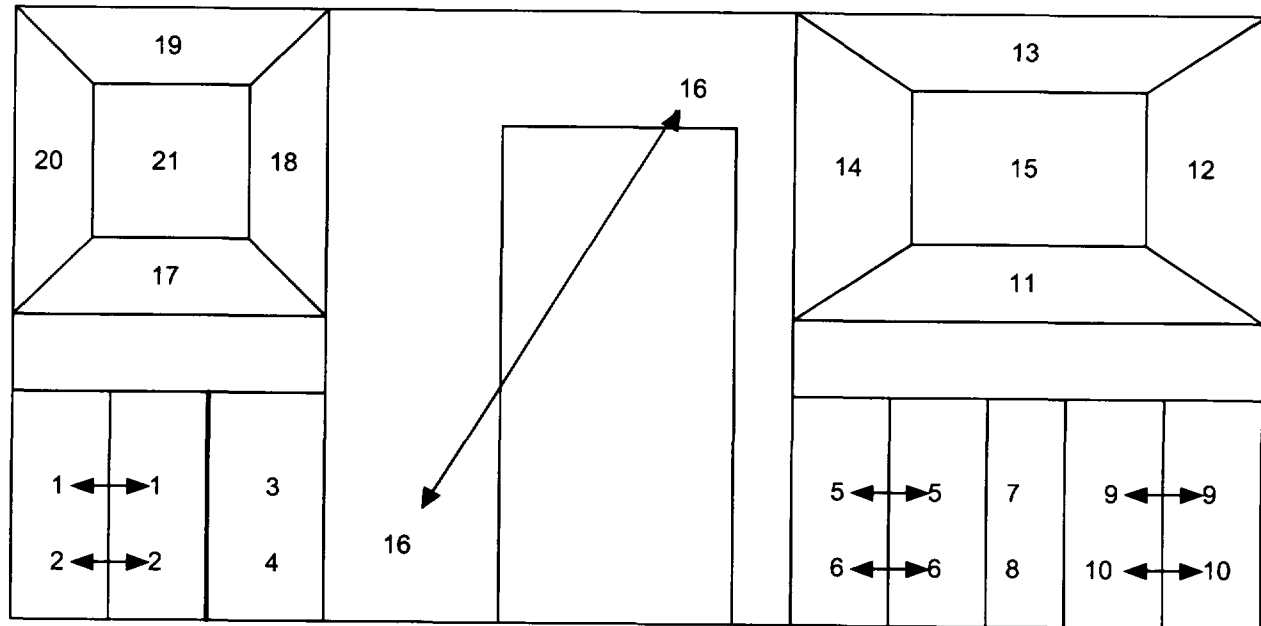
Room: 164 View A

Name:

Notes: Smear # 21 is <MDA in all three channels.



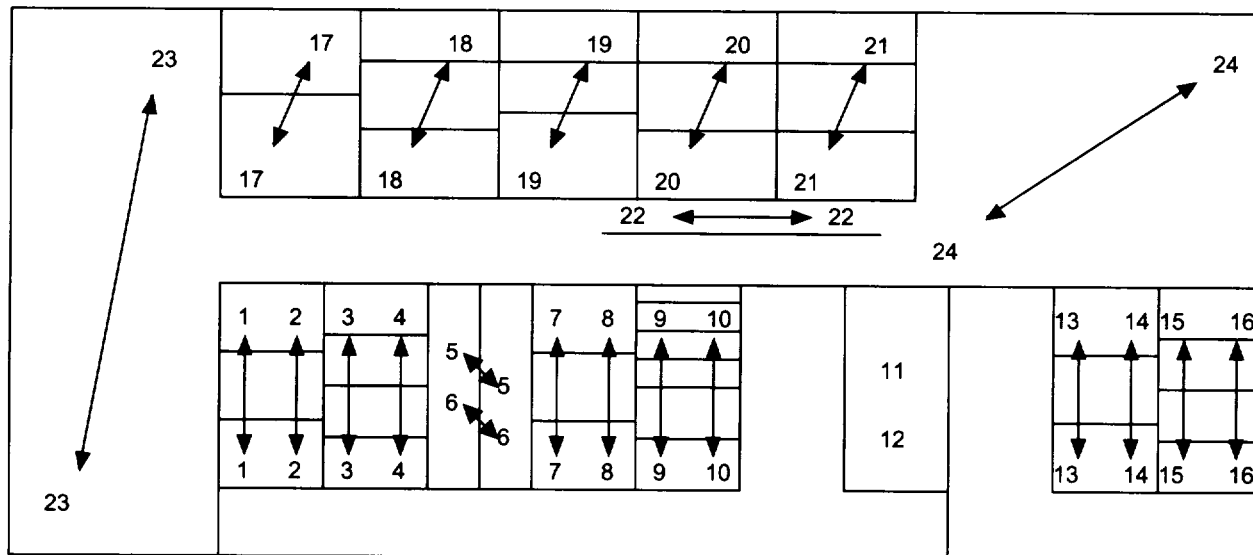
Arthurak and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA	12	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA	13	<MDA	<MDA	<MDA
4	<MDA	<MDA	<MDA	14	<MDA	<MDA	<MDA
5	<MDA	<MDA	<MDA	15	<MDA	<MDA	<MDA
6	<MDA	<MDA	<MDA	16	<MDA	<MDA	<MDA
7	<MDA	<MDA	<MDA	17	<MDA	<MDA	<MDA
8	<MDA	<MDA	<MDA	18	<MDA	<MDA	<MDA
9	<MDA	<MDA	<MDA	19	<MDA	<MDA	<MDA
10	<MDA	<MDA	<MDA	20	<MDA	<MDA	<MDA

Notes: Part 1, smears 1 through 20

**Authorlink and Mahoney Enterprises, Inc.**

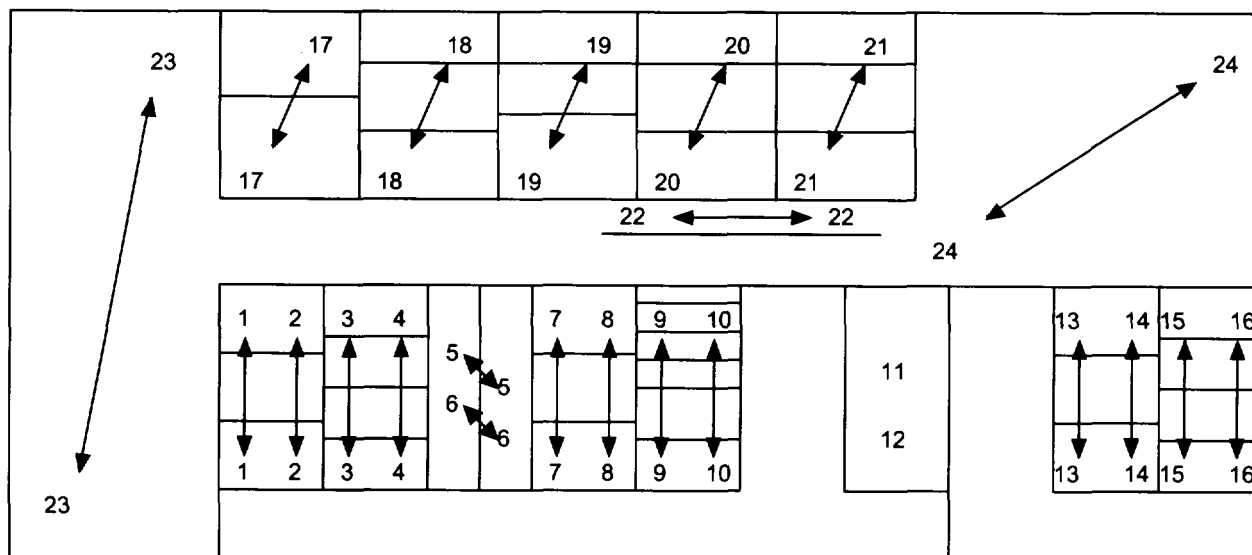
Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA
4	<MDA	<MDA	<MDA
5	<MDA	<MDA	<MDA
6	<MDA	<MDA	<MDA
7	<MDA	<MDA	<MDA
8	<MDA	<MDA	<MDA
9	<MDA	<MDA	<MDA
10	<MDA	<MDA	<MDA

Smear ID	Channel 1	Channel 2	Channel 3
11	<MDA	<MDA	<MDA
12	<MDA	<MDA	<MDA
13	<MDA	<MDA	<MDA
14	<MDA	<MDA	<MDA
15	<MDA	<MDA	<MDA
16	<MDA	<MDA	<MDA
17	<MDA	<MDA	<MDA
18	<MDA	<MDA	<MDA
19	<MDA	<MDA	<MDA
20	<MDA	<MDA	<MDA

Notes: Part 2, smears 21 through 24



**Antkowiak and Mahoney
Enterprises, Inc.**

[illegible]

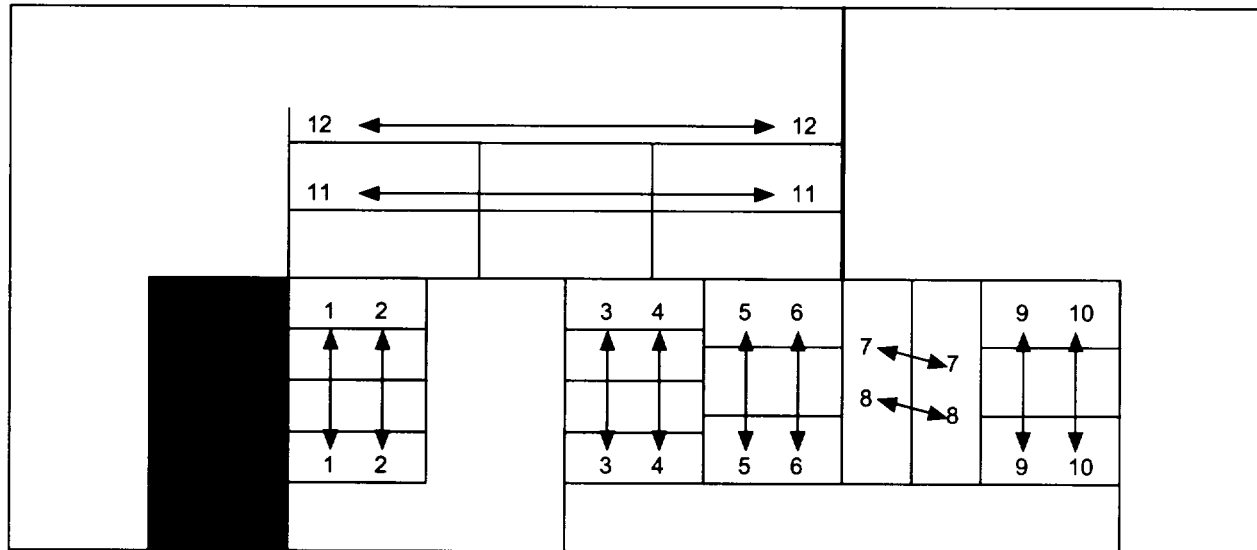
Room: 164 View C

Name:

Notes:



Antikwik and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA	12	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA				
4	<MDA	<MDA	<MDA				
5	<MDA	<MDA	<MDA				
6	<MDA	<MDA	<MDA				
7	<MDA	<MDA	<MDA				
8	<MDA	<MDA	<MDA				
9	<MDA	<MDA	<MDA				
10	<MDA	<MDA	<MDA				

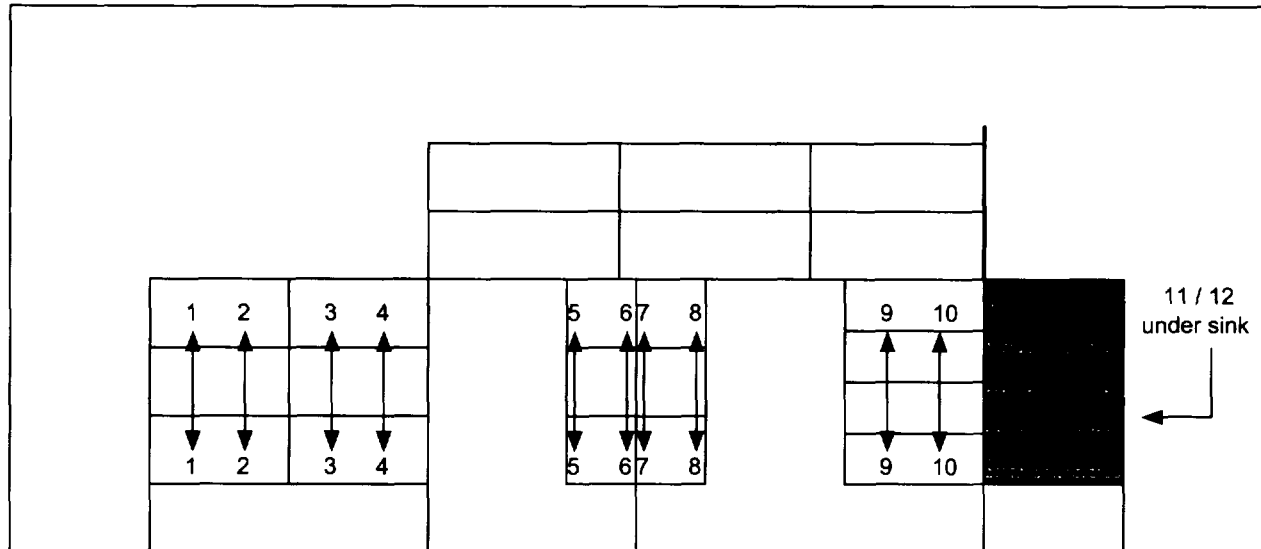
Room: 164 View D

Name:

Notes:



Andrewink and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA	12	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA				
4	<MDA	<MDA	<MDA				
5	<MDA	<MDA	<MDA				
6	<MDA	<MDA	<MDA				
7	<MDA	<MDA	<MDA				
8	<MDA	<MDA	<MDA				
9	<MDA	<MDA	<MDA				
10	<MDA	<MDA	<MDA				

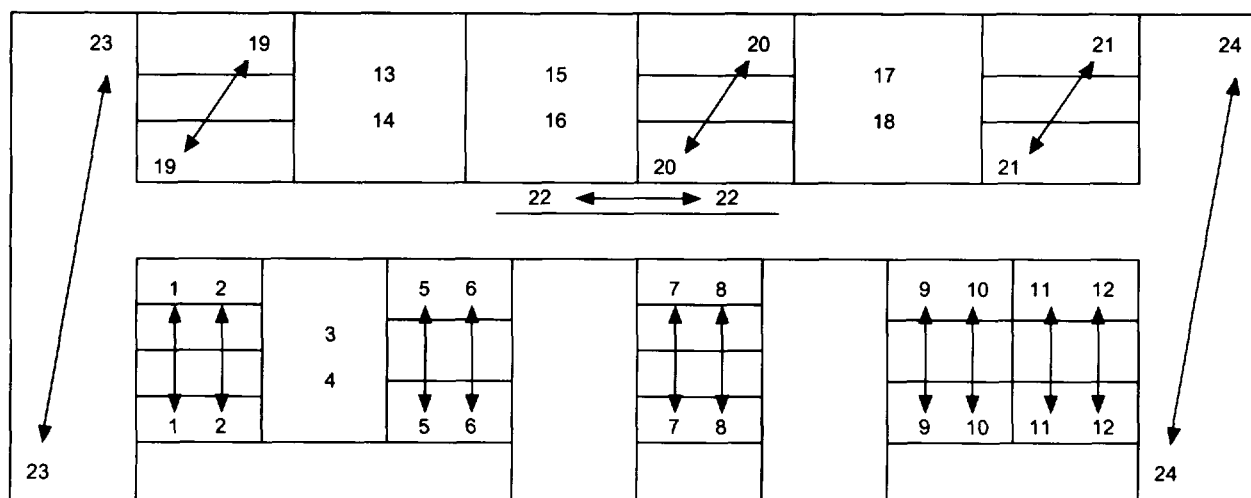
Room: 164 View E

Name:

Notes: Part 1, smears 1 through 20



Antares and Mahoney
Enterprises, Inc.



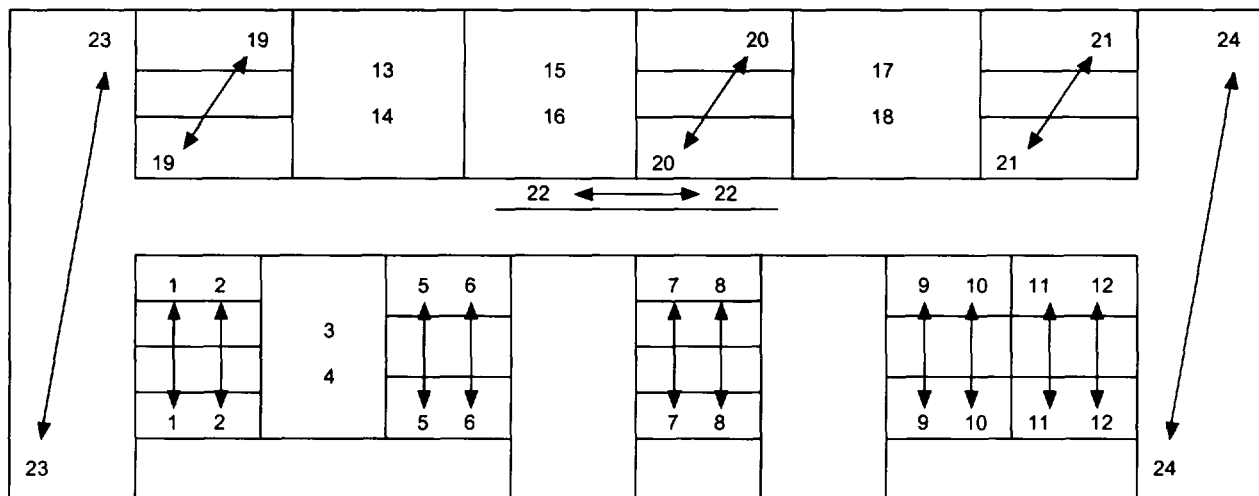
Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA	12	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA	13	<MDA	<MDA	<MDA
4	<MDA	<MDA	<MDA	14	<MDA	<MDA	<MDA
5	<MDA	<MDA	<MDA	15	<MDA	<MDA	<MDA
6	<MDA	<MDA	<MDA	16	<MDA	<MDA	<MDA
7	<MDA	<MDA	<MDA	17	<MDA	<MDA	<MDA
8	<MDA	<MDA	<MDA	18	<MDA	<MDA	<MDA
9	<MDA	<MDA	<MDA	19	<MDA	<MDA	<MDA
10	<MDA	<MDA	<MDA	20	<MDA	<MDA	<MDA

Notes: Part 2, smears 21 through 24



**Anderson and Mahoney
Enterprises, Inc.**



Smear Analysis Results - Analysis by Liquid Scintillation Counting

[illegible]

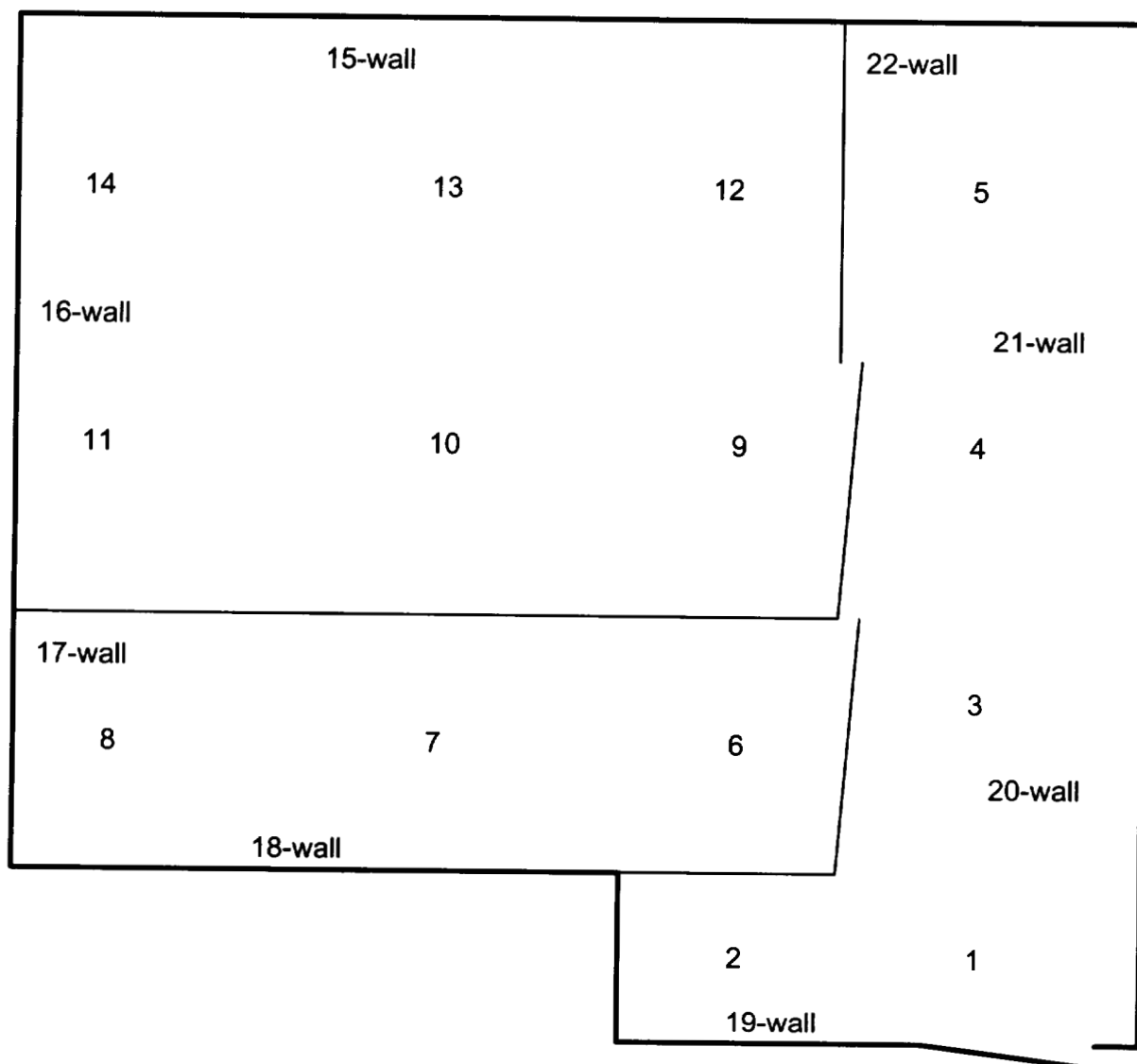
Room: 180 Main View (Waste Room)

Name:

Notes: Part 1, smears 1 through 20.



Andromedak and Mahoney
Enterprises, Inc.



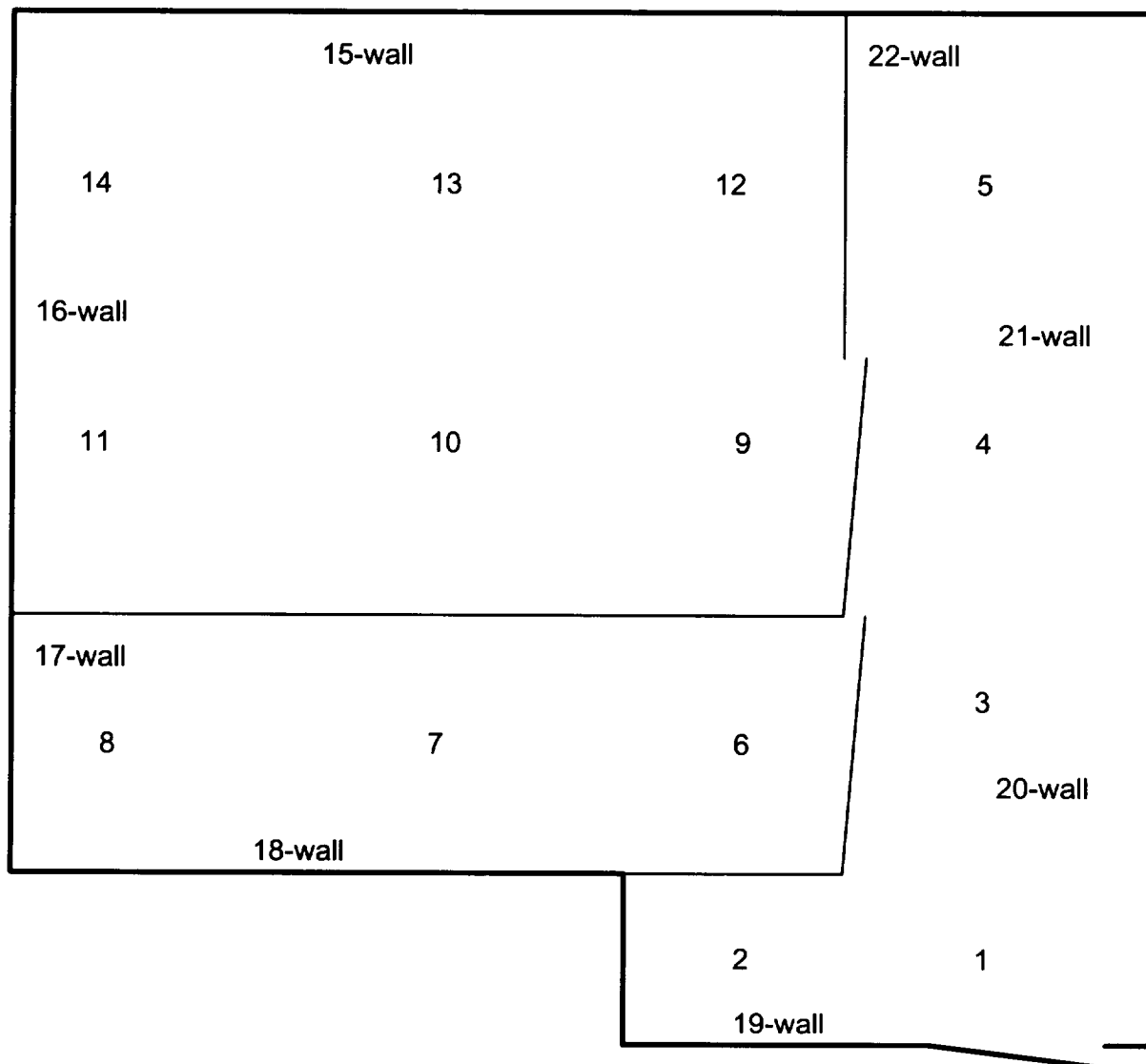
Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA	12	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA	13	<MDA	<MDA	<MDA
4	<MDA	<MDA	<MDA	14	<MDA	<MDA	<MDA
5	<MDA	<MDA	<MDA	15	<MDA	<MDA	<MDA
6	<MDA	<MDA	<MDA	16	<MDA	<MDA	<MDA
7	<MDA	<MDA	<MDA	17	<MDA	<MDA	<MDA
8	<MDA	<MDA	<MDA	18	<MDA	<MDA	<MDA
9	<MDA	<MDA	<MDA	19	<MDA	<MDA	<MDA
10	<MDA	<MDA	<MDA	20	<MDA	<MDA	<MDA

Notes: Part 2, smears 21 through 23



**Arthurwick and Mahoney
Enterprises, Inc.**



23-floor in hallway

Smear Analysis Results - Analysis by Liquid Scintillation Counting

[illegible]

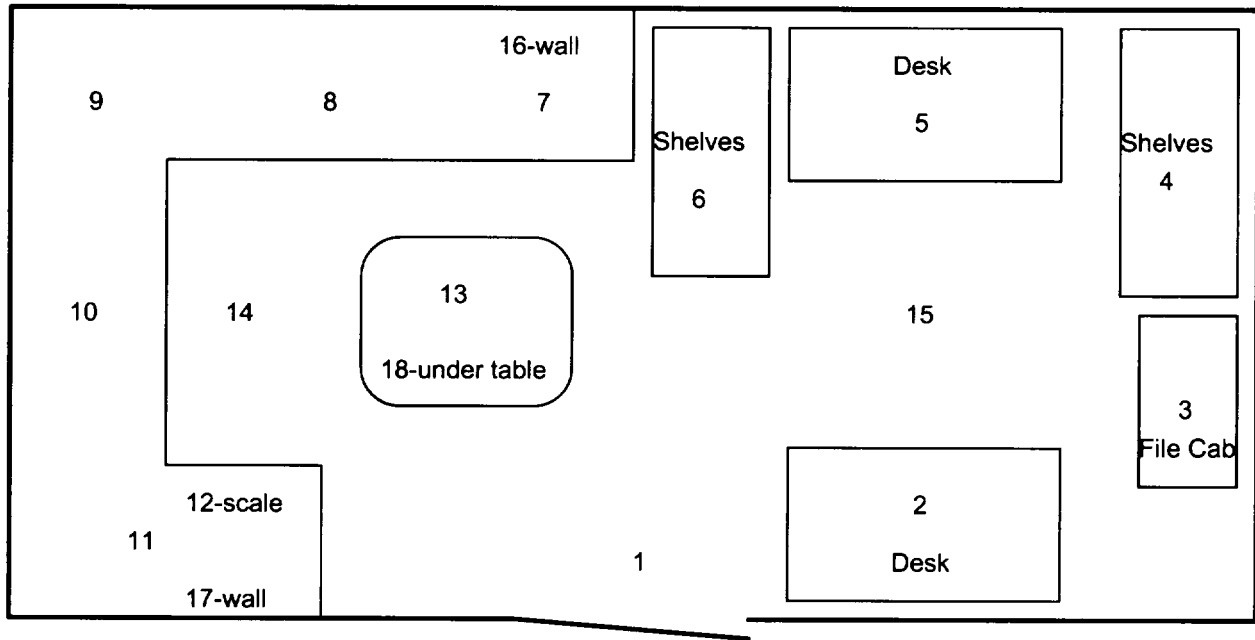
Room: 195C Main View

Name:

Notes:



Arthur J. Ginter and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA	12	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA	13	<MDA	<MDA	<MDA
4	<MDA	<MDA	<MDA	14	<MDA	<MDA	<MDA
5	<MDA	<MDA	<MDA	15	<MDA	<MDA	<MDA
6	<MDA	<MDA	<MDA	16	<MDA	<MDA	<MDA
7	<MDA	<MDA	<MDA	17	<MDA	<MDA	<MDA
8	<MDA	<MDA	<MDA	18	<MDA	<MDA	<MDA
9	<MDA	<MDA	<MDA				
10	<MDA	<MDA	<MDA				

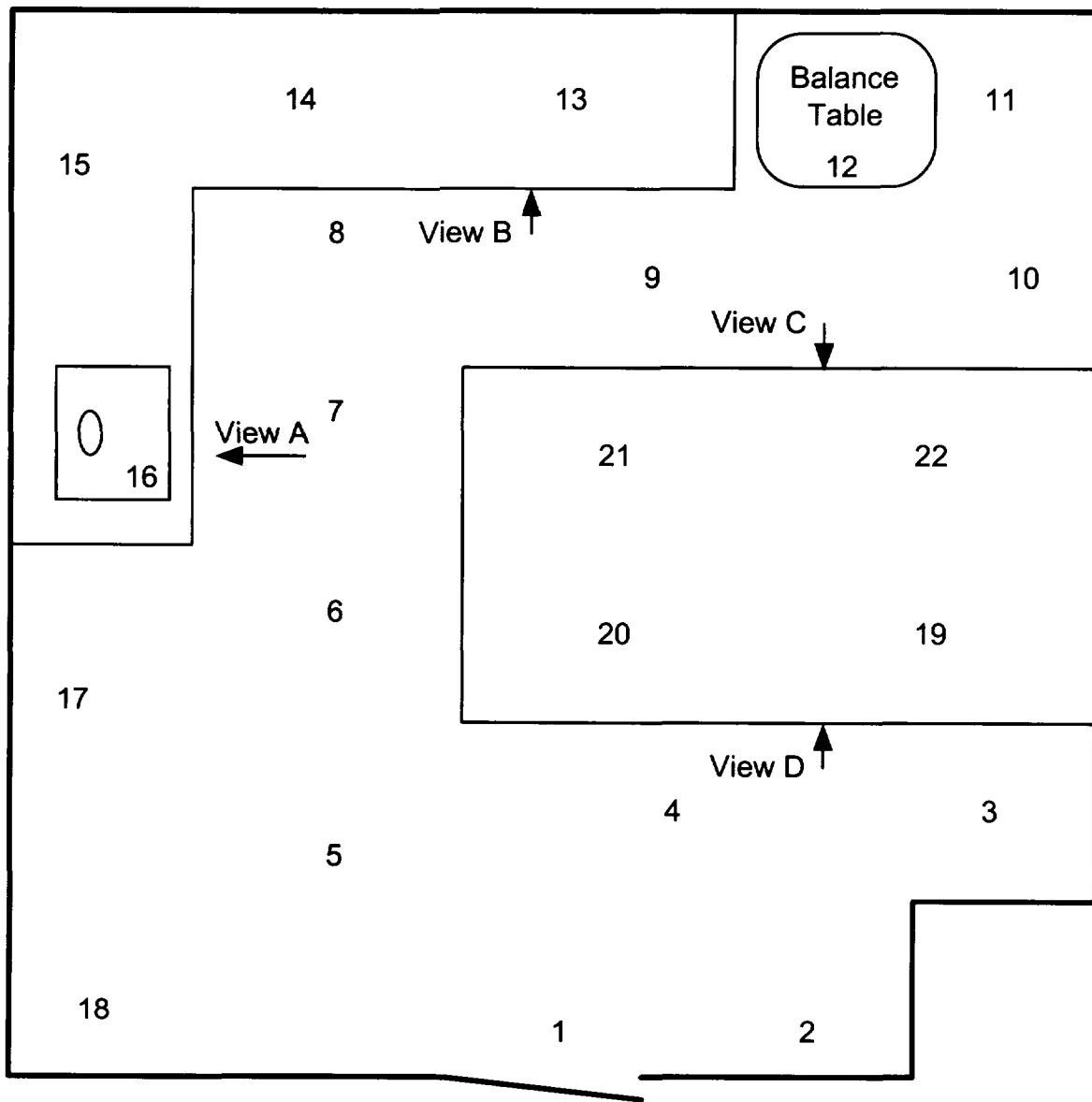
Room: 242 Main View

Name:

Notes:



Antkowiak and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA	12	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA	13	<MDA	<MDA	<MDA
4	<MDA	<MDA	<MDA	14	<MDA	<MDA	<MDA
5	<MDA	<MDA	<MDA	15	<MDA	<MDA	<MDA
6	<MDA	<MDA	<MDA	16	<MDA	<MDA	<MDA
7	<MDA	<MDA	<MDA	17	<MDA	<MDA	<MDA
8	<MDA	<MDA	<MDA	18	<MDA	<MDA	<MDA
9	<MDA	<MDA	<MDA				
10	<MDA	<MDA	<MDA				

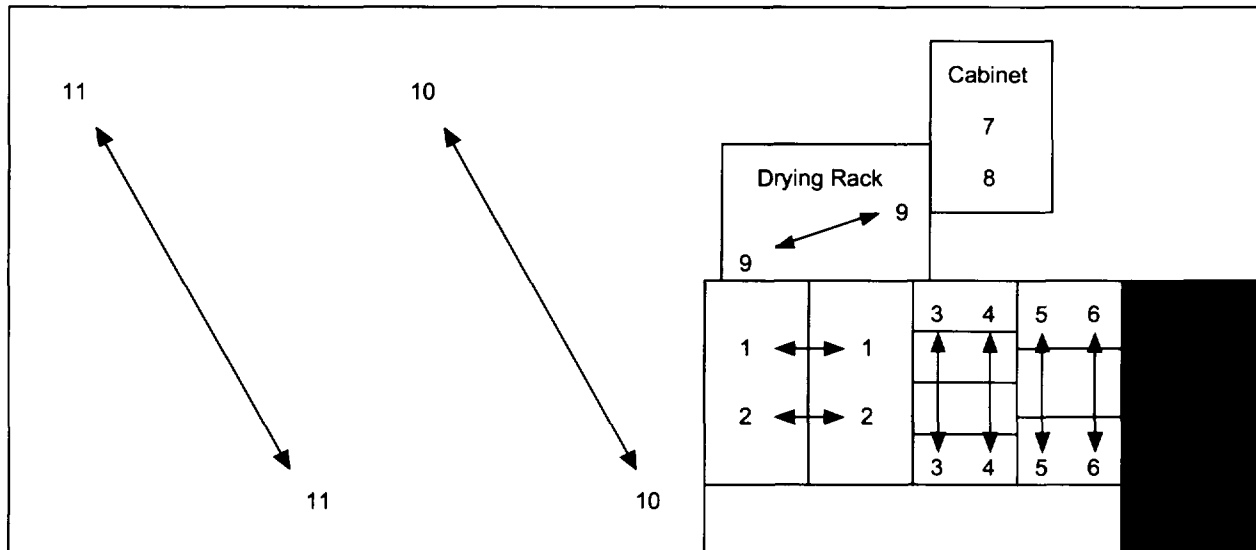
Room: 242 View A

Name:

Notes:



Antekwik and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA				
3	<MDA	<MDA	<MDA				
4	<MDA	<MDA	<MDA				
5	<MDA	<MDA	<MDA				
6	<MDA	<MDA	<MDA				
7	<MDA	<MDA	<MDA				
8	<MDA	<MDA	<MDA				
9	<MDA	<MDA	<MDA				
10	<MDA	<MDA	<MDA				

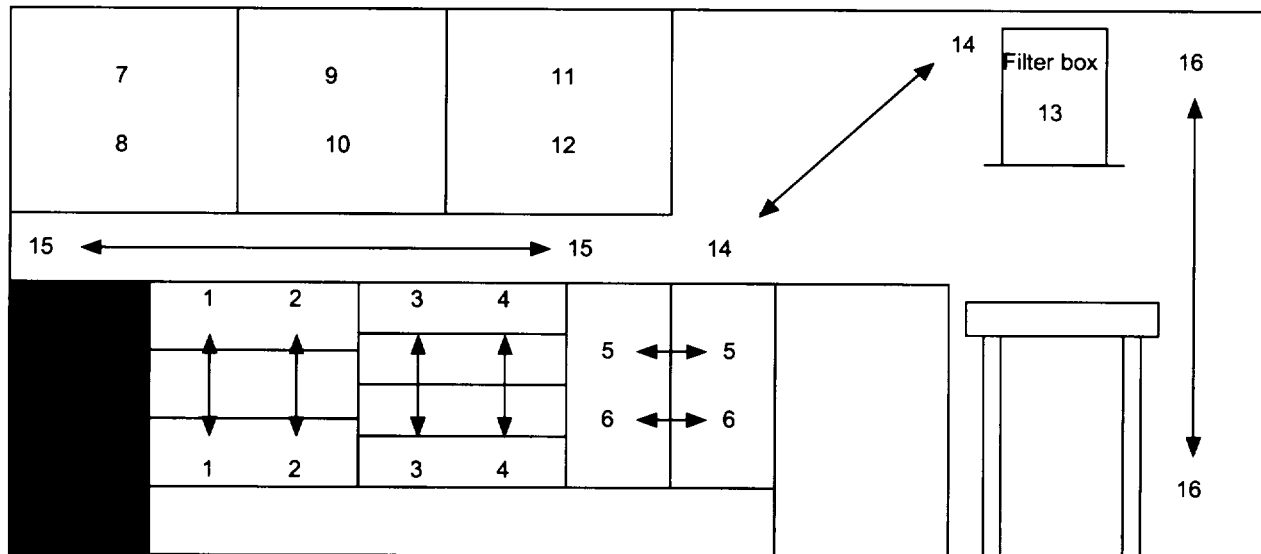
Room: 242 View B

Name:

Notes:



Artizus and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA	12	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA	13	<MDA	<MDA	<MDA
4	<MDA	<MDA	<MDA	14	<MDA	<MDA	<MDA
5	<MDA	<MDA	<MDA	15	<MDA	<MDA	<MDA
6	<MDA	<MDA	<MDA	16	<MDA	<MDA	<MDA
7	<MDA	<MDA	<MDA				
8	<MDA	<MDA	<MDA				
9	<MDA	<MDA	<MDA				
10	<MDA	<MDA	<MDA				

Room: 242 View C

Name:

Notes:



Arthurwick and Mahoney
Enterprises, Inc.

1	2	3	4	5	6	7	8	9	10
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
1	2	3	4	5	6	7	8	9	10

Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA				
2	<MDA	<MDA	<MDA				
3	<MDA	<MDA	<MDA				
4	<MDA	<MDA	<MDA				
5	<MDA	<MDA	<MDA				
6	<MDA	<MDA	<MDA				
7	<MDA	<MDA	<MDA				
8	<MDA	<MDA	<MDA				
9	<MDA	<MDA	<MDA				
10	<MDA	<MDA	<MDA				

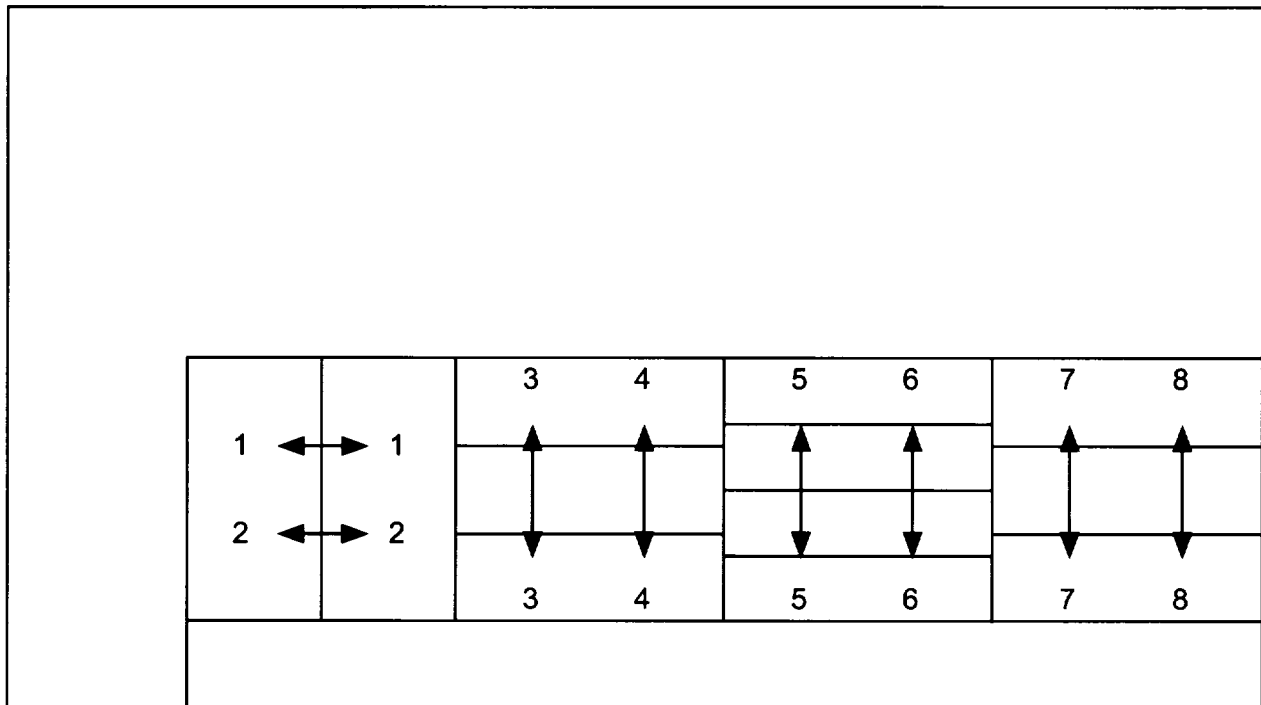
Room: 242 View D

Name:

Notes:



Arthur J. and Maryann
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA				
2	<MDA	<MDA	<MDA				
3	<MDA	<MDA	<MDA				
4	<MDA	<MDA	<MDA				
5	<MDA	<MDA	<MDA				
6	<MDA	<MDA	<MDA				
7	<MDA	<MDA	<MDA				
8	<MDA	<MDA	<MDA				

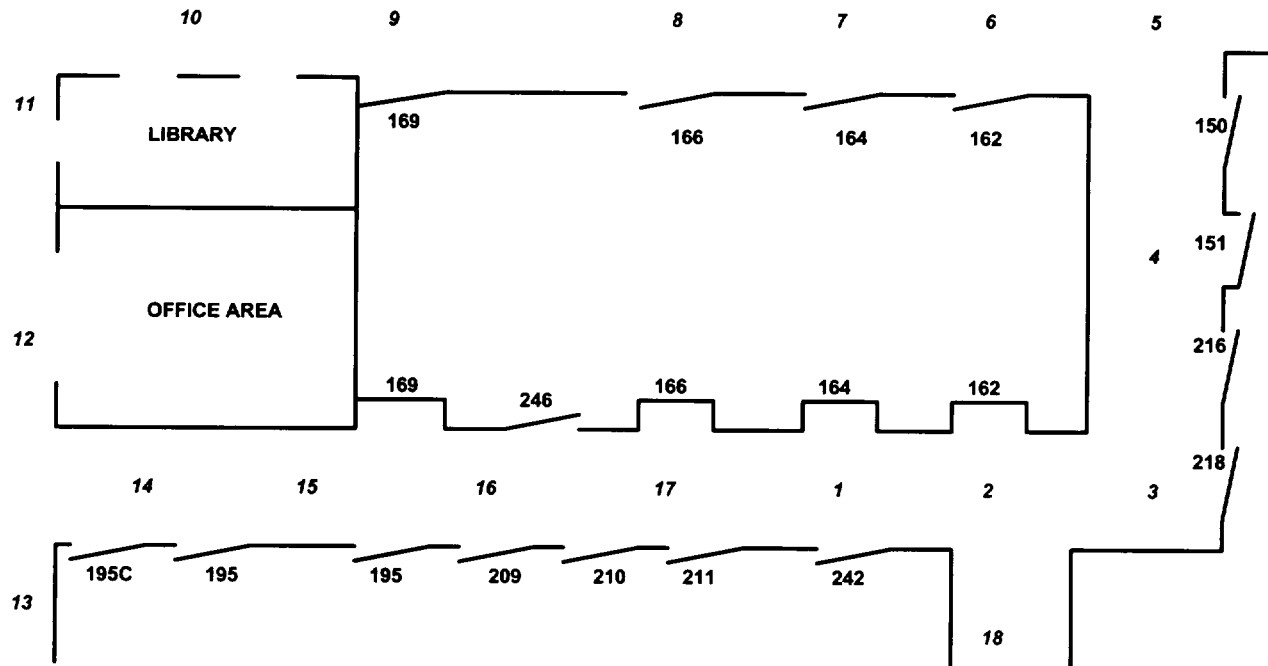
Room: Hallway

Name:

Notes:



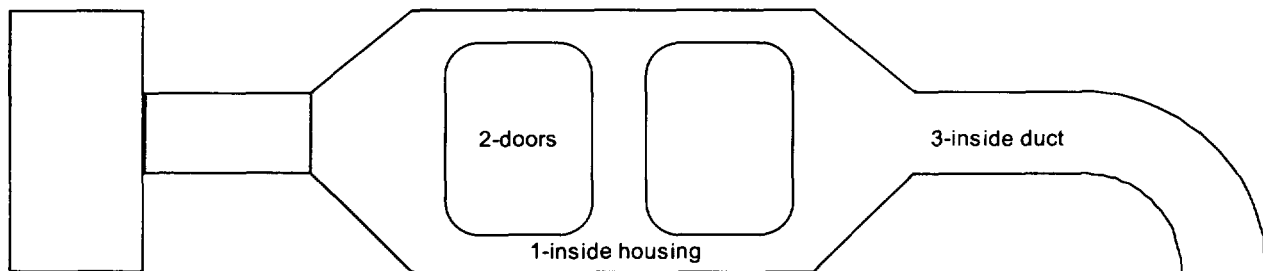
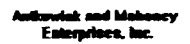
Andrew and Mahoney
Enterprises, Inc.



Smear Analysis Results - Analysis by Liquid Scintillation Counting

Smear ID	Channel 1	Channel 2	Channel 3	Smear ID	Channel 1	Channel 2	Channel 3
1	<MDA	<MDA	<MDA	11	<MDA	<MDA	<MDA
2	<MDA	<MDA	<MDA	12	<MDA	<MDA	<MDA
3	<MDA	<MDA	<MDA	13	<MDA	<MDA	<MDA
4	<MDA	<MDA	<MDA	14	<MDA	<MDA	<MDA
5	<MDA	<MDA	<MDA	15	<MDA	<MDA	<MDA
6	<MDA	<MDA	<MDA	16	<MDA	<MDA	<MDA
7	<MDA	<MDA	<MDA	17	<MDA	<MDA	<MDA
8	<MDA	<MDA	<MDA	18	<MDA	<MDA	<MDA
9	<MDA	<MDA	<MDA				
10	<MDA	<MDA	<MDA				

Notes:

[illegible]



**Antkowiak and Mahoney
Enterprises, Inc.**

Appendix II

Scalar Measurements



Scalar Measurements – Room 150 and 162

Ludlum Model 12, serial no. 193772

Surveyed: 7/6/05

MDA = 92 dpm/100 cm²

Location	Smear Number	Reading (cpm)	Activity (dpm/100 cm ²)
Room 150, Front Room	1	6211	<MDA
Room 150, Front Room	4	6322	<MDA
Room 150, Front Room	8	6298	<MDA
Room 150, Back Room	2	6279	<MDA
Room 150, Back Room	5	6301	<MDA
Room 150, Back Room	7	6199	<MDA
Room 162, Main View	1	6255	<MDA
Room 162, Main View	4	6247	<MDA
Room 162, Main View	7	6399	<MDA
Room 162, Main View	11	6341	<MDA
Room 162, Main View	16	6366	<MDA
Room 162, Main View	20	6403	<MDA
Room 162, Main View	23	6359	<MDA
Room 162, Main View	27	6389	<MDA
Room 162, Main View	31	6387	<MDA
Room 162, View A	2	6100	<MDA
Room 162, View A	5	6225	<MDA
Room 162, View A	8	6183	<MDA
Room 162, View A	11	6179	<MDA
Room 162, View A	16	6097	<MDA
Room 162, View A	17	6211	<MDA
Room 162, View B	3	6327	<MDA
Room 162, View B	8	6274	<MDA
Room 162, View B	10	6270	<MDA
Room 162, View C	3	6265	<MDA
Room 162, View D	2	6176	<MDA
Room 162, View D	5	6227	<MDA
Room 162, View E	1	6303	<MDA



Scalar Measurements – Room 162 and 164

Ludlum Model 12, serial no. 193772

Surveyed: 7/7/05

MDA = 94 dpm/100 cm²

Location	Smear Number	Reading (cpm)	Activity (dpm/100 cm ²)
Room 162, View F	1	6312	<MDA
Room 162, View F	4	6401	<MDA
Room 162, View F	8	6377	<MDA
Room 162, View F	11	6279	<MDA
Room 162, View F	15	6284	<MDA
Room 162, View F	19	6266	<MDA
Room 162, View F	23	6231	<MDA
Room 162, View F	27	6313	<MDA
Room 162, View G	2	6247	<MDA
Room 162, View G	5	6270	<MDA
Room 162, View G	8	6237	<MDA
Room 162, View G	12	6311	<MDA
Room 162, View G	15	6324	<MDA
Room 164, Main View	1	6389	<MDA
Room 164, Main View	4	6387	<MDA
Room 164, Main View	9	6387	<MDA
Room 164, Main View	13	6100	<MDA
Room 164, Main View	18	6225	<MDA
Room 164, Main View	22	6183	<MDA
Room 164, Main View	25	6179	<MDA
Room 164, Main View	29	6097	<MDA
Room 164, Main View	33	6211	<MDA
Room 164, View A	2	6199	<MDA
Room 164, View A	6	6255	<MDA
Room 164, View A	10	6217	<MDA
Room 164, View A	14	6219	<MDA
Room 164, View A	18	6179	<MDA
Room 164, View A	21	6223	<MDA
Room 164, View B	2	6189	<MDA
Room 164, View B	6	6249	<MDA
Room 164, View B	10	6279	<MDA
Room 164, View B	14	6234	<MDA
Room 164, View B	18	6278	<MDA
Room 164, View B	21	6253	<MDA



**Antkowiak and Mahoney
Enterprises, Inc.**

Scalar Measurements – Room 164

Ludlum Model 12, serial no. 193772

Surveyed: 7/7/05

MDA = 94 dpm/100 cm²

Location	Smear Number	Reading (cpm)	Activity (dpm/100 cm ²)
Room 164, View C	1	6333	<MDA
Room 164, View C	4	6296	<MDA
Room 164, View C	8	6321	<MDA
Room 164, View C	11	6219	<MDA
Room 164, View D	1	6401	<MDA
Room 164, View D	4	6377	<MDA
Room 164, View D	7	6388	<MDA
Room 164, View D	11	6363	<MDA
Room 164, View E	1	6270	<MDA
Room 164, View E	4	6237	<MDA
Room 164, View E	7	6279	<MDA
Room 164, View E	11	6234	<MDA
Room 164, View E	15	6278	<MDA
Room 164, View E	18	6389	<MDA
Room 164, View E	22	6387	<MDA

Scalar Measurements – Room 180 and 195C

Ludlum Model 12, serial no. 193772

Surveyed: 7/13/05

MDA = 96 dpm/100 cm²

Location	Smear Number	Reading (cpm)	Activity (dpm/100 cm ²)
Room 180, Main View	1	6249	<MDA
Room 180, Main View	4	6279	<MDA
Room 180, Main View	7	6378	<MDA
Room 180, Main View	11	6234	<MDA
Room 180, Main View	15	6273	<MDA
Room 180, Main View	18	6256	<MDA
Room 180, Main View	22	6238	<MDA
Room 195C, Main View	1	6187	<MDA
Room 195C, Main View	4	6217	<MDA
Room 195C, Main View	7	6096	<MDA
Room 195C, Main View	11	6132	<MDA
Room 195C, Main View	15	6215	<MDA



Antkowiak and Mahoney
Enterprises, Inc.

Scalar Measurements – Room 242

Ludlum Model 12, serial no. 193772

Surveyed: 7/13/05

MDA = 96 dpm/100 cm²

Location	Smear Number	Reading (cpm)	Activity (dpm/100 cm ²)
Room 242, Main View	1	6249	<MDA
Room 242, Main View	4	6271	<MDA
Room 242, Main View	7	6279	<MDA
Room 242, Main View	11	6234	<MDA
Room 242, Main View	15	6278	<MDA
Room 242, Main View	18	6256	<MDA
Room 242 View A	3	6388	<MDA
Room 242 View A	6	6189	<MDA
Room 242 View A	9	6202	<MDA
Room 242 View B	3	6279	<MDA
Room 242 View B	6	6378	<MDA
Room 242 View B	9	6234	<MDA
Room 242 View B	12	6187	<MDA
Room 242 View B	15	6225	<MDA
Room 242 View C	2	6332	<MDA
Room 242 View C	6	6282	<MDA
Room 242 View C	9	6291	<MDA
Room 242 View D	3	6159	<MDA
Room 242 View D	7	6223	<MDA

Scalar Measurements – Hallway

Ludlum Model 12, serial no. 193772

Surveyed: 7/14/05

MDA = 95 dpm/100 cm²

Location	Smear Number	Reading (cpm)	Activity (dpm/100 cm ²)
Hallway	3	6344	<MDA
Hallway	6	6335	<MDA
Hallway	9	6354	<MDA
Hallway	12	6301	<MDA
Hallway	15	6332	<MDA



**Antkowiak and Mahoney
Enterprises, Inc.**

Appendix III
Calibration Certificates

Certificate of Calibration



Antkowiak and Mahoney
Enterprises, Inc.

Company Antkowiak & Mahoney Enterprises

Certificate Number: AMEIH 001

Manufacturer Ludlum

Model 12

Serial Number 193772

Probe Model 44-92

Serial Number PR178541

Calibration Type Linearity and Efficiency Check

Calibration Geometry 2 Pi

Battery Check Pass

High Voltage 1600

v

Background Reading 350

cpm

Pulse Generator: Ludlum Model 500, serial number 174393, calibrated 7/30/04

Scale	Calibration Point (cpm)	As Found (cpm)	Meter Reading (cpm)	Correction Factor
x1000	340,000	320,000	340,000	N/A
x1000	170,000	160,000	170,000	N/A
x100	34,000	34,000	34,000	N/A
x100	17,000	17,000	17,000	N/A
x10	3,400	3,200	3,300	N/A
x10	1,700	1,600	1,700	N/A
x1	340	250	340	N/A
x1	170	100	170	N/A

Source Isotope	Source Activity	Source Serial Number	Source Reading	Efficiency
Carbon-14	1.793 kBq	1010-66-2	2,800	0.023
Silicon-32	1.870 kBq	1010-66-3	22,000	0.196
Iodine-129	1.902 kBq	1010-66-1	5,400	0.047

Calibrated by Joel Antkowiak

Calibration Date July 21, 2004

Approved by

Approval Date July 22, 2004

Comments

Certificate of Calibration



Antkowiak and Mahoney
Enterprises, Inc.

Company Antkowiak & Mahoney Enterprises

Certificate Number: AME 421

Manufacturer Ludlum

Model 12

Serial Number 195030

Probe Model 43-68

Serial Number PR178507

Calibration Type Linearity and Efficiency Check

Calibration Geometry 2 Pi

Battery Check Pass

High Voltage 1700

v Background Reading 300 cpm

Pulse Generator: Ludlum Model 500, serial number 189500, calibrated August 27, 2004

Scale	Calibration Point (cpm)	As Found (cpm)	Meter Reading (cpm)	Correction Factor
x100	340,000	340,000	340,000	N/A
x100	170,000	170,000	170,000	N/A
x10	34,000	34,000	34,000	N/A
x10	17,000	17,000	17,000	N/A
x1	3,400	3,400	3,400	N/A
x1	1,700	1,700	1,700	N/A
x0.1	340	340	340	N/A
x0.1	170	170	170	N/A

Source Isotope	Source Activity	Source Serial Number	Source Reading	Efficiency
Carbon-14	1.793 kBq	1010-66-2	15,000	.137
Silicon-32	1.870 kBq	1010-66-3	45,000	.401

Calibrated by Joel Antkowiak

Calibration Date July 21, 2004

Approved by

Approval Date

Comments

Certificate of Calibration



Antkowiak and Mahoney
Enterprises, Inc.

3 Valley Court
Chester, NY 10918

Company Antkowiak & Mahoney Enterprises

Certificate Number: 420

Manufacturer Ludlum

Model 12

Serial Number 193772

Probe Model 43-68

Serial Number PR178433

Calibration Type Linearity and Efficiency Check **Calibration Geometry** 2 Pi

Battery Check Pass **High Voltage** 1600 **v** **Background Reading** 250 **cpm**

Pulse Generator: Ludlum Model 500, serial number 189500, calibrated August 27, 2004

Scale	Calibration Point (cpm)	As Found (cpm)	Meter Reading (cpm)	Correction Factor
x100	340,000	pegged	340,000	N/A
x100	170,000	340,000	170,000	N/A
x10	34,000	35,000	34,000	N/A
x10	17,000	18,000	17,000	N/A
x1	3,400	3,800	3,400	N/A
x1	1,700	2,100	1,700	N/A
x0.1	340	pegged	340	N/A
x0.1	170	500	170	N/A

Source Isotope	Source Activity	Source Serial Number	Source Reading	Efficiency
Carbon-14	1.793 kBq	1010-66-2	15,000	0.137
Silicon-32	1.870 kBq	1010-66-3	42,000	0.374

Calibrated by Joel Antkowiak

Calibration Date July 21, 2004

Approved by 

Approval Date _____

Comments



Antkowiak and Mahoney
Enterprises, Inc.

Certificate of Calibration

Company Antkowiak & Mahoney Enterprises **Certificate Number:** AMEIH 004

Manufacturer Keithley

Model 36155 **Serial Number** 36025

Probe Model Ion chamber **Serial Number** N/A

Calibration Type Dose Rate **Calibration Geometry** Parallel

Background Reading 0 **Battery Check** Pass

Scale	Calibration Point (mR/hr)	As Found (mR/hr)	Meter Reading (mR/hr)	Correction Factor
2R	593	568	542	N/A
2R	392	380	357	N/A
200 mR	107	112	97	N/A
200 mR	44.5	49.0	42	N/A
20 mR	15.9	19.0	17	N/A
20 mR	8.43	11.0	9.0	N/A

Calibrated using a JL Shepherd model 28-5A beam calibrator serial number 10270.
Cesium-137, 120 mCi, serial number 7881-GF.

Calibrated by Joel Antkowiak

Calibration Date 4/2/2005

Approved by 

Approval Date 4/2/2005

Comments

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

8/28/2005, and to inform you that the initial processing which includes an administrative review has been performed.

☒ AMEND 29-00139-02 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** 137626.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.