



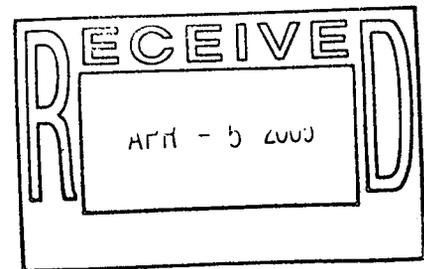
Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

Building 450 Closure Project

VERSION 0

February 28, 2005



CLASSIFICATION REVIEW NOT REQUIRED PER
EXEMPTION NUMBER CEX-005-02

ADMIN RECORD

B444-A-000125

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Building 450 Closure Project

VERSION 0

February 28, 2005

Reviewed by:  Date: 3/1/05
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ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
DCGL _{EMC}	Derived Concentration Guideline Level – elevated measurement comparison
DCGL _w	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U.S. Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U.S. Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
HEUN	Highly Enriched Uranyl Nitrate
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSA	Removable Surface Activity
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

EXECUTIVE SUMMARY

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Building 450. Because this Type 2 facility will be decommissioned, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) to supplement the Reconnaissance Level Characterization of this Type 2 facility. Building surfaces characterized as part of this PDS included the floors, walls, and ceiling. Environmental media beneath and surrounding the facility was not within the scope of this PDS and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

This PDS encompassed both radiological and chemical characterization to enable the compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP). The characterization built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report and Reconnaissance Level Characterization Report.

Results indicate that no chemical contamination exists in excess of the PDSP unrestricted release limits. Fixatives were used to immobilize loose beryllium contamination. Radiological contamination exists in excess of the PDSP unrestricted release limits in the first stage plenum and part of the second stage plenum. PCB ballasts and hazardous waste items (e.g., mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury-containing gauges, circuit boards, leaded glass, and lead-acid batteries) have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. Asbestos abatement was not conducted or required in Building 450 because there were no friable or non-friable asbestos containing building materials present. PCBs in paint meet the unrestricted release criteria of the RSOP for Facility Disposition (specific to 40CFR 761.62c).

Based upon this PDSR, Building 450 can be demolished and the entire building managed and disposed of as LLW-PCB Bulk Product Waste. To ensure the facility remains free of further contamination and PDS data remain valid, Level 2 Isolation Controls have been established and the areas posted accordingly.

1 INTRODUCTION

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Building 450. Because this Type 2 facility will be decommissioned, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) to supplement the Reconnaissance Level Characterization of this Type 2 facility. Building surfaces characterized as a part of this PDS included floors, walls and ceiling. The Building 450 exterior was characterized in accordance with Pre-Demolition Survey Plan (MAN-127-PDSP) requirements as part of the Building 444 Cluster RLCR, Dated November 6, 2001. Environmental media beneath and surrounding the facility was not within the scope of this PDS and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed, among these is Building 450. The location of this facility is shown in Attachment A, *Facility Location Map*. This facility no longer supports the RFETS mission and will be decommissioned to reduce Site infrastructure, risks and/or operating costs.

Before this Type 2 facility can be decommissioned, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for Building 450. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS is built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report and Reconnaissance Level Characterization Report.

1.1 Purpose

The purpose of this report is to communicate and document the results of the Building 450 PDS effort. A PDS is performed prior to building demolition to define the final radiological and chemical conditions of a facility. Final conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

1.2 Scope

This report presents the final radiological and chemical conditions of Building 450. Environmental media beneath and surrounding the facility is not within the scope of this PDSR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this PDS were the same DQOs identified in the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP), with the exception of the radiological surveys. Refer to section 2.0 of MAN-127-PDSP for these DQOs. The radiological survey Data Quality Objectives (DQOs) were met by following Radiological Safety Practice procedures 3-PRO-165-07.02, *Contamination Monitoring Requirements*, and PRO-267-RSP-09.05, *Radiological Characterization for Surface Contaminated Objects*.

2 HISTORICAL SITE ASSESSMENT

A Facility-specific Historical Site Assessment (HSA) and a Reconnaissance Level Characterization (RLC) was conducted to understand the facility history and related hazards. The HSA consisted of facility walk-downs, interviews, and document review, including review of the Historical Release Report, and were used to design the RLC. The RLC for Building 450 was performed in FY 2002 as part of the Building 444 Cluster RLCR (refer to *Reconnaissance Level Characterization Report for the Building 444 Cluster*, Dated September 5, 2002 (Revision 0)). Based on the RLC results, Building 450 was classified as a Type 2 facility, therefore, PDS characterization was required before decommissioning of the facility. The HSA, RLC and in-process results were used to identify PDS data gaps and needs, and to develop radiological and chemical PDS characterization packages. HSA and RLC documentation are located in the RISS Characterization Project files.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Radiological contamination was identified during the RLC, as well as, during the in-process stripout and decontamination phases in Building 450. Thus, extensive stripout and decontamination was required prior to the PDS. Contaminated equipment, filters and system piping were removed from the building prior to PDS. Radiological contamination could not be decontaminated below the PDS unrestricted release criteria without compromising the structural integrity of the building, or were too difficult to decontaminate. The radiological contamination was embedded into the cracks and joints such that if the decontamination effort chased the contamination into the cracks and joints, the structural integrity of the walls would be compromised to the point of being unsafe for human occupancy. Therefore, the entire building will be removed and managed as LLW during demolition. Applicable surfaces were decontaminated in order to remove as much removable contamination as practical, and then fixatives were applied to immobilize any remaining loose contamination. Appropriate controls will be incorporated into the demolition work packages to control these hazards during demolition.

The following bullets summarize the results of the PDS surveys:

- Plenum Inlets

Pre-fixative: <745 – 24,915 dpm/100cm² fixed, <205 - 4,976 dpm/100cm² loose

Post-fixative: <205 dpm/100cm² loose

- 1st Stage Plenum Area
 - Pre-fixative: <745 - 99,000 dpm/100cm² fixed, <205 - 2,452 dpm/100cm² loose
 - Post-fixative: <205 dpm/100cm² loose
- 2nd Stage Plenum Area
 - Pre-fixative: <745 - 52,500 dpm/100cm² fixed, <205 - 1,115 dpm/100cm² loose
 - Post-fixative: <205 dpm/100cm² loose
- 3rd Stage Plenum Area and Fan Room (these areas were never posted as a contamination area)
 - Pre-fixative: <745 dpm/100cm² fixed, <205 dpm/100cm² loose
 - Post-fixative: Not required

Radiological survey data, and survey locations are presented in Attachment B-1, *Pre-Fixative LLW Survey Forms*; and Attachment B-2, *Post-Fixative LLW Survey Forms*.

Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern. Based on the RLC data and historical and process knowledge, only depleted uranium activity was a radiological concern inside Building 450.

Radiological PDS survey unit packages were not developed for Building 450 because the entire building will be managed as LLW; instead LLW demolition planning surveys were performed. These surveys are contained in Attachment B-1, *Pre-Fixative LLW Survey Forms*, and Attachment B-2, *Post-Fixative LLW Survey Forms*, and suffice as the PDS radiological surveys for these areas of the building. The instruments used for the LLW surveys had an MDA of 50% of the PDSP unrestricted release criteria limits. Building 450 be removed and managed as LLW.

Building 450 exterior was surveyed per PDS requirements as part of the *Reconnaissance Level Characterization Report for the Building 444 Cluster*, Dated September 5, 2002 (Revision 0), and met PDS unrestricted release levels. An additional confirmatory survey of wall and roof surfaces of the Building 450 exterior was performed during the PDS survey, and all results were less than the PDS unrestricted release levels. Refer to Attachment B-3, *450 Confirmatory Survey*, for the building exterior confirmatory radiological survey.

To ensure the facility remains free of further contamination and PDS data remain valid, Level 2 Isolation Controls have been established and the areas posted accordingly.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Building 450 was characterized for chemical hazards per the PDSP. Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on, or in the facility. Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined. A Chemical Characterization Plan was developed during the planning phase that describes sampling requirements and the justification for the sample locations and estimated sample numbers. The contaminants of concern were asbestos, beryllium, and RCRA constituents. Refer to Attachment C-1, for details on sample results and sample locations. Isolation control postings are displayed on affected structures to ensure no hazardous materials are introduced.

4.1 Asbestos

A survey of building materials suspected of containing asbestos was conducted during in-process stripout of the facility. A CDPHE-certified asbestos inspector conducted the inspection in accordance with the *Asbestos Characterization Protocol, PRO-563-ACPR, Revision 1*. Based on the inspection no materials were identified that were suspected of containing asbestos, therefore no asbestos sampling was required or performed as part of this PDS.

4.2 Beryllium (Be)

During the in-process stripout and decontamination phase of Building 450, all areas containing loose beryllium contamination were either decontaminated to below the unrestricted release limit of $0.2 \mu\text{g}/100\text{cm}^2$ or fixatives were applied (after the radiological portion of the PDS was completed) to immobilize any loose beryllium in order to comply with unrestricted release limits. Levels of beryllium that were immobilized in place ranged from 0.1 to $0.875 \mu\text{g}/100\text{cm}^2$. Since Building 450 was on the list of Known Beryllium Areas, both random and biased PDS sampling was required.

Random and biased beryllium smear samples were collected in Building 450 in accordance with the PDSP and the *Beryllium Characterization Procedure, PRO-536-BCPR, Revision 0, September 9, 1999*. The table in Attachment C-1 summarizes the "as left" PDS beryllium swipe data for Building 450. All final "as left" beryllium PDS swipe results were less than the action levels of $0.2 \mu\text{g}/100\text{cm}^2$ and investigative levels of $0.1 \mu\text{g}/100\text{cm}^2$. Detailed PDS beryllium laboratory swipe data and location maps are contained in Attachment C-1, *Beryllium Results Table and Sample Location Maps*.

4.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]

Based on a review of the HSAR, RLCR, interviews, and facility walk-downs, Building 450 was an exhaust filter plenum for Building 444. Prior to this PDS, surveys in Building 444 did not indicate any RCRA/CERCLA contamination, and there is no additional evidence that RCRA/CERCLA constituents were introduced into Building 450. Therefore, sampling was not performed as part of this PDSR.

The facility contained some RCRA regulated items, such as mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury containing gauges, circuit boards, and lead-acid batteries. However, these items have been removed and managed in accordance with the Colorado Hazardous Waste Act.

4.4 Polychlorinated Biphenyls (PCBs)

Based on the HSAR, RLCR, interviews, and facility walk-downs of Building 450, no PCB-containing equipment was ever used or stored in the building, making the potential for PCB contamination resulting from spills highly unlikely. Therefore, PCB sampling was not performed as part of the PDS.

Based on the age of Building 450 (constructed before 1980), paints used are assumed to contain PCBs, and painted surfaces will be managed as PCB Bulk Product Waste. The facility may have contained PCB fluorescent light ballasts, however, all leaking PCB ballasts, and those greater than 9 pounds have been removed from the facility and managed appropriately.

5 PHYSICAL HAZARDS

Physical hazards associated with Building 450 are those common to standard industrial environments, and include hazards associated with energized systems, utilities, and trips and falls. Building 450 is attached to Building 444 via ventilation exhaust ducting. There are no other unique hazards associated with the facility. The facility has been relatively well maintained and is in good physical condition, therefore, does not present hazards associated with building deterioration. Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for the decommissioning of Building 450, and consequent waste management, are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments B and C) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original project DQOs.

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate:

- ◆ the *number* of samples and surveys;
- ◆ the *types* of samples and surveys;
- ◆ the sampling/survey process as implemented “in the field”; and
- ◆ the laboratory analytical process, relative to accuracy and precision considerations.

Details of the DQA are provided in Attachment D.

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The decommissioning of Building 450 will generate LLW-PCB Bulk Product Waste. This waste will be removed and sent to appropriate offsite landfills. Estimated waste volumes are presented below. All ballasts and hazardous waste items have been removed and managed pursuant to Site PCB and waste management procedures.

WASTE TYPES AND VOLUME ESTIMATES							
Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste (cu ft)
450	8,000 – LLW	0	9,000 – LLW	0	0	0	None

8 FACILITY CLASSIFICATION AND CONCLUSIONS

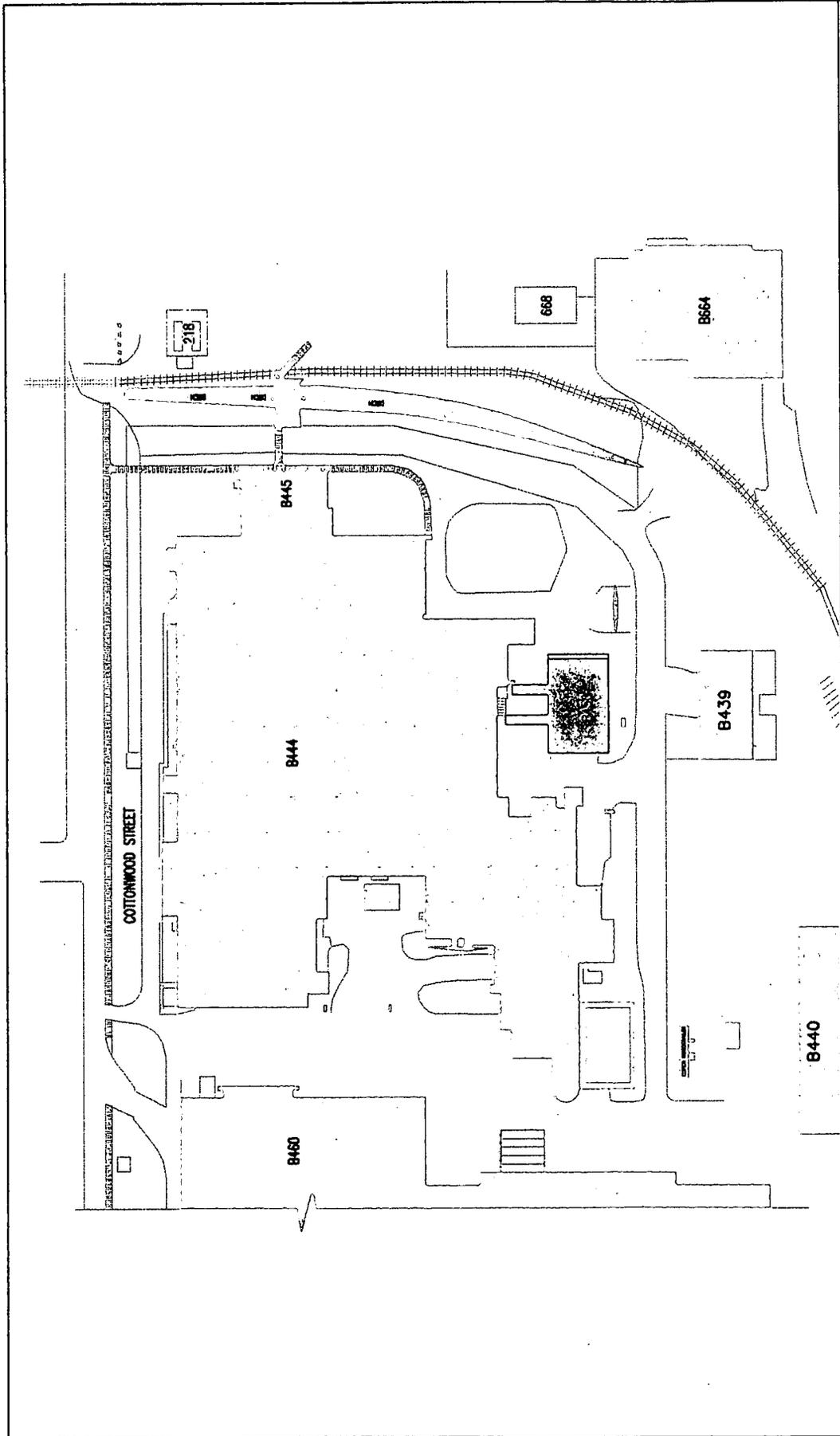
Based on the analysis of radiological, chemical and physical hazards, Building 450 is ready for demolition and the waste managed as LLW-PCB Bulk Product Waste. The LLW radiological survey Data Quality Objectives (DQOs) were met by following Radiological Safety Practice procedures 3-PRO-165-07.02, *Contamination Monitoring Requirements*, and PRO-267-RSP-09.05, *Radiological Characterization for Surface Contaminated Objects*. The PDSP radiological MDA requirements were met for all radiological surveys. Radiological contamination exists in excess of the PDSP unrestricted release limits, therefore the entire building will be managed as LLW during demolition.

Building 450 does not possess beryllium or chemical contamination in excess of the PDSP unrestricted release limits. However, fixatives were used to immobilize loose beryllium contamination. All PCB ballasts and hazardous waste items (e.g., mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury-containing gauges, circuit boards, leaded glass, and lead-acid batteries) have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. Asbestos abatement was not conducted or required in Building 450 because there were no friable or non-friable asbestos containing building materials present.

Environmental media beneath and surrounding the facility will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA. To ensure Building 450 remains free of further contamination and PDS data remain valid, Level 2 Isolation Controls have been established and the facility posted accordingly.

9 REFERENCES

- DOE/RFFO, CDPHE, EPA, 1996. *Rocky Flats Cleanup Agreement (RFCA)*, July 19, 1996.
- DOE Order 5400.5, "*Radiation Protection of the Public and the Environment.*"
- DOE Order 414.1A, "*Quality Assurance.*"
- EPA, 1994. "*The Data Quality Objective Process,*" EPA QA/G-4.
- K-H, 1999. *Decommissioning Program Plan*, June 21, 1999.
- MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev. 1, November 1, 2001.
- MAN-076-FDPM, *Facility Disposition Program Manual*, Rev. 3, January 1, 2002.
- MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev. 4, July 15, 2002.
- MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.
- MARSSIM - *Multi-Agency Radiation Survey and Site Investigation Manual* (NUREG-1575, EPA 402-R-97-016).
- PRO-475-RSP-16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure*, Rev. 1, May 22, 2001.
- PRO-476-RSP-16.02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev. 1, May 22, 2001.
- PRO-477-RSP-16.03, *Radiological Samples of Building Media*, Rev. 1, May 22, 2001.
- PRO-478-RSP-16.04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev. 1, May 22, 2001.
- PRO-479-RSP-16.05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev. 1, May 22, 2001.
- PRO-563-ACPR, *Asbestos Characterization Procedure*, Revision 0, August 24, 1999.
- PRO-536-BCPR, *Beryllium Characterization Procedure*, Revision 0, August 24, 1999.
- RFETS, *Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition.*
- RFETS, *Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal.*
- RFETS, *RFCA RSOP for Recycling Concrete*, September 28, 1999.
- Reconnaissance Level Characterization Report for the Building 444 Cluster*, dated September 5, 2002 (Revision 0).



BUILDING 450 LOCATION MAP

U.S. Department of Energy
 Rocky Flats Environmental Technology Site
 Prepared by:  KAISER HILL
 File Name: B450 LACATION MAP.DWG

Scale:
 1 inch = 64 feet
 1 grid sq. = 1 sq. m.



Sheet: 1 of 1 | Rev: 0

ATTACHMENT B

Radiological Pre/Post LLW Survey Forms

ATTACHMENT B-1

Pre-Fixative LLW Survey Forms

ROCKY PLAINS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 176102	Serial # 143883	Serial # 1409
Cal Due 3/14/05	Cal Due 7/13/05	Cal Due 5/8/05
Bkg. 0.3 cpm α	Bkg. 0.6 cpm α	Bkg. 5 cpm α
Eff. 35.8 %	Eff. 36.0 %	Eff. 17 %
MDA 18 dpm α	MDA 18 dpm α	MDA 94 dpm α
Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 176102	Serial # 143883	Serial # 1409
Cal Due 3/14/05	Cal Due 7/13/05	Cal Due 5/8/05
Bkg. 73.3 cpm β	Bkg. 78.9 cpm β	Bkg. 464 cpm β
Eff. 25 %	Eff. 25 %	Eff. 22 %
MDA 205 dpm β	MDA 205 dpm β	MDA 745 dpm β

Survey Type: CONTAMINATION Page 1 of 3
 Building: 444
 Location: 450 plenum inlets
 Purpose: Post pressure wash/pre fixative

RWP #: N/A

COPY

Date: 2/18/05 Time: 16:00

RCT: [Redacted]
 Print Name Signature Emp. #

RCT: N/A | N/A | N/A
 Print Name Signature Emp. #

PRN/REN: N/A

Comments: Isotope of Concern U-238.

SURVEY RESULTS

#	Description	REMOVABLE		DIRECT	
		DPM/100 CM ²		DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
1	West plenum inlet west wall	453	4012	3948	11645
2	West plenum inlet west wall	393	3060	2064	2729
3	West plenum inlet west wall	162	1232	960	<745
4	West plenum inlet floor	45	320	1560	10760
5	West plenum inlet floor	24	<205	876	10940
6	West plenum inlet floor	33	<205	774	4525
7	West plenum inlet floor	57	440	1398	7885
8	West plenum inlet floor	57	360	840	2985
9	West plenum inlet floor	<18	<205	1986	7705
10	West plenum inlet floor	75	600	3060	9715
11	West plenum inlet floor	84	720	2580	6750
12	West plenum inlet floor	81	480	1038	1950
13	West plenum inlet floor	189	880	3618	16365
14	West plenum inlet east wall	369	1944	1674	4150
15	West plenum inlet east wall	87	600	930	<745
16	West plenum inlet ceiling	378	2380	2790	7065
17	West plenum inlet ceiling	114	520	1590	2495
18	West plenum inlet ceiling	219	1220	1680	2400
19	West plenum inlet ceiling	216	1000	1110	1260
20	West plenum inlet ceiling	102	600	804	1065
21	East plenum inlet west wall	63	488	1548	4350
22	East plenum inlet west wall	256	2200	3894	10865
23	East plenum inlet west wall	153	1200	1170	1270
24	East plenum inlet floor	18	248	894	9265
25	East plenum inlet floor				

Date Reviewed: 2-21-05 RS Supervisor [Redacted]

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Building: 444
 Location: 450 plenum inlets
 Purpose: Post pressure wash/pre fixative

Date: 2/18/05
 Time: 4:00 PM

#	Description	REMOVABLE DPM/100 CM ²		DIRECT DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
26	East plenum inlet floor	30	320	3564	10775
27	East plenum inlet floor	33	<205	990	5815
28	East plenum inlet floor	42	240	1188	15000
29	East plenum inlet floor	45	400	804	6915
30	East plenum inlet floor	<18	<205	666	10695
31	East plenum inlet floor	87	720	7212	24915
32	East plenum inlet floor	93	440	1722	4290
33	East plenum inlet floor	93	440	1080	750
34	East plenum inlet east wall	51	400	2778	6695
35	East plenum inlet east wall	186	1544	2574	6295
36	East plenum inlet ceiling	132	960	606	870
37	East plenum inlet ceiling	291	1720	1056	960
38	East plenum inlet ceiling	231	1928	3396	13390
39	East plenum inlet ceiling	633	4976	3042	5575
40	East plenum inlet ceiling	93	680	936	<745
41	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A
43	N/A	N/A	N/A	N/A	N/A
44	N/A	N/A	N/A	N/A	N/A
45	N/A	N/A	N/A	N/A	N/A
46	N/A	N/A	N/A	N/A	N/A
47	N/A	N/A	N/A	N/A	N/A
48	N/A	N/A	N/A	N/A	N/A
49	N/A	N/A	N/A	N/A	N/A
50	N/A	N/A	N/A	N/A	N/A
51	N/A	N/A	N/A	N/A	N/A
52	N/A	N/A	N/A	N/A	N/A
53	N/A	N/A	N/A	N/A	N/A
54	N/A	N/A	N/A	N/A	N/A
55	N/A	N/A	N/A	N/A	N/A
56	N/A	N/A	N/A	N/A	N/A
57	N/A	N/A	N/A	N/A	N/A
58	N/A	N/A	N/A	N/A	N/A
59	N/A	N/A	N/A	N/A	N/A
60	N/A	N/A	N/A	N/A	N/A
61	N/A	N/A	N/A	N/A	N/A
62	N/A	N/A	N/A	N/A	N/A
63	N/A	N/A	N/A	N/A	N/A
64	N/A	N/A	N/A	N/A	N/A
65	N/A	N/A	N/A	N/A	N/A
66	N/A	N/A	N/A	N/A	N/A
67	N/A	N/A	N/A	N/A	N/A
68	N/A	N/A	N/A	N/A	N/A
69	N/A	N/A	N/A	N/A	N/A
70	N/A	N/A	N/A	N/A	N/A
71	N/A	N/A	N/A	N/A	N/A

RADIOLOGICAL SAFETY

Building: 444
Location: 450 plenum inlets
Purpose: Post pressure wash/pre fixative

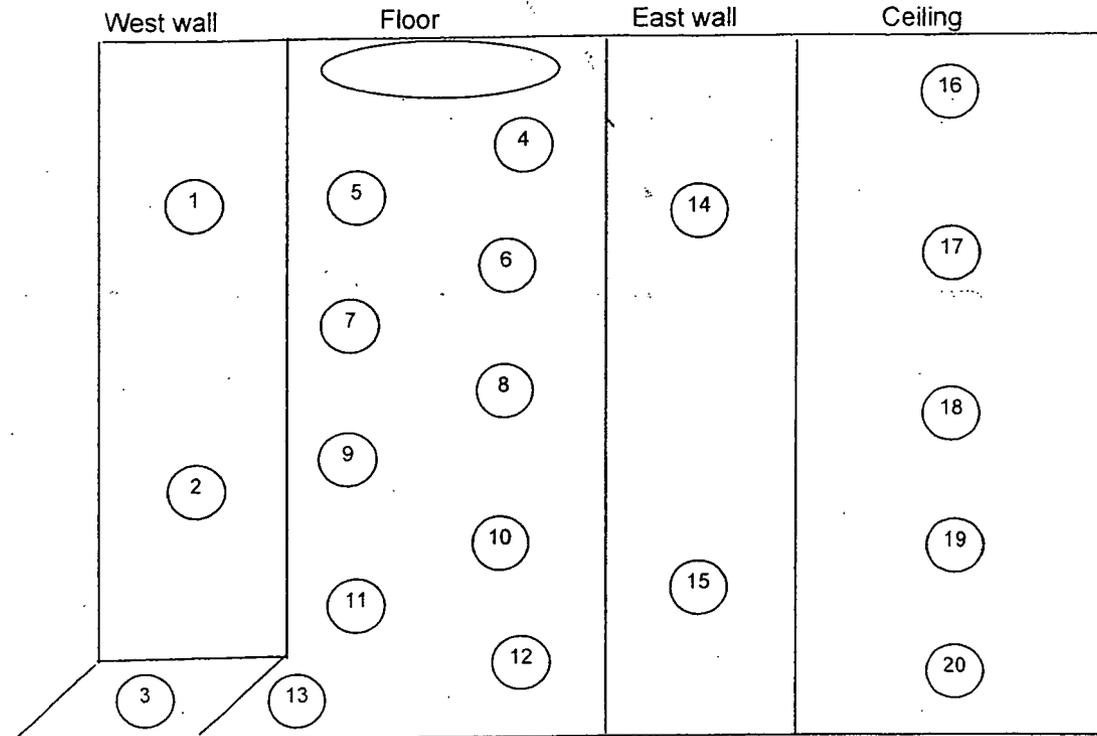
Drawing Showing Survey Points

COPY

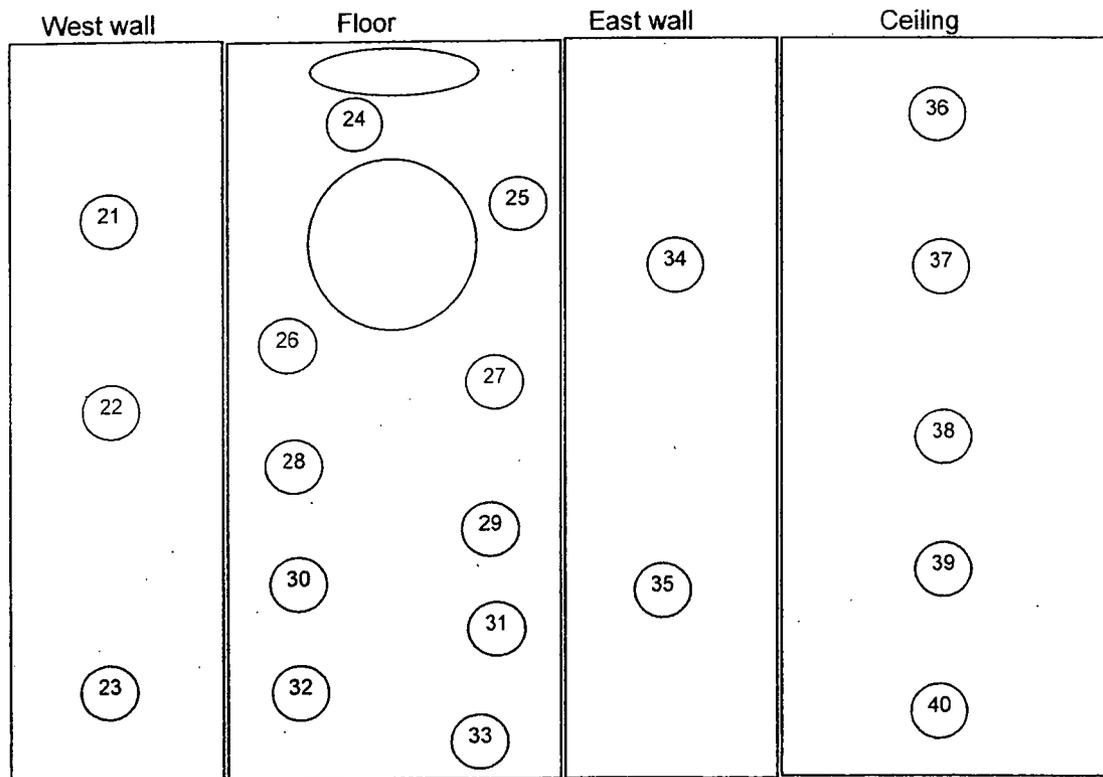
Date: 2/18/05

Time: 4:00 PM

West Plenum Inlet



East Plenum Inlet



ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 176102	Serial # 143883	Serial # 1409
Cal Due 3/14/05	Cal Due 7/13/05	Cal Due 5/8/05
Bkg. 0.3 cpm α	Bkg. 0.6 cpm α	Bkg. 5 cpm α
Eff. 35.8 %	Eff. 36.0 %	Eff. 17 %
MDA 18 dpm α	MDA 18 dpm α	MDA 94 dpm α
Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 176102	Serial # 143883	Serial # 1409
Cal Due 3/14/05	Cal Due 7/13/05	Cal Due 5/8/05
Bkg. 73.3 cpm β	Bkg. 78.9 cpm β	Bkg. 464 cpm β
Eff. 25 %	Eff. 25 %	Eff. 22 %
MDA 205 dpm β	MDA 205 dpm β	MDA 745 dpm β

Survey Type : CONTAMINATION Page 1 of 4
 Building: 444
 Location: 450 plenum 1st stage east
 Purpose: Post pressure wash/pre fixative

RWP #: N/A

COPY

Date: 2/18/05 Time: 16:00

RCT: 

RCT: <u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Print Name	Signature	Emp. #

PRN/REN : N/A

Comments: Isotope of Concern U-238.

SURVEY RESULTS

#	Description	REMOVABLE		DIRECT	
		DPM/100 CM ²		DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
1	East plenum demister north wall	<18	<205	<94	<745
2	East plenum demister north wall	<18	<205	<94	<745
3	East plenum demister north wall	<18	<205	<94	<745
4	East plenum demister north wall	<18	<205	<94	<745
5	East plenum demister north wall	35	<205	<94	<745
6	East plenum demister north wall	18	<205	<94	<745
7	East plenum demister north wall	24	<205	<94	<745
8	East plenum demister north wall	27	340	<94	<745
9	East plenum demister north wall	<18	<205	<94	<745
10	East plenum demister north wall	<18	<205	<94	<745
11	East plenum demister north wall	<18	<205	<94	<745
12	East plenum demister north wall	<18	<205	<94	<745
13	East plenum demister north wall	<18	<205	<94	<745
14	East plenum demister north wall	<18	<205	<94	<745
15	East plenum demister north wall	<18	<205	<94	<745
16	East plenum demister north wall	32	239	<94	<745
17	East plenum demister north wall	21	<205	<94	<745
18	East plenum demister north wall	<18	<205	<94	<745
19	East plenum demister north wall	35	<205	984	1720
20	East plenum demister north wall #	<18	<205	1278	4535
21	East plenum demister north wall	99	667	1836	5710
22	East plenum demister north wall	49	<205	1008	5000
23	East plenum demister floor	24	<205	4686	46275
24	East plenum demister floor	68	370	5142	68000
25	East plenum demister floor	<18	<205	1620	13205

Date Reviewed: 2-21-05 RS Supervision: 

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COPY

Building: 444

Location: 450 plenum 1st stage east

Purpose: Post pressure wash/pre fixative

Date: 2/18/05

Time: 4:00 PM

#	Description	REMOVABLE DPM/100 CM ²		DIRECT DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
26	East plenum demister floor	144	1083	1080	11530
27	East plenum demister floor	404	2264	2688	19115
28	East plenum demister floor	88	451	2256	21905
29	East plenum demister floor	171	908	2484	14335
30	East plenum demister floor	286	2019	720	15920
31	East plenum demister floor	357	2452	420	13205
32	East plenum demister floor	110	499	360	<745
33	East plenum 1st stage floor	43	<205	1476	12955
34	East plenum 1st stage floor	29	212	1800	11655
35	East plenum 1st stage floor	35	210	918	19675
36	East plenum 1st stage floor	76	436	1464	13240
37	East plenum 1st stage floor	54	283	1932	12860
38	East plenum 1st stage floor	90	596	1068	15290
39	East plenum 1st stage floor	132	627	1068	13315
40	East plenum 1st stage floor	118	620	1182	12985
41	East plenum 1st stage floor	286	1927	2868	61500
42	East plenum 1st stage floor	113	1024	822	3440
43	East plenum east wall	18	<205	<94	<745
44	East plenum east wall	<18	<205	<94	<745
45	East plenum east wall	<18	<205	<94	<745
46	East plenum east wall	21	<205	<94	<745
47	East plenum east wall	<18	<205	360	3470
48	East plenum east wall	<18	<205	<94	<745
49	East plenum east wall	<18	<205	<94	<745
50	East plenum east wall	<18	<205	<94	<745
51	East plenum demister and 1st stage ceiling	<18	<205	<94	<745
52	East plenum demister and 1st stage ceiling	<18	<205	<94	<745
53	East plenum demister and 1st stage ceiling	<18	<205	<94	<745
54	East plenum demister and 1st stage ceiling	<18	<205	<94	<745
55	East plenum demister and 1st stage ceiling	<18	<205	<94	<745
56	East plenum demister and 1st stage ceiling	<18	<205	<94	<745
57	East plenum demister and 1st stage ceiling	<18	<205	<94	<745
58	East plenum demister and 1st stage ceiling	26	<205	<94	<745
59	East plenum demister and 1st stage ceiling	<18	<205	<94	<745
60	East plenum demister and 1st stage ceiling	<18	<205	<94	<745
61	East plenum 1st stage airlock floor	<18	<205	<94	<745
62	East plenum 1st stage airlock wall	<18	<205	<94	<745
63	East plenum 1st stage airlock wall	<18	<205	<94	<745
64	East plenum 1st stage airlock wall	<18	<205	<94	<745
65	East plenum 1st stage airlock wall	<18	<205	<94	<745
66	East plenum 1st stage airlock ceiling	<18	<205	<94	<745
67	Demister rack	<18	<205	<94	<745
68	Demister rack	<18	<205	<94	<745
69	Demister rack	57	379	1464	6100
70	Demister rack	76	400	1464	11360
71	Demister rack	71	455	1596	7350

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Building: 444

RADIOLOGICAL SAFETY

Page 3 of 4

Location: 450 plenum 1st stage east

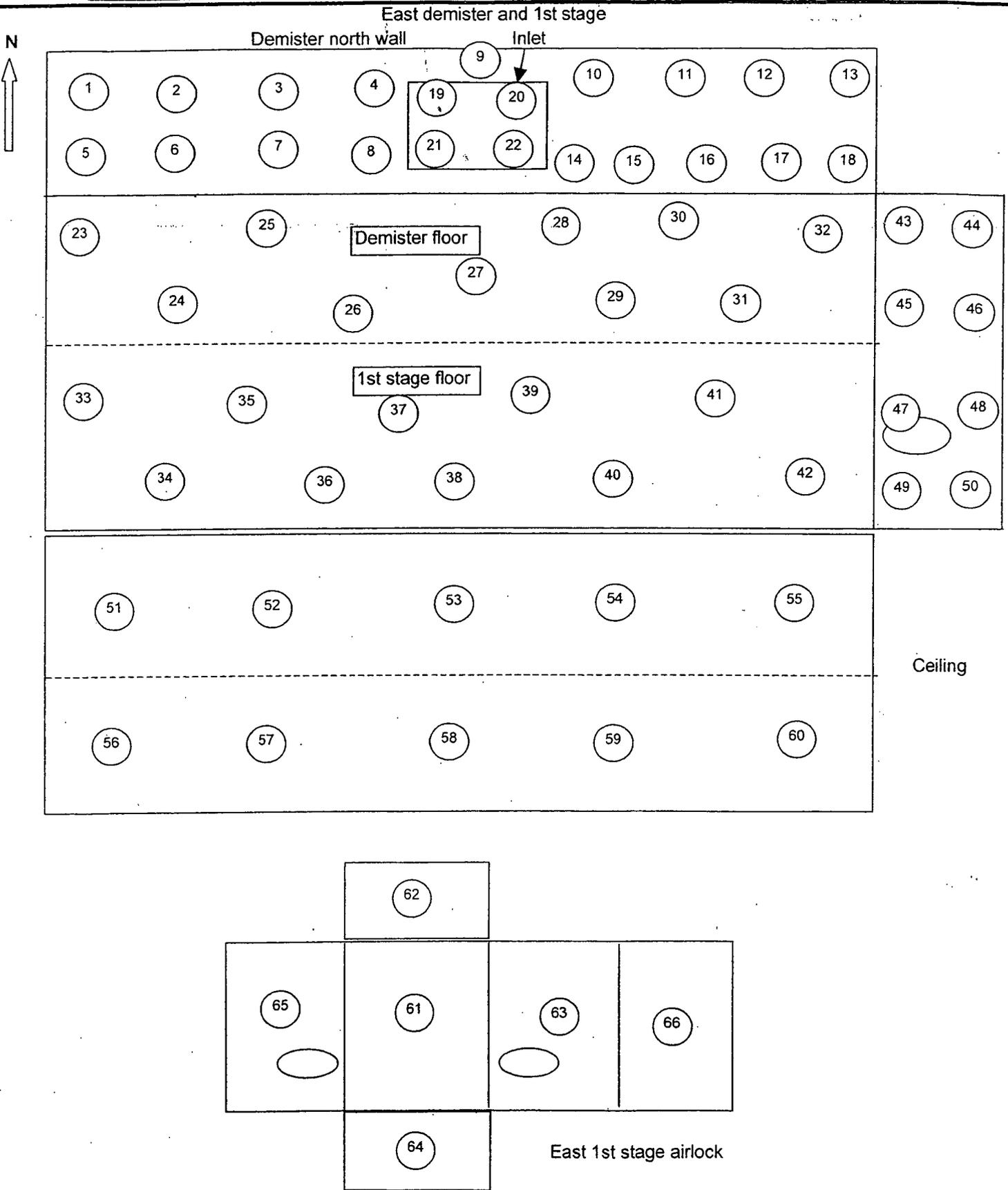
Drawing Showing Survey Points

COPY

Date: 2/18/05

Purpose: Post pressure wash/pre fixative

Time: 4:00 PM



Building: 444

RADIOLOGICAL SAFETY

Page 4 of 4

Location: 450 plenum 1st stage east

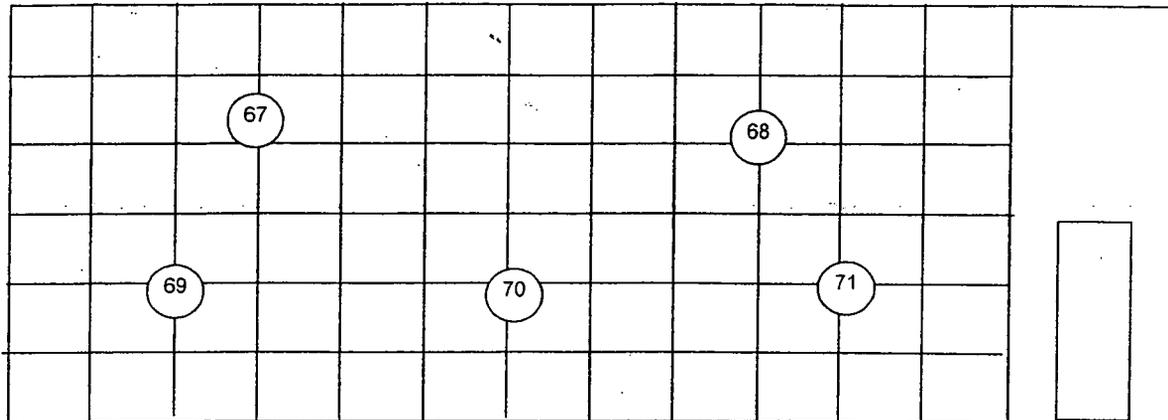
Drawing Showing Survey Point

Date: 2/18/04

Purpose: Post pressure wash/pre- fixative

COPY

Time: 4:00 PM



Demister rack

ROCKY PLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 176102	Serial # 143883	Serial # 1409
Cal Due 3/14/05	Cal Due 7/13/05	Cal Due 5/8/05
Bkg. 0.3 cpm α	Bkg. 0.6 cpm α	Bkg. 5 cpm α
Eff. 35.8 %	Eff. 36.0 %	Eff. 17 %
MDA 18 dpm α	MDA 18 dpm α	MDA 94 dpm α
Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model # 2929	Model DP-6
Serial # 176102	Serial # 143883	Serial # 1409
Cal Due 3/14/05	Cal Due 7/13/05	Cal Due 5/8/05
Bkg. 73.3 cpm β	Bkg. 78.9 cpm β	Bkg. 464 cpm β
Eff. 25 %	Eff. 25 %	Eff. 22 %
MDA 205 dpm β	MDA 205 dpm β	MDA 745 dpm β

Survey Type : CONTAMINATION Page 1 of 4
 Building: 444
 Location: 450 plenum 1st stage west
 Purpose: Post pressure wash/pre fixative

COPY

RWP #: N/A
 Date: 2/18/05 Time: 16:00
 RCT: [Redacted] [Redacted]
 Print Name
 RCT: N/A | N/A | N/A
 Print Name Signature Emp. #

PRN/REN : N/A
 Comments: Isotope of Concern U-238.

SURVEY RESULTS

#	Description	REMOVABLE		DIRECT	
		DPM/100 CM ²		DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
1	West plenum demister north wall	<18	<205	<94	<745
2	West plenum demister north wall	<18	<205	<94	<745
3	West plenum demister north wall	<18	<205	<94	<745
4	West plenum demister north wall	<18	<205	<94	<745
5	West plenum demister north wall	<18	<205	546	3250
6	West plenum demister north wall	<18	<205	990	2670
7	West plenum demister north wall	24	<205	<94	<745
8	West plenum demister north wall	24	<205	<94	<745
9	West plenum demister north wall	<18	<205	<94	<745
10	West plenum demister north wall	24	<205	1488	3805
11	West plenum demister north wall	135	832	948	1360
12	West plenum west wall	35	283	<94	<745
13	West plenum west wall	79	432	<94	<745
14	West plenum west wall	57	367	402	5000
15	West plenum west wall	90	568	<94	<745
16	West plenum west wall	<18	<205	<94	<745
17	West plenum west wall	<18	<205	<94	<745
18	West plenum west wall	<18	<205	<94	<745
19	West plenum demister floor	138	900	732	11875
20	West plenum demister floor #	<18	<205	3378	46730
21	West plenum demister floor	60	400	3198	36655
22	West plenum demister floor	<18	<205	5574	71000
23	West plenum demister floor	38	<205	3228	33500
24	West plenum demister floor	65	275	4122	41620
25	West plenum demister floor	165	855	1116	11180

Date Reviewed: 2-21-05 RS Supervision: [Redacted]

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ROCKY MOUNTAIN ENVIRONMENTAL TECHNOLOGY SITE

Building: 444
 Location: 450 plenum 1st stage west
 Purpose: Post pressure wash/pre fixative

RADIOLOGICAL SAFETY

COPY

Page 2 of 4
 Date: 2/18/05
 Time: 4:00 PM

#	Description	REMOVABLE		DIRECT	
		DPM/100 CM ²		DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
26	West plenum demister floor	79	543	7740	83000
27	West plenum demister floor	157	932	3054	23020
28	West plenum demister floor	124	511	3924	99000
29	West plenum 1st stage floor	37	<205	984	10625
30	West plenum 1st stage floor	29	256	1080	10465
31	West plenum 1st stage floor	57	<205	1104	11980
32	West plenum 1st stage floor	68	268	1068	11680
33	West plenum 1st stage floor	40	223	1584	15970
34	West plenum 1st stage floor	40	260	5358	30175
35	West plenum 1st stage floor	36	<205	1416	13350
36	West plenum 1st stage floor	29	<205	4764	21405
37	West plenum 1st stage floor	<18	<205	4068	20400
38	West plenum 1st stage floor	<18	<205	3546	29840
39	West plenum demister and 1st stage ceiling	<18	<205	<94	<745
40	West plenum demister and 1st stage ceiling	<18	<205	<94	<745
41	West plenum demister and 1st stage ceiling	<18	<205	<94	<745
42	West plenum demister and 1st stage ceiling	<18	<205	<94	<745
43	West plenum demister and 1st stage ceiling	21	<205	<94	<745
44	West plenum demister and 1st stage ceiling	<18	<205	<94	<745
45	West plenum demister and 1st stage ceiling	<18	<205	<94	<745
46	West plenum demister and 1st stage ceiling	<18	<205	<94	<745
47	West plenum demister and 1st stage ceiling	<18	<205	<94	<745
48	West plenum demister and 1st stage ceiling	29	220	<94	<745
49	West plenum 1st stage airlock floor	<18	<205	<94	<745
50	West plenum 1st stage airlock wall	<18	<205	<94	<745
51	West plenum 1st stage airlock wall	<18	<205	<94	<745
52	West plenum 1st stage airlock wall	<18	<205	<94	<745
53	West plenum 1st stage airlock wall	<18	<205	<94	<745
54	West plenum 1st stage airlock ceiling	<18	<205	<94	<745
55	Demister rack	35	<205	<94	<745
56	Demister rack	<18	<205	<94	<745
57	Demister rack	<18	<205	<94	<745
58	Demister rack	21	272	1782	17570
59	Demister rack	49	283	1740	17820
60	N/A	N/A	N/A	N/A	N/A
61	N/A	N/A	N/A	N/A	N/A
62	N/A	N/A	N/A	N/A	N/A
63	N/A	N/A	N/A	N/A	N/A
64	N/A	N/A	N/A	N/A	N/A
65	N/A	N/A	N/A	N/A	N/A
66	N/A	N/A	N/A	N/A	N/A
67	N/A	N/A	N/A	N/A	N/A
68	N/A	N/A	N/A	N/A	N/A
69	N/A	N/A	N/A	N/A	N/A
70	N/A	N/A	N/A	N/A	N/A
71	N/A	N/A	N/A	N/A	N/A

Building: 444
Location: 450 plenum 1st stage west
Purpose: Post pressure wash/pre fixative

RADIOLOGICAL SAFETY

Drawing Showing Survey Points

COPY

Page 3 of 4

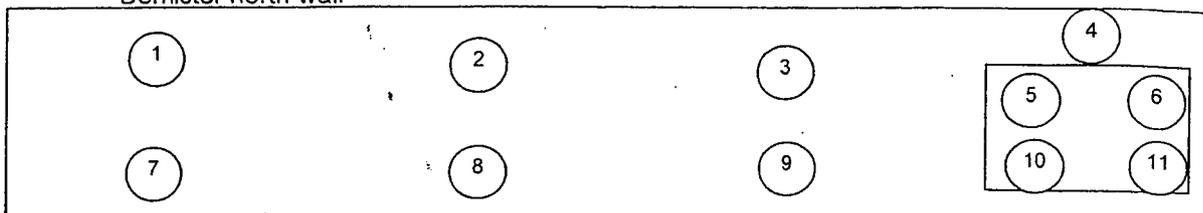
Date: 2/18/05

Time: 4:00 PM

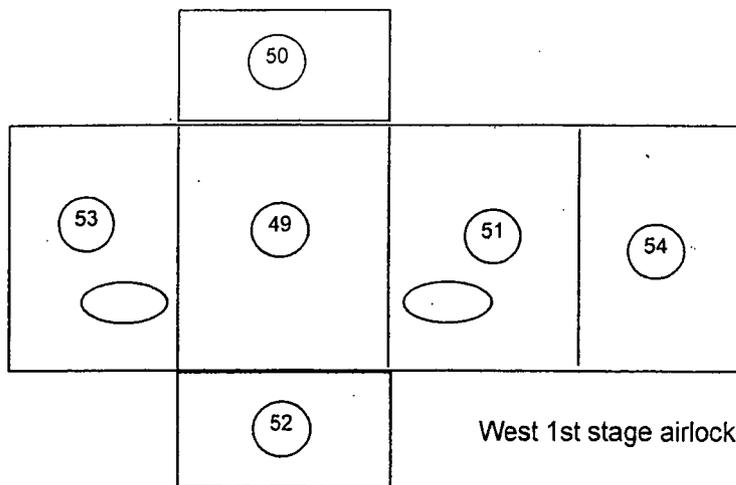
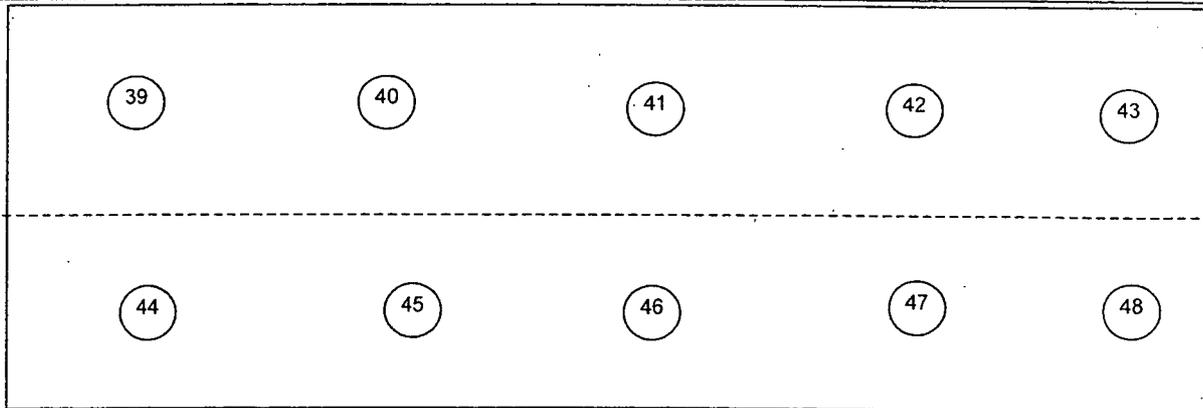
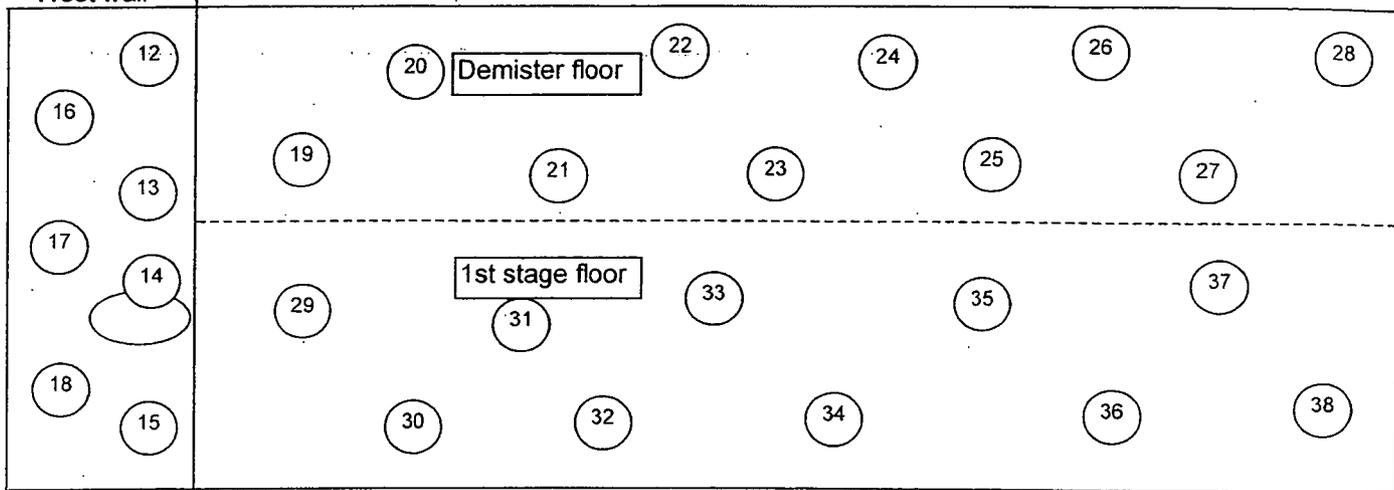
West demister and 1st stage



Demister north wall



West wall



West 1st stage airlock

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RADIOLOGICAL SAFETY

Building: 444

Location: 450 plenum 1st stage west

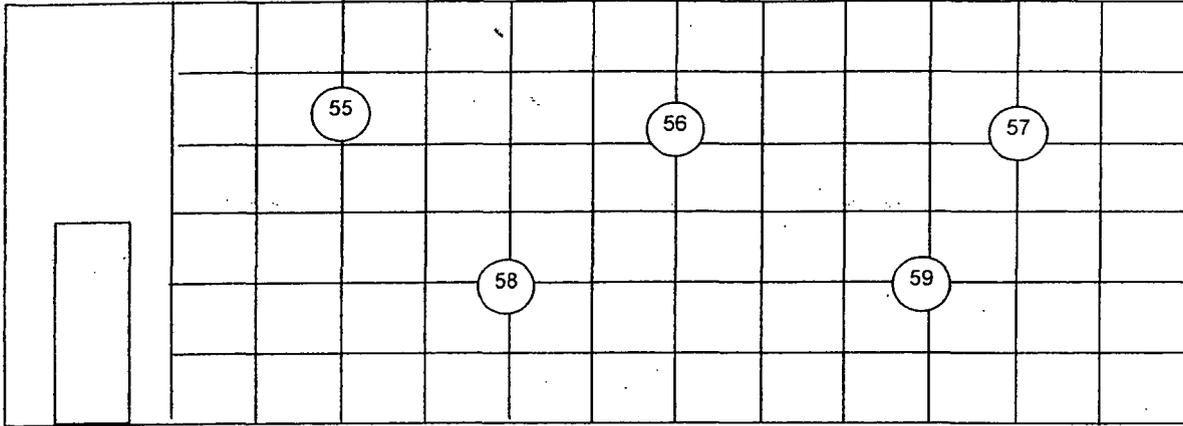
Drawing Showing Survey Point

COPY

Date: 2/18/04

Purpose: Post pressure wash/pre- fixative

Time: 4:00 PM



Demister rack

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 176102	Serial # 143883	Serial # 1409
Cal Due 3/14/05	Cal Due 7/13/05	Cal Due 5/8/05
Bkg. 0.3 cpm α	Bkg. 0.6 cpm α	Bkg. 5 cpm α
Eff. 35.8 %	Eff. 36.0 %	Eff. 17 %
MDA 18 dpm α	MDA 18 dpm α	MDA 94 dpm α
Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 176102	Serial # 143883	Serial # 1409
Cal Due 3/14/05	Cal Due 7/13/05	Cal Due 5/8/05
Bkg. 25 cpm β	Bkg. 464 cpm β	Bkg. 22 cpm β
Eff. 25 %	Eff. 25 %	Eff. 22 %
MDA 205 dpm β	MDA 205 dpm β	MDA 745 dpm β

Survey Type: CONTAMINATION Page 1 of 3
 Building: 444
 Location: 450 plenum 2nd stage east
 Purpose: Post pressure wash/pre fixative

RWP #: N/A

COPY

Date: 2/18/05 Time: 16:00

RCT: 

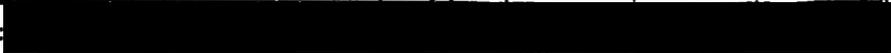
RCT: <u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Print Name	Signature	Emp. #

PRN/REN: N/A

Comments: Isotope of Concern U-238.

SURVEY RESULTS

#	Description	REMOVABLE		DIRECT	
		DPM/100 CM ²		DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
1	East 1st stage filter racks	<18	<205	<94	<745
2	East 1st stage filter racks	<18	<205	<94	<745
3	East 1st stage filter racks	<18	<205	<94	<745
4	East 1st stage filter racks	<18	<205	<94	<745
5	East 1st stage filter racks	<18	<205	<94	<745
6	East 1st stage filter racks	<18	<205	<94	<745
7	East 1st stage filter racks	<18	<205	<94	<745
8	East 1st stage filter racks	27	340	<94	<745
9	East 1st stage filter racks	<18	<205	<94	<745
10	East 1st stage filter racks	<18	<205	<94	<745
11	East 1st stage filter racks	<18	<205	<94	<745
12	East 1st stage filter racks	<18	<205	<94	<745
13	East 1st stage filter racks	<18	<205	<94	<745
14	East 1st stage filter racks	<18	<205	<94	<745
15	East plenum 2nd stage floor	146	1115	4392	52500
16	East plenum 2nd stage floor	71	260	432	3550
17	East plenum 2nd stage floor	51	279	378	4215
18	East plenum 2nd stage floor	40	348	606	2720
19	East plenum 2nd stage floor	49	227	234	1015
20	East plenum 2nd stage floor #	<18	<205	<94	<745
21	East plenum 2nd stage floor	23	<205	<94	<745
22	East plenum 2nd stage floor	<18	<205	192	1575
23	East plenum 2nd stage floor	<18	<205	<94	<745
24	East plenum 2nd stage floor	<18	<205	<94	<745
25	East plenum east wall	<18	<205	<94	<745

Date Reviewed: 2-21-05 RS Supervision: 

Print Name _____ Signature _____ Emp. # _____

2/

COPY

Building: 444
 Location: 450 plenum 2nd stage east
 Purpose: Post pressure wash/pre fixative

Date: 2/18/05
 Time: 4:00 PM

#	Description	REMOVABLE DPM/100 CM ²		DIRECT DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
26	East plenum east wall	<18	<205	<94	<745
27	East plenum 2nd stage ceiling	<18	<205	<94	<745
28	East plenum 2nd stage ceiling	<18	<205	<94	<745
29	East plenum 2nd stage ceiling	<18	<205	<94	<745
30	East plenum 2nd stage ceiling	<18	<205	<94	<745
31	East plenum 2nd stage ceiling	<18	<205	<94	<745
32	East plenum 2nd stage ceiling	<18	<205	<94	<745
33	East plenum 2nd stage ceiling	<18	<205	<94	<745
34	East plenum 2nd stage airlock floor	<18	<205	<94	<745
35	East plenum 2nd stage airlock wall	<18	<205	<94	<745
36	East plenum 2nd stage airlock wall	<18	<205	<94	<745
37	East plenum 2nd stage airlock wall	<18	<205	<94	<745
38	East plenum 2nd stage airlock wall	<18	<205	<94	<745
39	East plenum 2nd stage airlock ceiling	<18	<205	<94	<745
40	N/A	N/A	N/A	N/A	N/A
41	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A
43	N/A	N/A	N/A	N/A	N/A
44	N/A	N/A	N/A	N/A	N/A
45	N/A	N/A	N/A	N/A	N/A
46	N/A	N/A	N/A	N/A	N/A
47	N/A	N/A	N/A	N/A	N/A
48	N/A	N/A	N/A	N/A	N/A
49	N/A	N/A	N/A	N/A	N/A
50	N/A	N/A	N/A	N/A	N/A
51	N/A	N/A	N/A	N/A	N/A
52	N/A	N/A	N/A	N/A	N/A
53	N/A	N/A	N/A	N/A	N/A
54	N/A	N/A	N/A	N/A	N/A
55	N/A	N/A	N/A	N/A	N/A
56	N/A	N/A	N/A	N/A	N/A
57	N/A	N/A	N/A	N/A	N/A
58	N/A	N/A	N/A	N/A	N/A
59	N/A	N/A	N/A	N/A	N/A
60	N/A	N/A	N/A	N/A	N/A
61	N/A	N/A	N/A	N/A	N/A
62	N/A	N/A	N/A	N/A	N/A
63	N/A	N/A	N/A	N/A	N/A
64	N/A	N/A	N/A	N/A	N/A
65	N/A	N/A	N/A	N/A	N/A
66	N/A	N/A	N/A	N/A	N/A
67	N/A	N/A	N/A	N/A	N/A
68	N/A	N/A	N/A	N/A	N/A
69	N/A	N/A	N/A	N/A	N/A
70	N/A	N/A	N/A	N/A	N/A
71	N/A	N/A	N/A	N/A	N/A

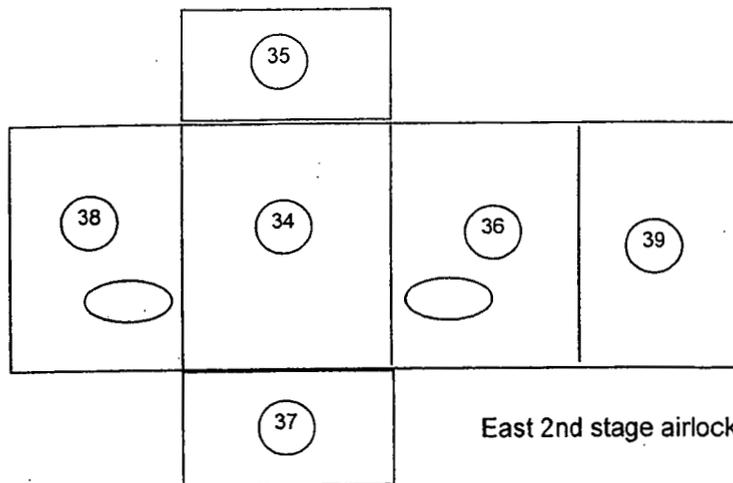
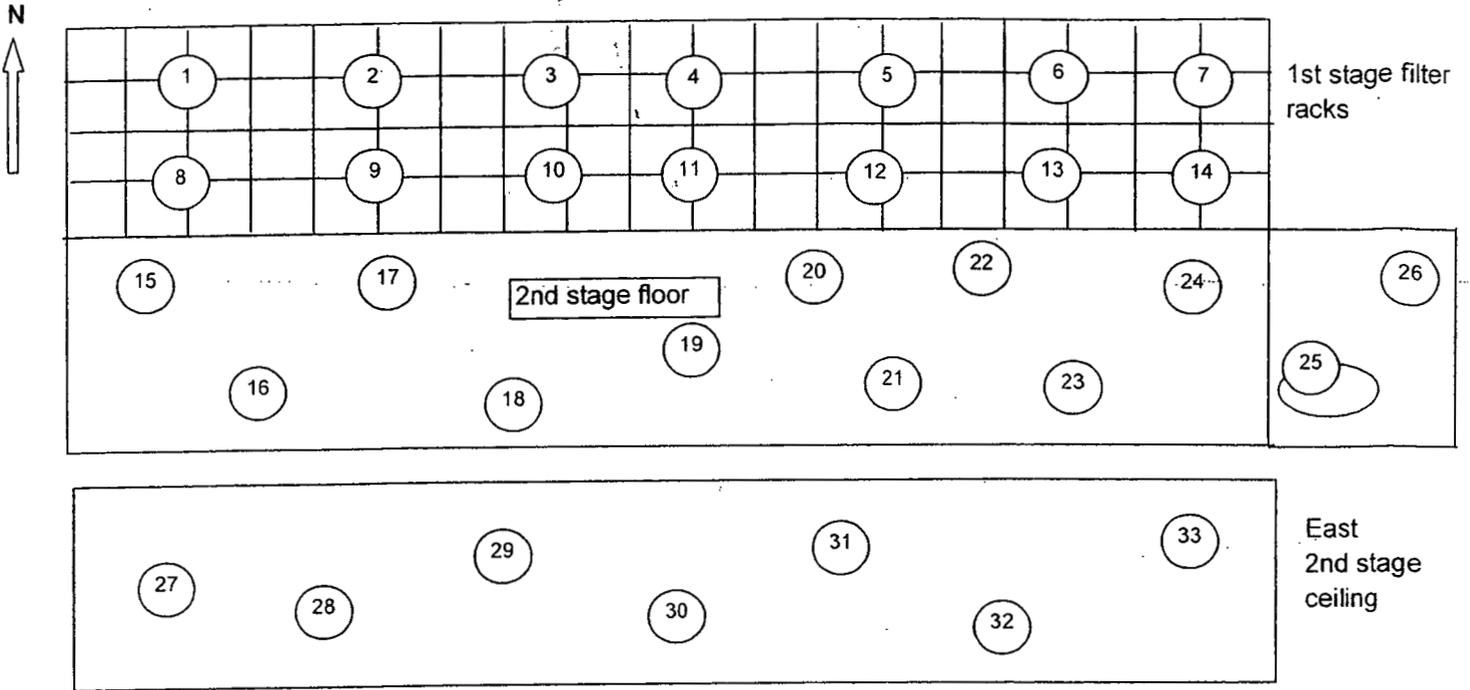
Building: 444
Location: 450 plenum 2nd stage east
Purpose: Post pressure wash/pre fixative

RADIOLOGICAL SAFETY
Drawing Showing Survey Points

COPY

Page 3 of 3
Date: 2/18/05
Time: 4:00 PM

East 2nd stage plenum



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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 176102	Serial # 143883	Serial # 1409
Cal Due 3/14/05	Cal Due 7/13/05	Cal Due 5/8/05
Bkg. 0.3 cpm α	Bkg. 0.6 cpm α	Bkg. 5 cpm α
Eff. 35.8 %	Eff. 36.0 %	Eff. 17 %
MDA 18 dpm α	MDA 18 dpm α	MDA 94 dpm α
Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 176102	Serial # 143883	Serial # 1409
Cal Due 3/14/05	Cal Due 7/13/05	Cal Due 5/8/05
Bkg. 73.3 cpm β	Bkg. 78.9 cpm β	Bkg. 464 cpm β
Eff. 25 %	Eff. 25 %	Eff. 22 %
MDA 205 dpm β	MDA 205 dpm β	MDA 745 dpm β

Survey Type: CONTAMINATION Page 1 of 3
 Building: 444
 Location: 450 plenum 2nd stage west
 Purpose: Post pressure wash/pre fixative

RWP #: N/A

COPY

Date: 2/18/05 Time: 16:00

RCT: [REDACTED]	Print Name	Signature	Emp. #
RCT: <u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	Print Name	Signature	Emp. #

PRN/REN: N/A

Comments: Isotope of Concern U-238.

SURVEY RESULTS

#	Description	REMOVABLE		DIRECT	
		DPM/100 CM ²		DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
1	West 1st stage filter racks	<18	<205	<94	<745
2	West 1st stage filter racks	<18	<205	<94	<745
3	West 1st stage filter racks	<18	<205	<94	<745
4	West 1st stage filter racks	<18	<205	<94	<745
5	West 1st stage filter racks	<18	<205	<94	<745
6	West 1st stage filter racks	<18	<205	<94	<745
7	West 1st stage filter racks	<18	<205	<94	<745
8	West 1st stage filter racks	27	340	<94	<745
9	West 1st stage filter racks	<18	<205	<94	<745
10	West 1st stage filter racks	<18	<205	<94	<745
11	West 1st stage filter racks	<18	<205	<94	<745
12	West 1st stage filter racks	<18	<205	<94	<745
13	West 1st stage filter racks	<18	<205	<94	<745
14	West 1st stage filter racks	<18	<205	<94	<745
15	West plenum 2nd stage floor	26	<205	1098	4375
16	West plenum 2nd stage floor	<18	220	342	1130
17	West plenum 2nd stage floor	<18	<205	600	3585
18	West plenum 2nd stage floor	38	<205	1896	6590
19	West plenum 2nd stage floor	29	<205	210	1625
20	West plenum 2nd stage floor #	35	<205	192	<745
21	West plenum 2nd stage floor	26	<205	180	<745
22	West plenum 2nd stage floor	38	<205	582	4500
23	West plenum 2nd stage floor	21	<205	444	1760
24	West plenum 2nd stage floor	74	380	1854	11750
25	West plenum east wall	<18	<205	<94	<745

Date Reviewed: 2-21-05 RS Supervisor [REDACTED]

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SAFETY

COPY

Building: 444
 Location: 450 plenum 2nd stage west
 Purpose: Post pressure wash/pre fixative

Date: 2/18/05
 Time: 4:00 PM

#	Description	REMOVABLE DPM/100 CM ²		DIRECT DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
26	West plenum east wall	<18	<205	<94	<745
27	West plenum 2nd stage ceiling	<18	<205	<94	<745
28	West plenum 2nd stage ceiling	<18	<205	<94	<745
29	West plenum 2nd stage ceiling	<18	<205	<94	<745
30	West plenum 2nd stage ceiling	<18	<205	<94	<745
31	West plenum 2nd stage ceiling	<18	<205	<94	<745
32	West plenum 2nd stage ceiling	<18	<205	<94	<745
33	West plenum 2nd stage ceiling	<18	<205	<94	<745
34	West plenum 2nd stage airlock floor	<18	<205	<94	<745
35	West plenum 2nd stage airlock wall	<18	<205	<94	<745
36	West plenum 2nd stage airlock wall	<18	<205	<94	<745
37	West plenum 2nd stage airlock wall	<18	<205	<94	<745
38	West plenum 2nd stage airlock wall	<18	<205	<94	<745
39	West plenum 2nd stage airlock ceiling	<18	<205	<94	<745
40	N/A	N/A	N/A	N/A	N/A
41	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A
43	N/A	N/A	N/A	N/A	N/A
44	N/A	N/A	N/A	N/A	N/A
45	N/A	N/A	N/A	N/A	N/A
46	N/A	N/A	N/A	N/A	N/A
47	N/A	N/A	N/A	N/A	N/A
48	N/A	N/A	N/A	N/A	N/A
49	N/A	N/A	N/A	N/A	N/A
50	N/A	N/A	N/A	N/A	N/A
51	N/A	N/A	N/A	N/A	N/A
52	N/A	N/A	N/A	N/A	N/A
53	N/A	N/A	N/A	N/A	N/A
54	N/A	N/A	N/A	N/A	N/A
55	N/A	N/A	N/A	N/A	N/A
56	N/A	N/A	N/A	N/A	N/A
57	N/A	N/A	N/A	N/A	N/A
58	N/A	N/A	N/A	N/A	N/A
59	N/A	N/A	N/A	N/A	N/A
60	N/A	N/A	N/A	N/A	N/A
61	N/A	N/A	N/A	N/A	N/A
62	N/A	N/A	N/A	N/A	N/A
63	N/A	N/A	N/A	N/A	N/A
64	N/A	N/A	N/A	N/A	N/A
65	N/A	N/A	N/A	N/A	N/A
66	N/A	N/A	N/A	N/A	N/A
67	N/A	N/A	N/A	N/A	N/A
68	N/A	N/A	N/A	N/A	N/A
69	N/A	N/A	N/A	N/A	N/A
70	N/A	N/A	N/A	N/A	N/A
71	N/A	N/A	N/A	N/A	N/A

RADIOLOGICAL SAFETY

Building: 444

Page 3 of 3

Location: 450 plenum 2nd stage west

Drawing Showing Survey Point

COPY

Date: 2/18/05

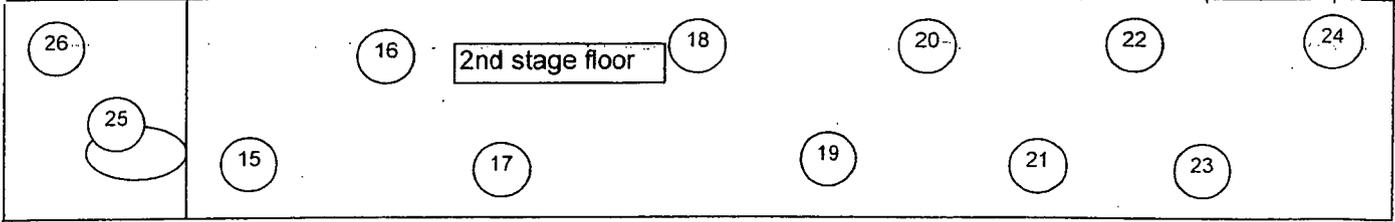
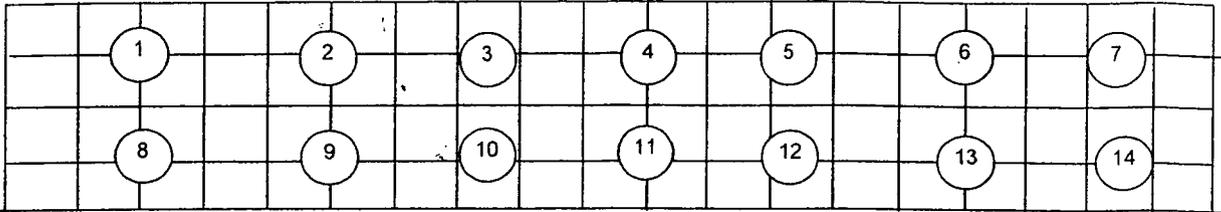
Purpose: Post pressure wash/pre fixative

Time: 4:00 PM

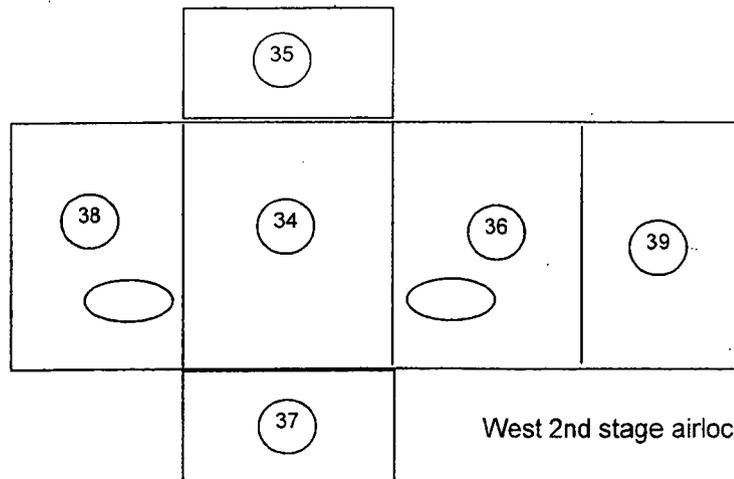
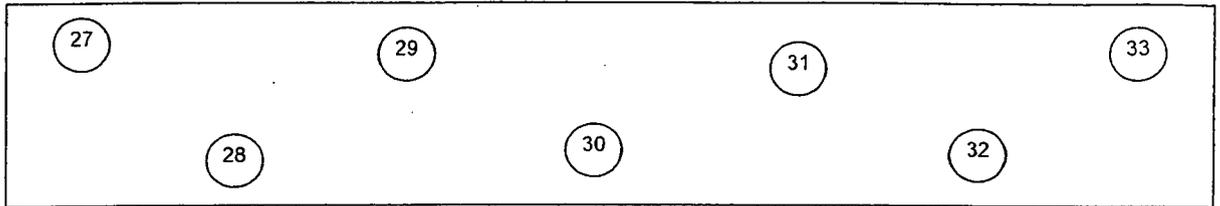
West 2nd stage plenum



West 1st stage filter rack



West 2nd stage ceiling



West 2nd stage airlock

ROCKY MOUNTAIN ENVIRONMENTAL TECHNOLOGYS, LLC

INSTRUMENT DATA

Mfg.	LUDLUM	Mfg.	LUDLUM	Mfg.	NE Electra
Model	2929	Model	2929	Model	DP-6
Serial #	143866	Serial #	143883	Serial #	1279
Cal Due	7/25/05	Cal Due	7/13/05	Cal Due	8/10/05
Bkg	0.2 cpm α	Bkg	0.6 cpm α	Bkg	4 cpm α
Efficiency	34.2 %	Efficiency	36.0 %	Efficiency	17 %
MDA	18 dpm α	MDA	18 dpm α	MDA	94 dpm α

Survey Type: Alpha / Beta Contamination
Building: 450 Plenum
Location: 3rd Stage
Purpose: Characterization Survey & Downpost

RWP #: 05-444-0005

Date: 2/21/05 **Time:** 10:00

Mfg.	LUDLUM	Mfg.	LUDLUM	Mfg.	NE Electra
Model	2929	Model	2929	Model	DP-6
Serial #	143866	Serial #	143883	Serial #	1279
Cal Due	7/25/05	Cal Due	7/13/05	Cal Due	8/10/05
Bkg	79.8 cpm β	Bkg	82.5 cpm β	Bkg	550 cpm β
Efficiency	25.0 %	Efficiency	25.0 %	Efficiency	22 %
MDA	205 dpm β	MDA	205 dpm β	MDA	745 dpm β

PRN/REN #: N/A

Comments: Isotope of concern is U-238. A 60 second pat was performed at each survey point-no activity was found to be above the MDA of the electra.

SURVEY RESULTS

Swipe #	LOCATION	ALPHA			BETA		
		Swipe	Direct	Wipe	Swipe	Direct	Wipe
		dpm/100cm ²	dpm/100cm ²	dpm/wipe	dpm/100cm ²	dpm/100cm ²	dpm/wipe
1	SEE MAP	< 18	< 94	N/A	< 205	< 745	N/A
2	WALL	< 18	< 94	N/A	< 205	< 745	N/A
3	DOOR	< 18	< 94	N/A	< 205	< 745	N/A
4	WALL	< 18	< 94	N/A	< 205	< 745	N/A
5	WALL	< 18	< 94	N/A	< 205	< 745	N/A
6	DOOR	< 18	< 94	N/A	< 205	< 745	N/A
7	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
8	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
9	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
10	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
11	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
12	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
13	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
14	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
15	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
16	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
17	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
18	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
19	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
20	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A

Date Reviewed: 2-22-05 **RS Supervision:** _____

COPY

ROCKY HILLS ENVIRONMENTAL TECHNOLOGY SITE

SURVEY RESULTS

Swipe #	LOCATION	ALPHA			BETA		
		Swipe dpm/100cm ²	Direct dpm/100cm ²	Wipe dpm/wipe	Swipe dpm/100cm ²	Direct dpm/100cm ²	Wipe dpm/wipe
21	DOOR	< 18	< 94	N/A	< 205	< 745	N/A
22	WALL	< 18	< 94	N/A	< 205	< 745	N/A
23	WALL	< 18	< 94	N/A	< 205	< 745	N/A
24	LOUVERS	< 18	< 94	N/A	< 205	< 745	N/A
25	COILS	< 18	< 94	N/A	< 205	< 745	N/A
26	LOUVERS	< 18	< 94	N/A	< 205	< 745	N/A
27	WALL	< 18	< 94	N/A	< 205	< 745	N/A
28	WALL	< 18	< 94	N/A	< 205	< 745	N/A
29	DOOR	< 18	< 94	N/A	< 205	< 745	N/A
30	FILTERS	< 18	< 94	N/A	< 205	< 745	N/A
31	FILTERS	< 18	< 94	N/A	< 205	< 745	N/A
32	FILTERS	< 18	< 94	N/A	< 205	< 745	N/A
33	FILTERS	< 18	< 94	N/A	< 205	< 745	N/A
34	FILTERS	< 18	< 94	N/A	< 205	< 745	N/A
35	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
36	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
37	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
38	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
39	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
40	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
41	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
42	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
43	DOOR	< 18	< 94	N/A	< 205	< 745	N/A
44	DOOR	< 18	< 94	N/A	< 205	< 745	N/A
45	WALL	< 18	< 94	N/A	< 205	< 745	N/A
46	WALL	< 18	< 94	N/A	< 205	< 745	N/A
47	DOOR	< 18	< 94	N/A	< 205	< 745	N/A
48	WALL	< 18	< 94	N/A	< 205	< 745	N/A
49	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
50	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
51	DOOR	< 18	< 94	N/A	< 205	< 745	N/A
52	FAN COVER	< 18	< 94	N/A	< 205	< 745	N/A
53	FAN COVER	< 18	< 94	N/A	< 205	< 745	N/A
54	FAN COVER	< 18	< 94	N/A	< 205	< 745	N/A
55	WALL	< 18	< 94	N/A	< 205	< 745	N/A
56	WALL	< 18	< 94	N/A	< 205	< 745	N/A
57	LOUVERS	< 18	< 94	N/A	< 205	< 745	N/A
58	WALL	< 18	< 94	N/A	< 205	< 745	N/A
59	COILS	< 18	< 94	N/A	< 205	< 745	N/A
60	LOUVERS	< 18	< 94	N/A	< 205	< 745	N/A
61	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
62	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
63	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A

COPY

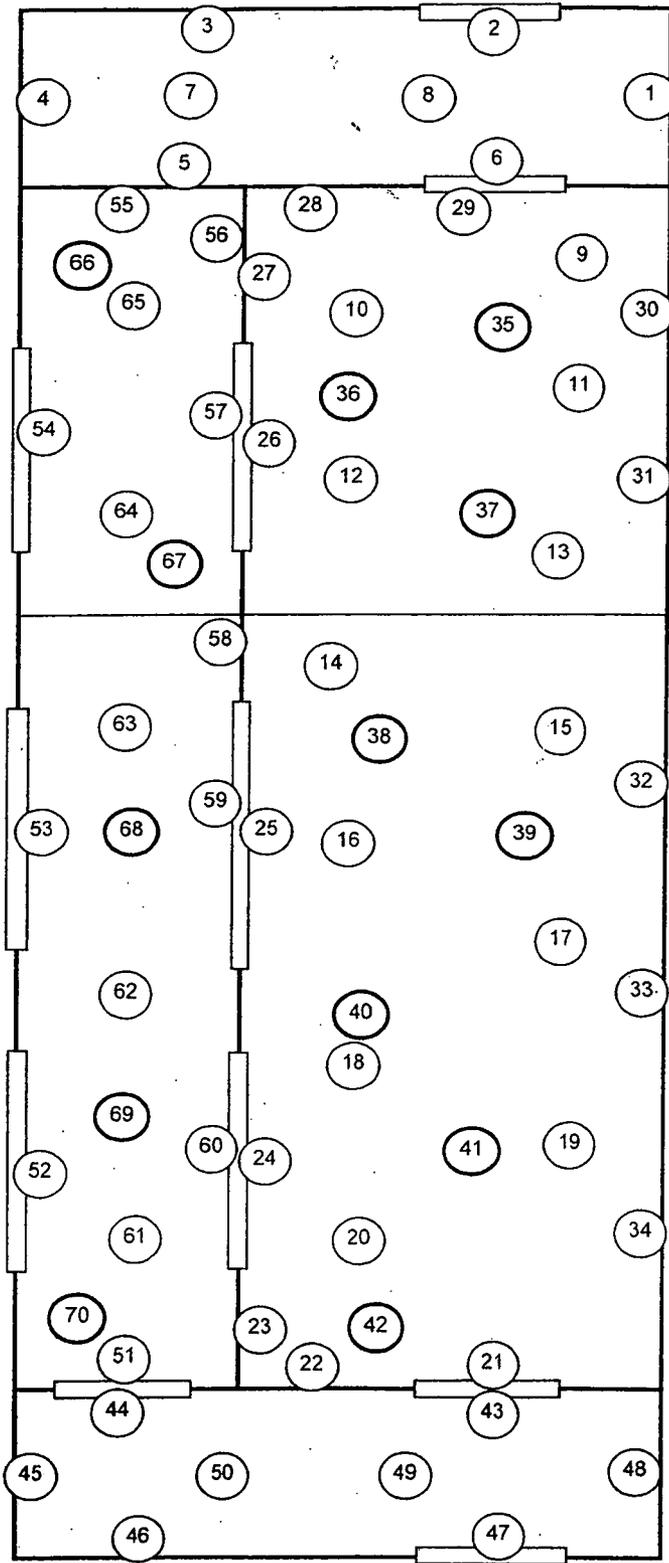
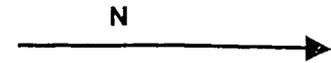
SURVEY RESULTS

Swipe #	LOCATION	ALPHA			BETA		
		Swipe dpm/100cm ²	Direct dpm/100cm ²	Wipe dpm/wipe	Swipe dpm/100cm ²	Direct dpm/100cm ²	Wipe dpm/wipe
64	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
65	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
66	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
67	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
68	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
69	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
70	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
71	N/A	N/A	N/A	N/A	N/A	N/A	N/A
72	N/A	N/A	N/A	N/A	N/A	N/A	N/A
73	N/A	N/A	N/A	N/A	N/A	N/A	N/A
74	N/A	N/A	N/A	N/A	N/A	N/A	N/A
75	N/A	N/A	N/A	N/A	N/A	N/A	N/A
76	N/A	N/A	N/A	N/A	N/A	N/A	N/A
77	N/A	N/A	N/A	N/A	N/A	N/A	N/A
78	N/A	N/A	N/A	N/A	N/A	N/A	N/A
79	N/A	N/A	N/A	N/A	N/A	N/A	N/A
80	N/A	N/A	N/A	N/A	N/A	N/A	N/A
81	N/A	N/A	N/A	N/A	N/A	N/A	N/A
82	N/A	N/A	N/A	N/A	N/A	N/A	N/A
83	N/A	N/A	N/A	N/A	N/A	N/A	N/A
84	N/A	N/A	N/A	N/A	N/A	N/A	N/A
85	N/A	N/A	N/A	N/A	N/A	N/A	N/A
86	N/A	N/A	N/A	N/A	N/A	N/A	N/A
87	N/A	N/A	N/A	N/A	N/A	N/A	N/A
88	N/A	N/A	N/A	N/A	N/A	N/A	N/A
89	N/A	N/A	N/A	N/A	N/A	N/A	N/A
90	N/A	N/A	N/A	N/A	N/A	N/A	N/A
91	N/A	N/A	N/A	N/A	N/A	N/A	N/A
92	N/A	N/A	N/A	N/A	N/A	N/A	N/A
93	N/A	N/A	N/A	N/A	N/A	N/A	N/A
94	N/A	N/A	N/A	N/A	N/A	N/A	N/A
95	N/A	N/A	N/A	N/A	N/A	N/A	N/A
96	N/A	N/A	N/A	N/A	N/A	N/A	N/A
97	N/A	N/A	N/A	N/A	N/A	N/A	N/A
98	N/A	N/A	N/A	N/A	N/A	N/A	N/A
99	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100	N/A	N/A	N/A	N/A	N/A	N/A	N/A
101	N/A	N/A	N/A	N/A	N/A	N/A	N/A
102	N/A	N/A	N/A	N/A	N/A	N/A	N/A
103	N/A	N/A	N/A	N/A	N/A	N/A	N/A
104	N/A	N/A	N/A	N/A	N/A	N/A	N/A
105	N/A	N/A	N/A	N/A	N/A	N/A	N/A
106	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Drawing Showing Survey Points

3rd Stage-450 Plenum



30

ROCKY MOUNTAIN ENVIRONMENTAL TECHNOLOGY SUPPLY

INSTRUMENT DATA

Mfg. <u>LUDLUM</u>	Mfg. <u>LUDLUM</u>	Mfg. <u>NE Electra</u>	Survey Type: <u>Alpha / Beta Contamination</u>
Model <u>2929</u>	Model <u>2929</u>	Model <u>DP-6</u>	Building: <u>450 Plenum</u>
Serial # <u>143866</u>	Serial # <u>143883</u>	Serial # <u>1279</u>	Location: <u>Fan Room</u>
Cal Due <u>7/25/05</u>	Cal Due <u>7/13/05</u>	Cal Due <u>8/10/05</u>	Purpose: <u>Characterization Survey</u>
Bkg <u>0.2 cpmα</u>	Bkg <u>0.6 cpmα</u>	Bkg <u>4 cpmα</u>	RWP #: <u>N/A</u>
Efficiency <u>34.2 %</u>	Efficiency <u>36.0 %</u>	Efficiency <u>17 %</u>	Date: <u>2/21/05</u> Time: <u>13:30</u>
MDA <u>18 dpmα</u>	MDA <u>18 dpmα</u>	MDA <u>94 dpmα</u>	Print name Signature Emp. #
Mfg. <u>LUDLUM</u>	Mfg. <u>LUDLUM</u>	Mfg. <u>NE Electra</u>	
Model <u>2929</u>	Model <u>2929</u>	Model <u>DP-6</u>	
Serial # <u>143866</u>	Serial # <u>143883</u>	Serial # <u>1279</u>	
Cal Due <u>7/25/05</u>	Cal Due <u>7/13/05</u>	Cal Due <u>8/10/05</u>	
Bkg <u>79.8 cpmβ</u>	Bkg <u>82.5 cpmβ</u>	Bkg <u>550 cpmβ</u>	
Efficiency <u>25.0 %</u>	Efficiency <u>25.0 %</u>	Efficiency <u>22 %</u>	
MDA <u>205 dpmβ</u>	MDA <u>205 dpmβ</u>	MDA <u>745 dpmβ</u>	

PRN/REN #: N/A

Comments: Isotope of concern is U-238. A 60 second pat was performed at each survey point-no activity was found to be above the MDA of the electra.

SURVEY RESULTS

Swipe #	LOCATION	ALPHA			BETA		
		Swipe	Direct	Wipe	Swipe	Direct	Wipe
	SEE MAP	dpm/100cm ²	dpm/100cm ²	dpm/wipe	dpm/100cm ²	dpm/100cm ²	dpm/wipe
1	WALL	< 18	< 94	N/A	< 205	< 745	N/A
2	WALL	< 18	< 94	N/A	< 205	< 745	N/A
3	WALL	< 18	< 94	N/A	< 205	< 745	N/A
4	WALL	< 18	< 94	N/A	< 205	< 745	N/A
5	WALL	< 18	< 94	N/A	< 205	< 745	N/A
6	ELECTRICAL PANEL	< 18	< 94	N/A	< 205	< 745	N/A
7	ELECTRICAL PANEL	< 18	< 94	N/A	< 205	< 745	N/A
8	WALL	< 18	< 94	N/A	< 205	< 745	N/A
9	WALL	< 18	< 94	N/A	< 205	< 745	N/A
10	WALL	< 18	< 94	N/A	< 205	< 745	N/A
11	ELECTRICAL PANELS	< 18	< 94	N/A	< 205	< 745	N/A
12	PHONE BOOTH	< 18	< 94	N/A	< 205	< 745	N/A
13	WALL	< 18	< 94	N/A	< 205	< 745	N/A
14	WALL	< 18	< 94	N/A	< 205	< 745	N/A
15	WALL	< 18	< 94	N/A	< 205	< 745	N/A
16	WALL	< 18	< 94	N/A	< 205	< 745	N/A
17	ELECTRICAL PANEL	< 18	< 94	N/A	< 205	< 745	N/A
18	ELECTRICAL PANEL	< 18	< 94	N/A	< 205	< 745	N/A
19	WALL	< 18	< 94	N/A	< 205	< 745	N/A
20	PUMP	< 18	< 94	N/A	< 205	< 745	N/A

Date Reviewed: 2-22-05 RS Supervision: _____

SURVEY RESULTS

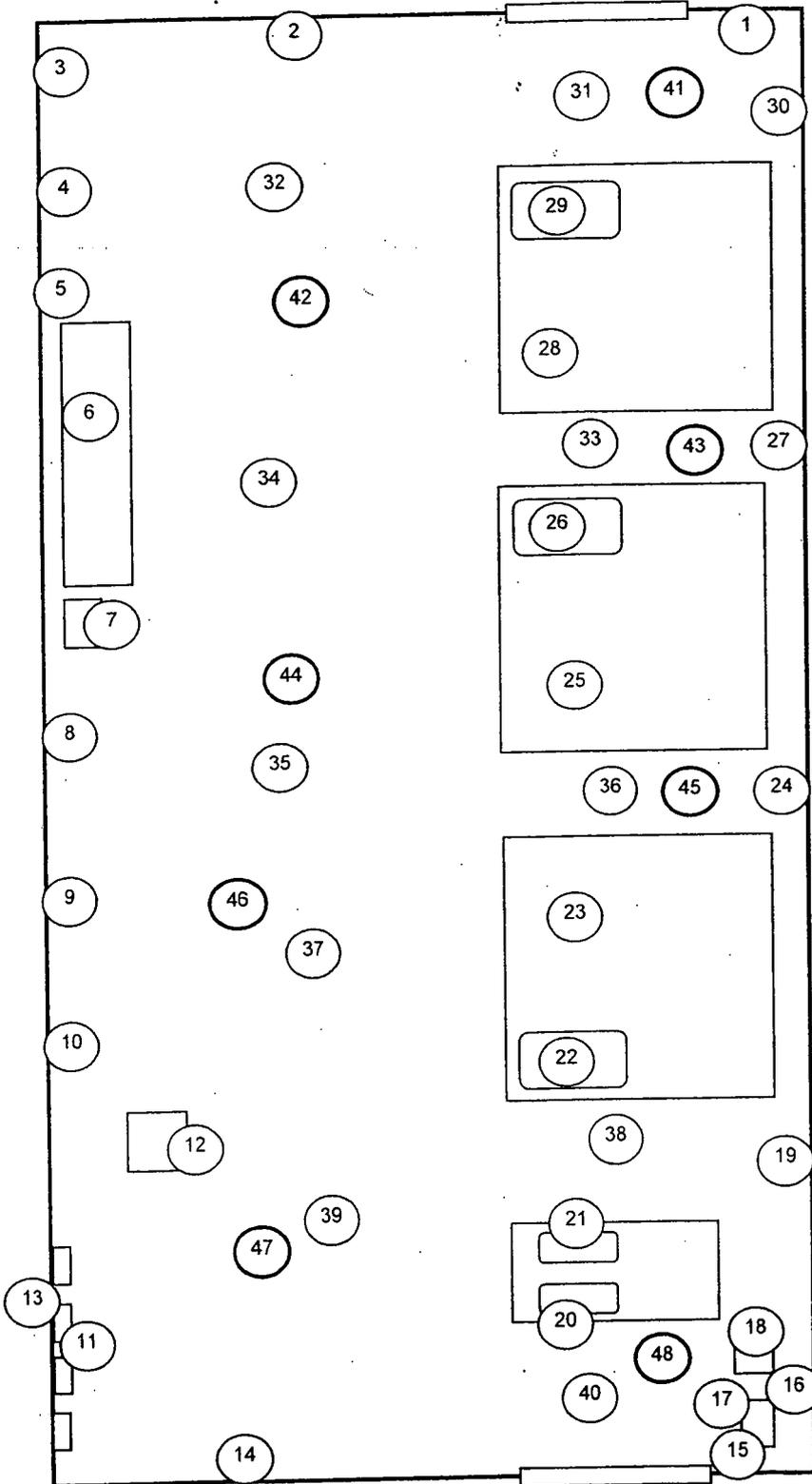
Swipe #	LOCATION	ALPHA			BETA		
		Swipe dpm/100cm ²	Direct dpm/100cm ²	Wipe dpm/wipe	Swipe dpm/100cm ²	Direct dpm/100cm ²	Wipe dpm/wipe
21	PUMP	< 18	< 94	N/A	< 205	< 745	N/A
22	FAN MOTOR	< 18	< 94	N/A	< 205	< 745	N/A
23	FAN HOUSING	< 18	< 94	N/A	< 205	< 745	N/A
24	WALL	< 18	< 94	N/A	< 205	< 745	N/A
25	FAN HOUSING	< 18	< 94	N/A	< 205	< 745	N/A
26	FAN MOTOR	< 18	< 94	N/A	< 205	< 745	N/A
27	WALL	< 18	< 94	N/A	< 205	< 745	N/A
28	FAN HOUSING	< 18	< 94	N/A	< 205	< 745	N/A
29	FAN MOTOR	< 18	< 94	N/A	< 205	< 745	N/A
30	WALL	< 18	< 94	N/A	< 205	< 745	N/A
31	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
32	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
33	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
34	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
35	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
36	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
37	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
38	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
39	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
40	FLOOR	< 18	< 94	N/A	< 205	< 745	N/A
41	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
42	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
43	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
44	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
45	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
46	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
47	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
48	OVERHEADS	< 18	< 94	N/A	< 205	< 745	N/A
49	N/A	N/A	N/A	N/A	N/A	N/A	N/A
50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
51	N/A	N/A	N/A	N/A	N/A	N/A	N/A
52	N/A	N/A	N/A	N/A	N/A	N/A	N/A
53	N/A	N/A	N/A	N/A	N/A	N/A	N/A
54	N/A	N/A	N/A	N/A	N/A	N/A	N/A
55	N/A	N/A	N/A	N/A	N/A	N/A	N/A
56	N/A	N/A	N/A	N/A	N/A	N/A	N/A
57	N/A	N/A	N/A	N/A	N/A	N/A	N/A
58	N/A	N/A	N/A	N/A	N/A	N/A	N/A
59	N/A	N/A	N/A	N/A	N/A	N/A	N/A
60	N/A	N/A	N/A	N/A	N/A	N/A	N/A
61	N/A	N/A	N/A	N/A	N/A	N/A	N/A
62	N/A	N/A	N/A	N/A	N/A	N/A	N/A
63	N/A	N/A	N/A	N/A	N/A	N/A	N/A

ENVIRONMENTAL TECHNOLOGY

Drawing Showing Survey Points

Fan Room-450 Plenum

N



ATTACHMENT B-2

Post-Fixative LLW Survey Forms

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY S/EE

INSTRUMENT DATA

Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 143866	Serial # 143883	Serial # N/A
Cal Due 7/25/05	Cal Due 7/13/05	Cal Due N/A
Bkg. 0.2 cpm α	Bkg. 0.6 cpm α	Bkg. N/A cpm α
Eff. 34.2 %	Eff. 36.0 %	Eff. N/A %
MDA 18 dpm α	MDA 18 dpm α	MDA N/A dpm α
Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 143866	Serial # 143883	Serial # N/A
Cal Due 7/25/05	Cal Due 7/13/05	Cal Due N/A
Bkg. 79.8 cpm β	Bkg. 82.5 cpm β	Bkg. N/A cpm β
Eff. 25 %	Eff. 25 %	Eff. N/A %
MDA 205 dpm β	MDA 205 dpm β	MDA N/A dpm β

Survey Type: CONTAMINATION Page 1 of 3
 Building: 444
 Location: 450 plenum inlets
 Purpose: Post fixative

RWP #: N/A

COPY

Date: 2/21/05 Time: 10:00

RO [REDACTED]
 RO [REDACTED]
 Print Name _____ Signature _____ Emp. # _____

PRN/REN : N/A

Comments: Isotope of Concern U-238.

SURVEY RESULTS

#	Description	REMOVABLE		DIRECT	
		DPM/100 CM ²		DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
1	West plenum inlet west wall	<18	<205	N/A	N/A
2	West plenum inlet west wall	<18	<205	N/A	N/A
3	West plenum inlet west wall	<18	<205	N/A	N/A
4	West plenum inlet floor	<18	<205	N/A	N/A
5	West plenum inlet floor	<18	<205	N/A	N/A
6	West plenum inlet floor	<18	<205	N/A	N/A
7	West plenum inlet floor	<18	<205	N/A	N/A
8	West plenum inlet floor	<18	<205	N/A	N/A
9	West plenum inlet east wall	<18	<205	N/A	N/A
10	West plenum inlet east wall	<18	<205	N/A	N/A
11	West plenum inlet east wall	<18	<205	N/A	N/A
12	West plenum inlet ceiling	<18	<205	N/A	N/A
13	West plenum inlet ceiling	<18	<205	N/A	N/A
14	West plenum inlet ceiling	<18	<205	N/A	N/A
15	West plenum inlet ceiling	<18	<205	N/A	N/A
16	East plenum inlet west wall	<18	<205	N/A	N/A
17	East plenum inlet west wall	<18	<205	N/A	N/A
18	East plenum inlet west wall	<18	<205	N/A	N/A
19	East plenum inlet floor	<18	<205	N/A	N/A
20	East plenum inlet floor	<18	<205	N/A	N/A
21	East plenum inlet floor	<18	<205	N/A	N/A
22	East plenum inlet floor	<18	<205	N/A	N/A
23	East plenum inlet floor	<18	<205	N/A	N/A
24	East plenum east wall	<18	<205	N/A	N/A
25	East plenum east wall	<18	<205	N/A	N/A

Date Reviewed: 2-22-05 RS Supervision: [REDACTED]

35

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

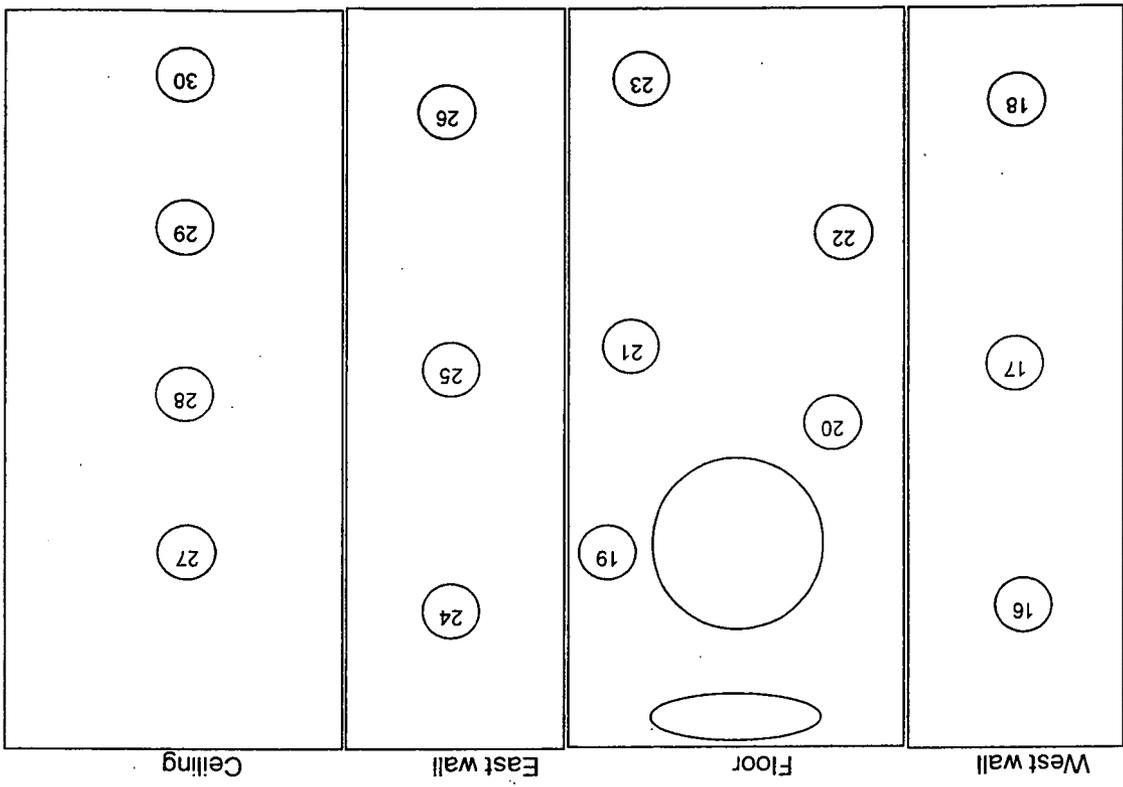
Building: 444
 Location: 450 plenum inlets
 Purpose: Post fixative

RADIOLOGICAL SAFETY

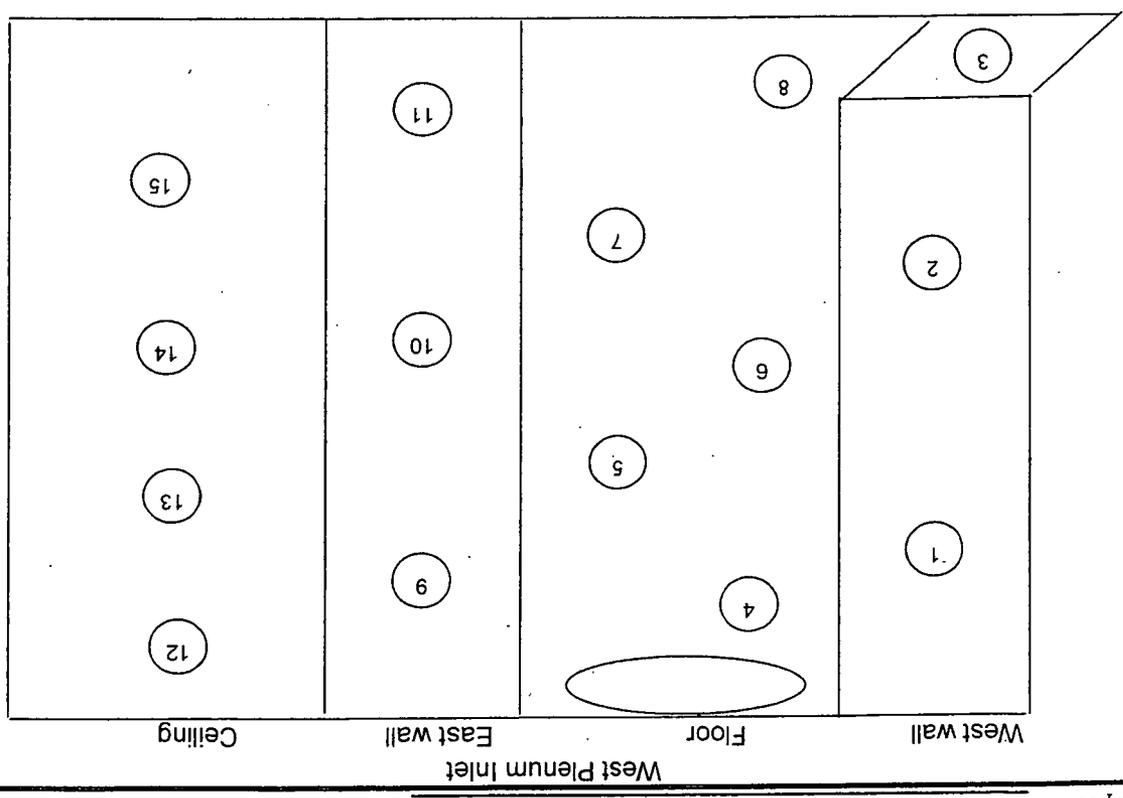
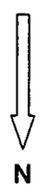
Date: 2/21/05
 Time: 10:00 AM

COPY

#	Description	REMOVABLE DPM/100 CM ²		DIRECT DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
26	East plenum east wall	<18	<205	N/A	N/A
27	East plenum inlet ceiling	<18	<205	N/A	N/A
28	East plenum inlet ceiling	<18	<205	N/A	N/A
29	East plenum inlet ceiling	<18	<205	N/A	N/A
30	East plenum inlet ceiling	<18	<205	N/A	N/A
31	N/A	N/A	N/A	N/A	N/A
32	N/A	N/A	N/A	N/A	N/A
33	N/A	N/A	N/A	N/A	N/A
34	N/A	N/A	N/A	N/A	N/A
35	N/A	N/A	N/A	N/A	N/A
36	N/A	N/A	N/A	N/A	N/A
37	N/A	N/A	N/A	N/A	N/A
38	N/A	N/A	N/A	N/A	N/A
39	N/A	N/A	N/A	N/A	N/A
40	N/A	N/A	N/A	N/A	N/A
41	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A
43	N/A	N/A	N/A	N/A	N/A
44	N/A	N/A	N/A	N/A	N/A
45	N/A	N/A	N/A	N/A	N/A
46	N/A	N/A	N/A	N/A	N/A
47	N/A	N/A	N/A	N/A	N/A
48	N/A	N/A	N/A	N/A	N/A
49	N/A	N/A	N/A	N/A	N/A
50	N/A	N/A	N/A	N/A	N/A
51	N/A	N/A	N/A	N/A	N/A
52	N/A	N/A	N/A	N/A	N/A
53	N/A	N/A	N/A	N/A	N/A
54	N/A	N/A	N/A	N/A	N/A
55	N/A	N/A	N/A	N/A	N/A
56	N/A	N/A	N/A	N/A	N/A
57	N/A	N/A	N/A	N/A	N/A
58	N/A	N/A	N/A	N/A	N/A
59	N/A	N/A	N/A	N/A	N/A
60	N/A	N/A	N/A	N/A	N/A
61	N/A	N/A	N/A	N/A	N/A
62	N/A	N/A	N/A	N/A	N/A
63	N/A	N/A	N/A	N/A	N/A
64	N/A	N/A	N/A	N/A	N/A
65	N/A	N/A	N/A	N/A	N/A
66	N/A	N/A	N/A	N/A	N/A
67	N/A	N/A	N/A	N/A	N/A
68	N/A	N/A	N/A	N/A	N/A
69	N/A	N/A	N/A	N/A	N/A
70	N/A	N/A	N/A	N/A	N/A
71	N/A	N/A	N/A	N/A	N/A



East Plenum Inlet



West Plenum Inlet

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 143866	Serial # 143883	Serial # N/A
Cal Due 7/25/05	Cal Due 7/13/05	Cal Due N/A
Bkg. 0.2 cpm α	Bkg. 0.6 cpm α	Bkg. N/A cpm α
Eff. 34.2 %	Eff. 36.0 %	Eff. N/A %
MDA 18 dpm α	MDA 18 dpm α	MDA N/A dpm α
Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 143866	Serial # 143883	Serial # N/A
Cal Due 7/25/05	Cal Due 7/13/05	Cal Due N/A
Bkg. 79.8 cpm β	Bkg. 82.5 cpm β	Bkg. N/A cpm β
Eff. 25 %	Eff. 25 %	Eff. N/A %
MDA 205 dpm β	MDA 205 dpm β	MDA N/A dpm β

Survey Type : CONTAMINATION Page 1 of 4
 Building: 444
 Location: 450 plenum 1st stage east
 Purpose: Post fixative

RWP # : N/A COPY

Date: 2/21/05 Time: 10:00

RC: [REDACTED]
 Print Name: [REDACTED] Signature: [REDACTED] Emp. #: [REDACTED]

RCT:

N/A	N/A	N/A
Print Name	Signature	Emp. #

PRN/REN : N/A

Comments: Isotope of Concern U-238.

SURVEY RESULTS

#	Description	REMOVABLE		DIRECT	
		DPM/100 CM ²		DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
1	East plenum demister north wall	<18	<205	N/A	N/A
2	East plenum demister north wall	<18	<205	N/A	N/A
3	East plenum demister north wall	<18	<205	N/A	N/A
4	East plenum demister north wall	<18	<205	N/A	N/A
5	East plenum demister north wall	<18	<205	N/A	N/A
6	East plenum demister floor	<18	<205	N/A	N/A
7	East plenum demister floor	<18	<205	N/A	N/A
8	East plenum demister floor	<18	<205	N/A	N/A
9	East plenum demister floor	<18	<205	N/A	N/A
10	East plenum demister floor	<18	<205	N/A	N/A
11	East plenum demister floor	<18	<205	N/A	N/A
12	East plenum 1st stage floor	<18	<205	N/A	N/A
13	East plenum 1st stage floor	<18	<205	N/A	N/A
14	East plenum 1st stage floor	<18	<205	N/A	N/A
15	East plenum 1st stage floor	<18	<205	N/A	N/A
16	East plenum 1st stage floor	<18	<205	N/A	N/A
17	East plenum 1st stage floor	<18	<205	N/A	N/A
18	East plenum demister and 1st stage ceiling	<18	<205	N/A	N/A
19	East plenum demister and 1st stage ceiling	<18	<205	N/A	N/A
20	East plenum demister and 1st stage ceiling #	<18	<205	N/A	N/A
21	East plenum demister and 1st stage ceiling	<18	<205	N/A	N/A
22	East plenum demister and 1st stage ceiling	<18	<205	N/A	N/A
23	East plenum demister and 1st stage ceiling	<18	<205	N/A	N/A
24	East plenum 1st stage airlock ceiling	<18	<205	N/A	N/A
25	East plenum 1st stage airlock wall	<18	<205	N/A	N/A

Date Reviewed: 2-22-05 RS Supervision: [REDACTED]

28

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SAFETY

Building: 444
 Location: 450 plenum 1st stage east
 Purpose: Post fixative

Page 2 of 4

Date: 2/21/05

Time: 10:00 AM

COPY

#	Description	REMOVABLE		DIRECT	
		DPM/100 CM ²		DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
26	East plenum 1st stage airlock wall	<18	<205	N/A	N/A
27	East plenum 1st stage airlock wall	<18	<205	N/A	N/A
28	East plenum 1st stage airlock wall	<18	<205	N/A	N/A
29	East plenum 1st stage airlock floor	<18	<205	N/A	N/A
30	Demister rack	<18	<205	N/A	N/A
31	Demister rack	<18	<205	N/A	N/A
32	Demister rack	<18	<205	N/A	N/A
33	N/A	N/A	N/A	N/A	N/A
34	N/A	N/A	N/A	N/A	N/A
35	N/A	N/A	N/A	N/A	N/A
36	N/A	N/A	N/A	N/A	N/A
37	N/A	N/A	N/A	N/A	N/A
38	N/A	N/A	N/A	N/A	N/A
39	N/A	N/A	N/A	N/A	N/A
40	N/A	N/A	N/A	N/A	N/A
41	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A
43	N/A	N/A	N/A	N/A	N/A
44	N/A	N/A	N/A	N/A	N/A
45	N/A	N/A	N/A	N/A	N/A
46	N/A	N/A	N/A	N/A	N/A
47	N/A	N/A	N/A	N/A	N/A
48	N/A	N/A	N/A	N/A	N/A
49	N/A	N/A	N/A	N/A	N/A
50	N/A	N/A	N/A	N/A	N/A
51	N/A	N/A	N/A	N/A	N/A
52	N/A	N/A	N/A	N/A	N/A
53	N/A	N/A	N/A	N/A	N/A
54	N/A	N/A	N/A	N/A	N/A
55	N/A	N/A	N/A	N/A	N/A
56	N/A	N/A	N/A	N/A	N/A
57	N/A	N/A	N/A	N/A	N/A
58	N/A	N/A	N/A	N/A	N/A
59	N/A	N/A	N/A	N/A	N/A
60	N/A	N/A	N/A	N/A	N/A
61	N/A	N/A	N/A	N/A	N/A
62	N/A	N/A	N/A	N/A	N/A
63	N/A	N/A	N/A	N/A	N/A
64	N/A	N/A	N/A	N/A	N/A
65	N/A	N/A	N/A	N/A	N/A
66	N/A	N/A	N/A	N/A	N/A
67	N/A	N/A	N/A	N/A	N/A
68	N/A	N/A	N/A	N/A	N/A
69	N/A	N/A	N/A	N/A	N/A
70	N/A	N/A	N/A	N/A	N/A
71	N/A	N/A	N/A	N/A	N/A

Building: 444
Location: 450 plenum 1st stage east
Purpose: Post fixative

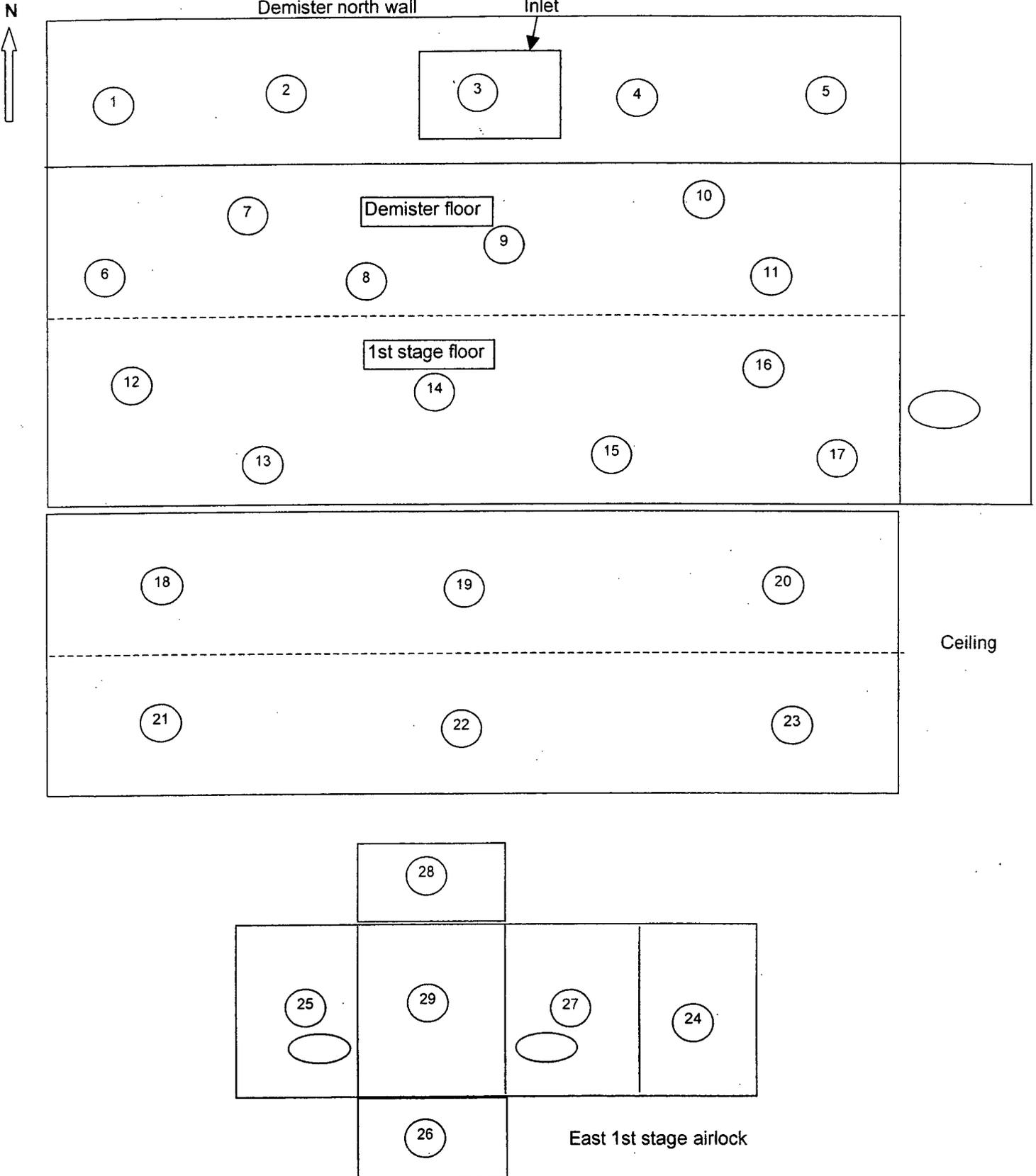
RADIOLOGICAL SAFETY

Drawing Showing Survey Points

COPY

Page 3 of 4
Date: 2/21/05
Time: 10:00 AM

East demister and 1st stage



40

Building: 444
Location: 450 plenum 1st stage east
Purpose: Post fixative

RADIOLOGICAL SAFETY

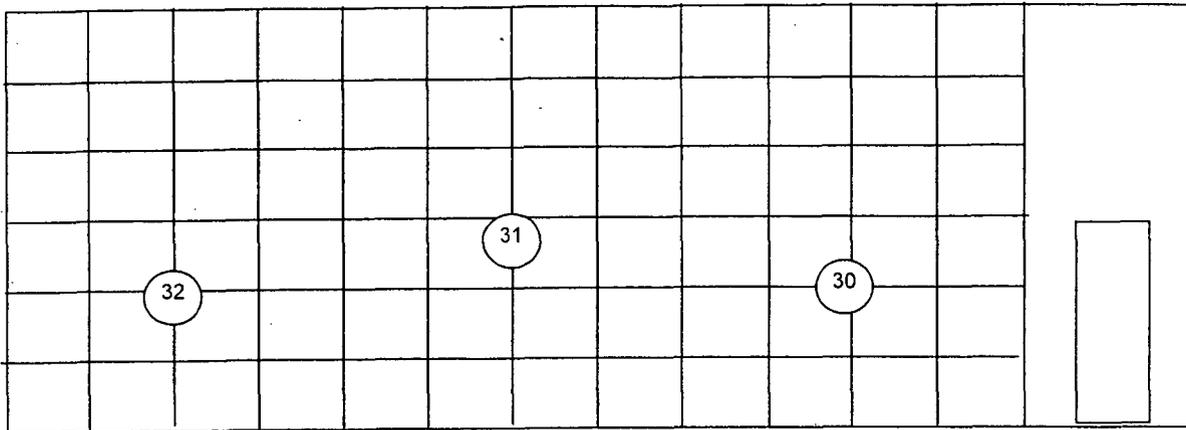
Drawing Showing Survey Points

COPY

Page 4 of 4

Date: 2/21/04

Time: 10:00 AM



Demister rack

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 143866	Serial # 143883	Serial # N/A
Cal Due 7/25/05	Cal Due 7/13/05	Cal Due N/A
Bkg. 0.2 cpm α	Bkg. 0.6 cpm α	Bkg. N/A cpm α
Eff. 34.2 %	Eff. 36.0 %	Eff. N/A %
MDA 18 dpm α	MDA 18 dpm α	MDA N/A dpm α
Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model # 2929	Model DP-6
Serial # 143866	Serial # 143883	Serial # N/A
Cal Due 7/25/05	Cal Due 7/13/05	Cal Due N/A
Bkg. 79.8 cpm β	Bkg. 82.5 cpm β	Bkg. N/A cpm β
Eff. 25 %	Eff. 25 %	Eff. N/A %
MDA 205 dpm β	MDA 205 dpm β	MDA N/A dpm β

Survey Type: CONTAMINATION Page 1 of 4
 Building: 444
 Location: 450 plenum 1st stage west
 Purpose: Post fixative

RWP #: N/A **COPY**
 Date: 2/21/05 Time: 10:00
 RCT: 
 Print Name _____ Signature _____ Emp. # _____
 RCT: N/A | N/A | N/A
 Print Name _____ Signature _____ Emp. # _____

PRN/REN: N/A
 Comments: Isotope of Concern U-238.

SURVEY RESULTS

#	Description	REMOVABLE		DIRECT	
		DPM/100 CM ²		DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
1	West plenum demister north wall	<18	<205	N/A	N/A
2	West plenum demister north wall	<18	<205	N/A	N/A
3	West plenum demister north wall	<18	<205	N/A	N/A
4	West plenum demister north wall	<18	<205	N/A	N/A
5	West plenum west wall	<18	<205	N/A	N/A
6	West plenum west wall	<18	<205	N/A	N/A
7	West plenum demister floor	<18	<205	N/A	N/A
8	West plenum demister floor	<18	<205	N/A	N/A
9	West plenum demister floor	<18	<205	N/A	N/A
10	West plenum demister floor	<18	<205	N/A	N/A
11	West plenum demister floor	<18	<205	N/A	N/A
12	West plenum demister floor	<18	<205	N/A	N/A
13	West plenum 1st stage floor	<18	<205	N/A	N/A
14	West plenum 1st stage floor	<18	<205	N/A	N/A
15	West plenum 1st stage floor	<18	<205	N/A	N/A
16	West plenum 1st stage floor	<18	<205	N/A	N/A
17	West plenum 1st stage floor	<18	<205	N/A	N/A
18	West plenum 1st stage floor	<18	<205	N/A	N/A
19	West plenum demister and 1st stage ceiling	<18	<205	N/A	N/A
20	West plenum demister and 1st stage ceiling #	<18	<205	N/A	N/A
21	West plenum demister and 1st stage ceiling	<18	<205	N/A	N/A
22	West plenum demister and 1st stage ceiling	<18	<205	N/A	N/A
23	West plenum demister and 1st stage ceiling	<18	<205	N/A	N/A
24	West plenum demister and 1st stage ceiling	<18	<205	N/A	N/A
25	West plenum 1st stage airlock floor	<18	<205	N/A	N/A

Date Reviewed: 2-22-05 RS Supervision: 
 Print Name _____ Signature _____ Emp. # _____

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

Building: 444
 Location: 450 plenum 1st stage west
 Purpose: Post fixative

RADIOLOGICAL SAFETY

COPY

Page 2 of 4
 Date: 2/21/05
 Time: 10:00 AM

#	Description	REMOVABLE DPM/100 CM ²		DIRECT DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
26	West plenum 1st stage airlock wall	<18	<205	N/A	N/A
27	West plenum 1st stage airlock wall	<18	<205	N/A	N/A
28	West plenum 1st stage airlock wall	<18	<205	N/A	N/A
29	West plenum 1st stage airlock wall	<18	<205	N/A	N/A
30	West plenum 1st stage airlock ceiling	<18	<205	N/A	N/A
31	Demister rack	<18	<205	N/A	N/A
32	Demister rack	<18	<205	N/A	N/A
33	Demister rack	<18	<205	N/A	N/A
34	N/A	N/A	N/A	N/A	N/A
35	N/A	N/A	N/A	N/A	N/A
36	N/A	N/A	N/A	N/A	N/A
37	N/A	N/A	N/A	N/A	N/A
38	N/A	N/A	N/A	N/A	N/A
39	N/A	N/A	N/A	N/A	N/A
40	N/A	N/A	N/A	N/A	N/A
41	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A
43	N/A	N/A	N/A	N/A	N/A
44	N/A	N/A	N/A	N/A	N/A
45	N/A	N/A	N/A	N/A	N/A
46	N/A	N/A	N/A	N/A	N/A
47	N/A	N/A	N/A	N/A	N/A
48	N/A	N/A	N/A	N/A	N/A
49	N/A	N/A	N/A	N/A	N/A
50	N/A	N/A	N/A	N/A	N/A
51	N/A	N/A	N/A	N/A	N/A
52	N/A	N/A	N/A	N/A	N/A
53	N/A	N/A	N/A	N/A	N/A
54	N/A	N/A	N/A	N/A	N/A
55	N/A	N/A	N/A	N/A	N/A
56	N/A	N/A	N/A	N/A	N/A
57	N/A	N/A	N/A	N/A	N/A
58	N/A	N/A	N/A	N/A	N/A
59	N/A	N/A	N/A	N/A	N/A
60	N/A	N/A	N/A	N/A	N/A
61	N/A	N/A	N/A	N/A	N/A
62	N/A	N/A	N/A	N/A	N/A
63	N/A	N/A	N/A	N/A	N/A
64	N/A	N/A	N/A	N/A	N/A
65	N/A	N/A	N/A	N/A	N/A
66	N/A	N/A	N/A	N/A	N/A
67	N/A	N/A	N/A	N/A	N/A
68	N/A	N/A	N/A	N/A	N/A
69	N/A	N/A	N/A	N/A	N/A
70	N/A	N/A	N/A	N/A	N/A
71	N/A	N/A	N/A	N/A	N/A

43

Building: 444
Location: 450 plenum 1st stage west
Purpose: Post fixative

RADIOLOGICAL SAFETY

Drawing Showing Survey Points

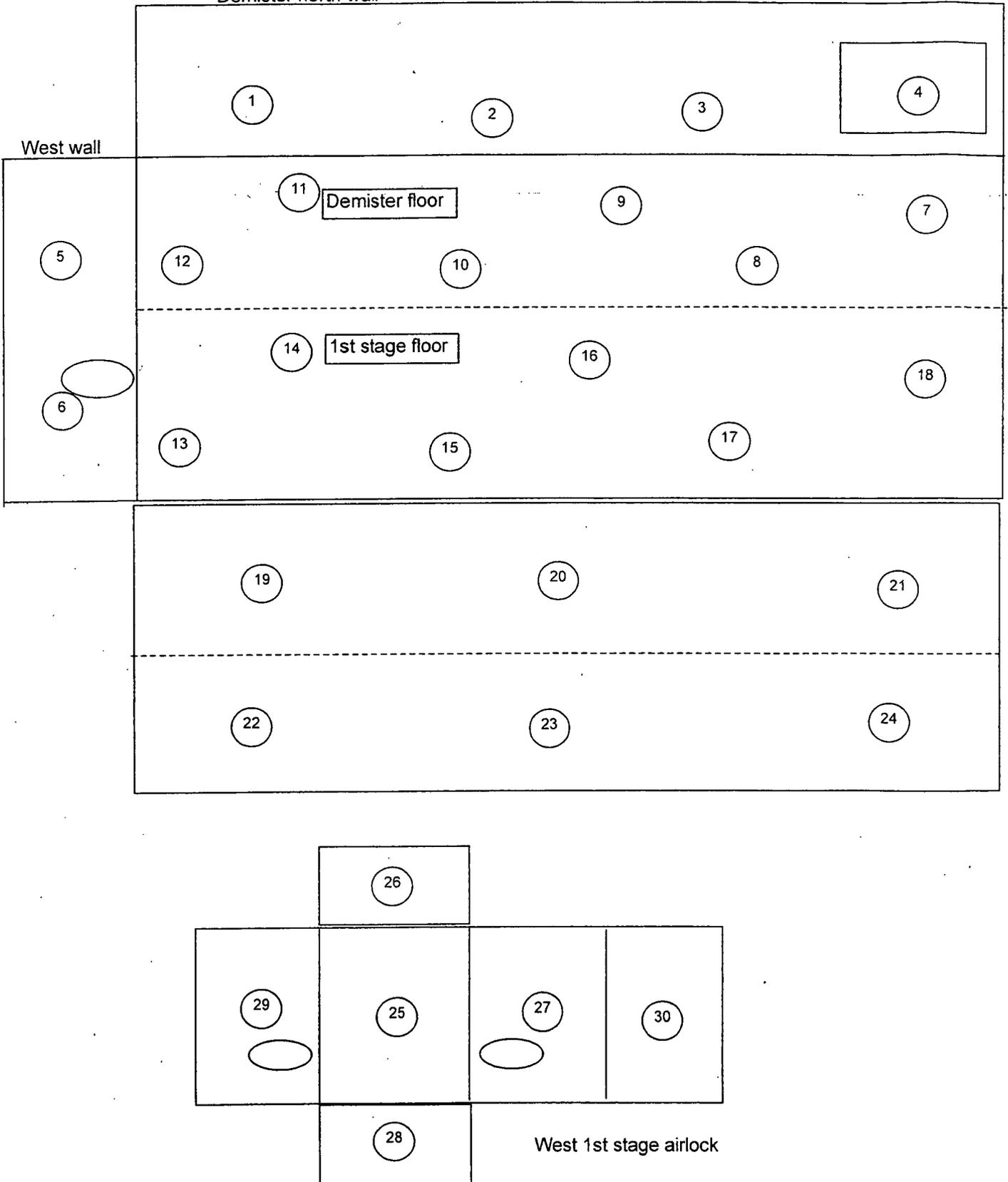
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Page 3 of 4
Date: 2/21/05
Time: 10:00 AM

West demister and 1st stage



Demister north wall



44

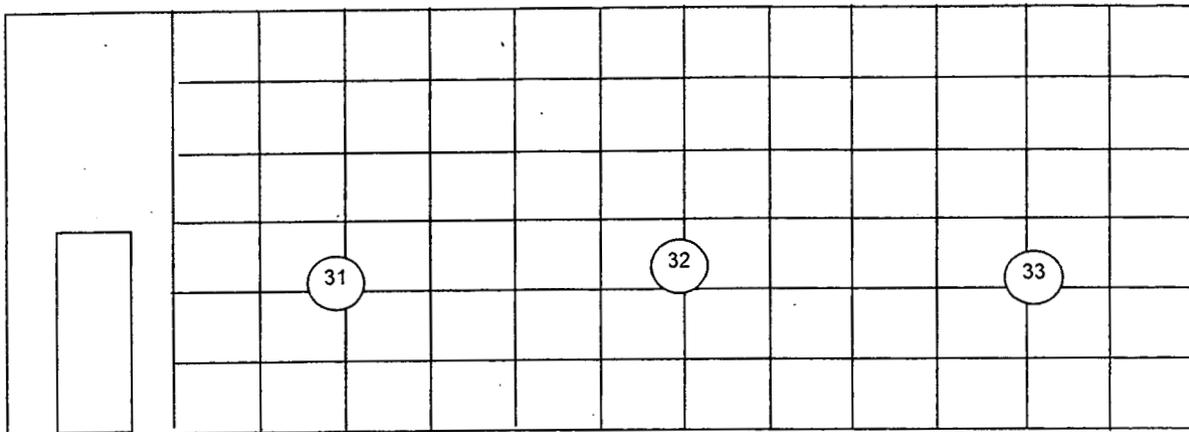
Building: 444
Location: 450 plenum 1st stage west
Purpose: Post fixative

RADIOLOGICAL SAFETY

Drawing Showing Survey Points

COPY

Page 4 of 4
Date: 2/21/04
Time: 10:00 AM



Demister rack

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 143866	Serial # 143883	Serial # 1409
Cal Due 3/14/05	Cal Due 7/13/05	Cal Due N/A
Bkg. 0.2 cpm α	Bkg. 0.6 cpm α	Bkg. N/A cpm α
Eff. 34.2 %	Eff. 36.0 %	Eff. N/A %
MDA 18 dpm α	MDA 18 dpm α	MDA N/A dpm α
Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 143866	Serial # 143883	Serial # N/A
Cal Due 3/14/05	Cal Due 7/13/05	Cal Due N/A
Bkg. 79.8 cpm β	Bkg. 82.5 cpm β	Bkg. N/A cpm β
Eff. 25 %	Eff. 25 %	Eff. N/A %
MDA 205 dpm β	MDA 205 dpm β	MDA N/A dpm β

Survey Type: CONTAMINATION Page 1 of 2

Building: 444
 Location: 450 plenum 2nd stage east
 Purpose: Post fixative

RWP #: N/A

COPY

Date: 2/21/05 Time: 10:00

RCT: [REDACTED]

RCT:

N/A	N/A	N/A
Print Name	Signature	Emp. #

PRN/REN : N/A

Comments: Isotope of Concern U-238.

SURVEY RESULTS

#	Description	REMOVABLE		DIRECT	
		DPM/100 CM ²		DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
1	East 1st stage filter racks	<18	<205	N/A	N/A
2	East 1st stage filter racks	<18	<205	N/A	N/A
3	East 1st stage filter racks	<18	<205	N/A	N/A
4	East 1st stage filter racks	<18	<205	N/A	N/A
5	East plenum 2nd stage floor	<18	<205	N/A	N/A
6	East plenum 2nd stage floor	<18	<205	N/A	N/A
7	East plenum 2nd stage floor	<18	<205	N/A	N/A
8	East plenum 2nd stage floor	<18	<205	N/A	N/A
9	East plenum 2nd stage floor	<18	<205	N/A	N/A
10	East plenum 2nd stage floor	<18	<205	N/A	N/A
11	East plenum east wall	<18	<205	N/A	N/A
12	East plenum 2nd stage ceiling	<18	<205	N/A	N/A
13	East plenum 2nd stage ceiling	<18	<205	N/A	N/A
14	East plenum 2nd stage ceiling	<18	<205	N/A	N/A
15	East plenum 2nd stage ceiling	<18	<205	N/A	N/A
16	East plenum 2nd stage airlock floor	<18	<205	N/A	N/A
17	East plenum 2nd stage airlock wall	<18	<205	N/A	N/A
18	East plenum 2nd stage airlock wall	<18	<205	N/A	N/A
19	East plenum 2nd stage airlock wall	<18	<205	N/A	N/A
20	East plenum 2nd stage airlock wall	<18	<205	N/A	N/A
21	East plenum 2nd stage airlock ceiling	<18	<205	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A
25	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 2-22-05 RS Super [REDACTED]

46

Building: 444
Location: 450 plenum 2nd stage east
Purpose: Post fixative

RADIOLOGICAL SAFETY

Drawing Showing Survey Points

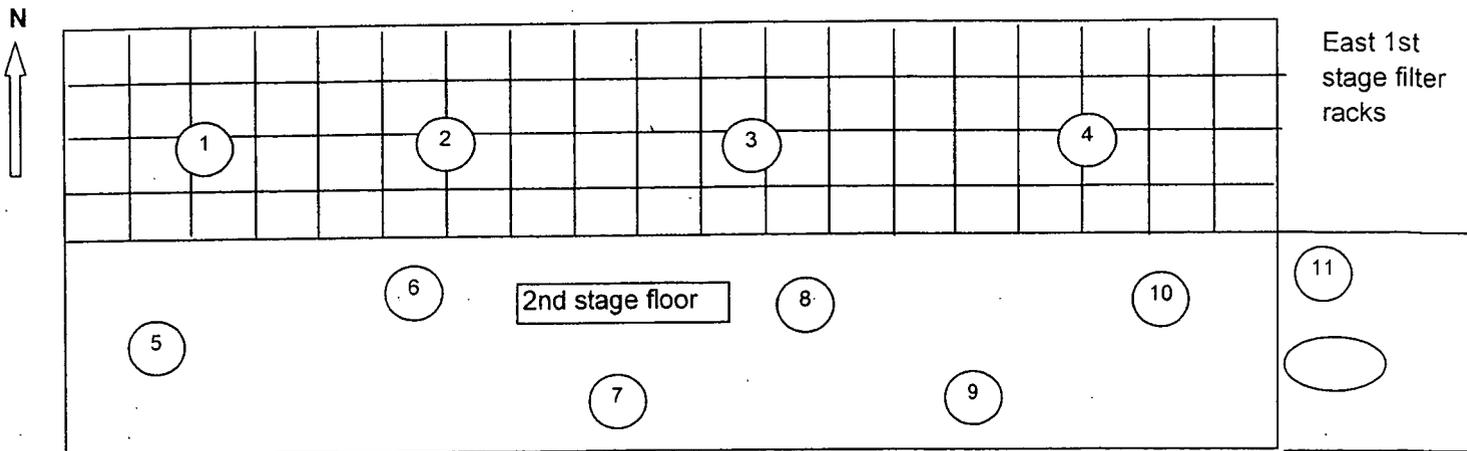
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Page 2 of 2

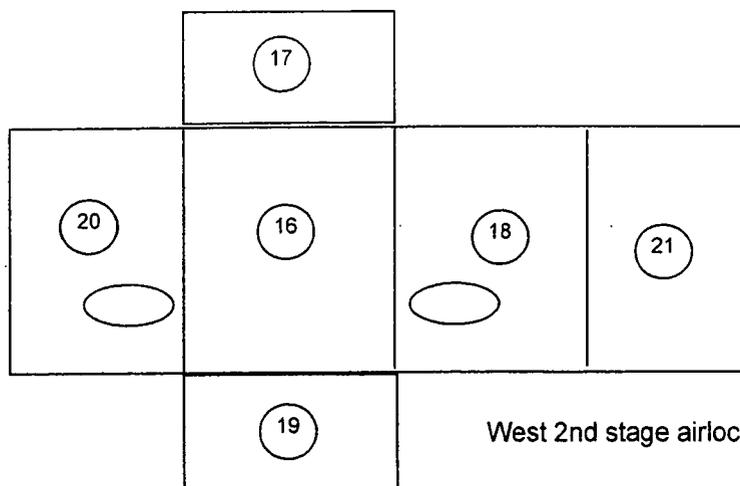
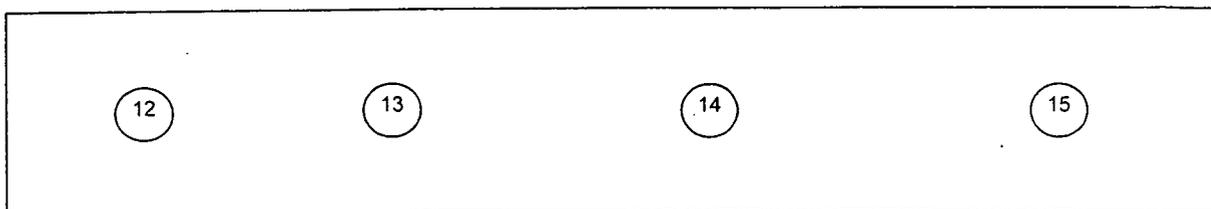
Date: 2/21/05

Time: 10:00 AM

East 2nd stage plenum



East 2nd stage ceiling



West 2nd stage airlock

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 143866	Serial # 143883	Serial # 1409
Cal Due 3/14/05	Cal Due 7/13/05	Cal Due N/A
Bkg. 0.2 cpm α	Bkg. 0.6 cpm α	Bkg. N/A cpm α
Eff. 34.2 %	Eff. 36.0 %	Eff. N/A %
MDA 18 dpm α	MDA 18 dpm α	MDA N/A dpm α
Mfg. Ludlum	Mfg. Ludlum	Mfg. NE Electra
Model 2929	Model 2929	Model DP-6
Serial # 143866	Serial # 143883	Serial # N/A
Cal Due 3/14/05	Cal Due 7/13/05	Cal Due N/A
Bkg. 79.8 cpm β	Bkg. 82.5 cpm β	Bkg. N/A cpm β
Eff. 25 %	Eff. 25 %	Eff. N/A %
MDA 205 dpm β	MDA 205 dpm β	MDA N/A dpm β

Survey Type: CONTAMINATION Page 1 of 2
 Building: 444
 Location: 450 plenum 2nd stage west
 Purpose: Post fixative

RWP #: N/A

COPY

Date: 2/21/05 Time: 10:00

RCT: [REDACTED]
Print Name Signature Emp. #

RCT: N/A | N/A | N/A
Print Name Signature Emp. #

PRN/REN: N/A

Comments: Isotope of Concern U-238.

SURVEY RESULTS

#	Description	REMOVABLE		DIRECT	
		DPM/100 CM ²		DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
1	West 1st stage filter racks	<18	<205	N/A	N/A
2	West 1st stage filter racks	<18	<205	N/A	N/A
3	West 1st stage filter racks	<18	<205	N/A	N/A
4	West 1st stage filter racks	<18	<205	N/A	N/A
5	West plenum west wall	<18	<205	N/A	N/A
6	West plenum 2nd stage floor	<18	<205	N/A	N/A
7	West plenum 2nd stage floor	<18	<205	N/A	N/A
8	West plenum 2nd stage floor	<18	<205	N/A	N/A
9	West plenum 2nd stage floor	<18	<205	N/A	N/A
10	West plenum 2nd stage floor	<18	<205	N/A	N/A
11	West plenum 2nd stage floor	<18	<205	N/A	N/A
12	West plenum 2nd stage ceiling	<18	<205	N/A	N/A
13	West plenum 2nd stage ceiling	<18	<205	N/A	N/A
14	West plenum 2nd stage ceiling	<18	<205	N/A	N/A
15	West plenum 2nd stage ceiling	<18	<205	N/A	N/A
16	West plenum 2nd stage airlock floor	<18	<205	N/A	N/A
17	West plenum 2nd stage airlock wall	<18	<205	N/A	N/A
18	West plenum 2nd stage airlock wall	<18	<205	N/A	N/A
19	West plenum 2nd stage airlock wall	<18	<205	N/A	N/A
20	West plenum 2nd stage airlock wall	<18	<205	N/A	N/A
21	West plenum 2nd stage airlock ceiling	<18	<205	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A
25	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 2-22-05 RS Supervision: [REDACTED]

Building: 444

RADIOLOGICAL SAFETY

Page 2 of 2

Location: 450 plenum 2nd stage west

Drawing Showing Survey Points

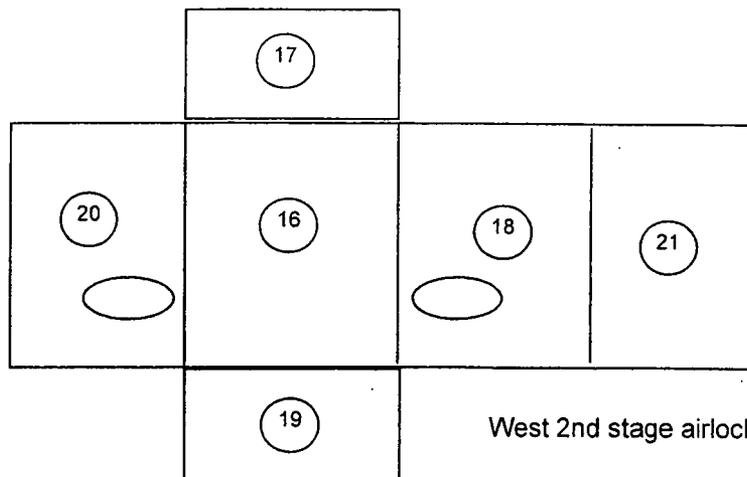
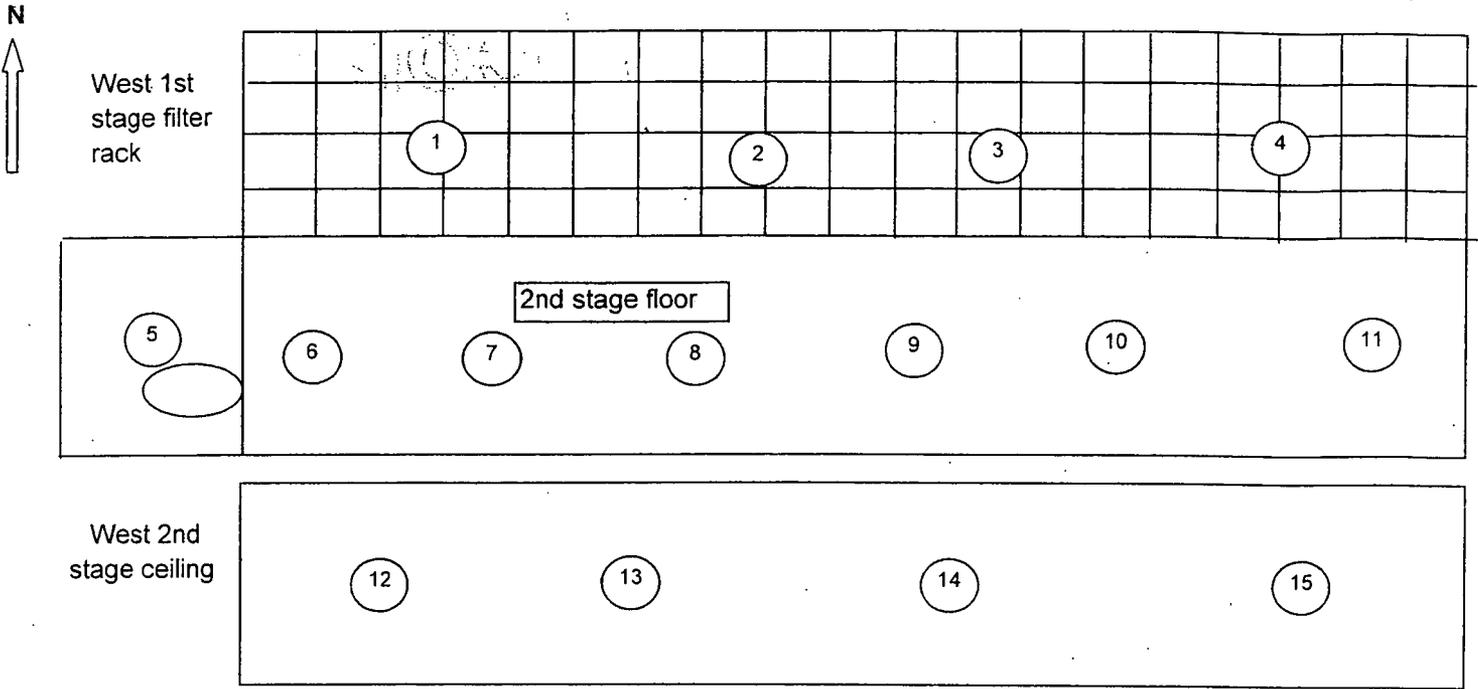
COPY

Date: 2/21/05

Purpose: Post fixative

Time: 10:00 AM

West 2nd stage plenum



ATTACHMENT B-3

Exterior Confirmatory Survey Form

sd

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Ludlum	Mfg.	Ludlum	Mfg.	NE Electra
Model	2929	Model	2929	Model	DP-6
Serial #	143866	Serial #	143883	Serial #	1279
Cal Due	7/25/05	Cal Due	7/13/05	Cal Due	8/10/05
Bkg.	0.2 cpm α	Bkg.	0.6 cpm α	Bkg.	3 cpm α
Eff.	34.2 %	Eff.	36.0 %	Eff.	17 %
MDA	18 dpm α	MDA	18 dpm α	MDA	94 dpm α
Mfg.	Ludlum	Mfg.	Ludlum	Mfg.	NE Electra
Model	2929	Model	2929	Model	DP-6
Serial #	143866	Serial #	143883	Serial #	1279
Cal Due	7/25/05	Cal Due	7/13/05	Cal Due	8/10/05
Bkg.	75.9 cpm β	Bkg.	85.1 cpm β	Bkg.	490 cpm β
Eff.	25 %	Eff.	25 %	Eff.	25 %
MDA	205 dpm β	MDA	205 dpm β	MDA	745 dpm β

Survey Type : CONTAMINATION Page 1 of 2
 Building: 444
 Location: 450 plenum exterior
 Purpose: Characterization

RWP # : N/A

COPY

Date: 2/22/05 Time: 10:00

RCT: [REDACTED]
 Print Name _____ Signature _____ Emp. # _____

RCT: N/A | N/A | N/A
 Print Name _____ Signature _____ Emp. # _____

PRN/REN : N/A

Comments: Isotope of Concern U-238.

SURVEY RESULTS

#	Description	REMOVABLE		DIRECT	
		DPM/100 CM ²		DPM/100 CM ²	
		ALPHA	BETA	ALPHA	BETA
1	Concrete walk	<18	<205	<94	1500
2	Concrete walk	<18	<205	<94	1750
3	Exterior wall	<18	<205	<94	<745
4	Exterior wall	<18	<205	<94	<745
5	Exterior wall	<18	<205	<94	<745
6	Exterior wall	<18	<205	<94	<745
7	Exterior wall	<18	<205	<94	<745
8	Exterior wall	<18	<205	<94	<745
9	Exterior wall	<18	<205	<94	<745
10	Exterior wall	<18	<205	<94	<745
11	Concrete walk	<18	<205	<94	1600
12	Concrete walk	<18	<205	<94	1750
13	Stairs	<18	<205	<94	2040
14	Concrete walk	<18	<205	<94	1500
15	Exterior wall	<18	<205	<94	<745
16	Exterior wall	<18	<205	<94	<745
17	Exterior wall	<18	<205	<94	<745
18	Exterior wall	<18	<205	<94	<745
19	Exterior wall	<18	<205	<94	<745
20	Duct exterior	<18	<205	<94	<745
21	Duct exterior	<18	<205	<94	<745
22	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A
25	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 2-22-05 RS Supervision: _____

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RADIOLOGICAL SAFETY

Building: 444

Date: 2/22/05

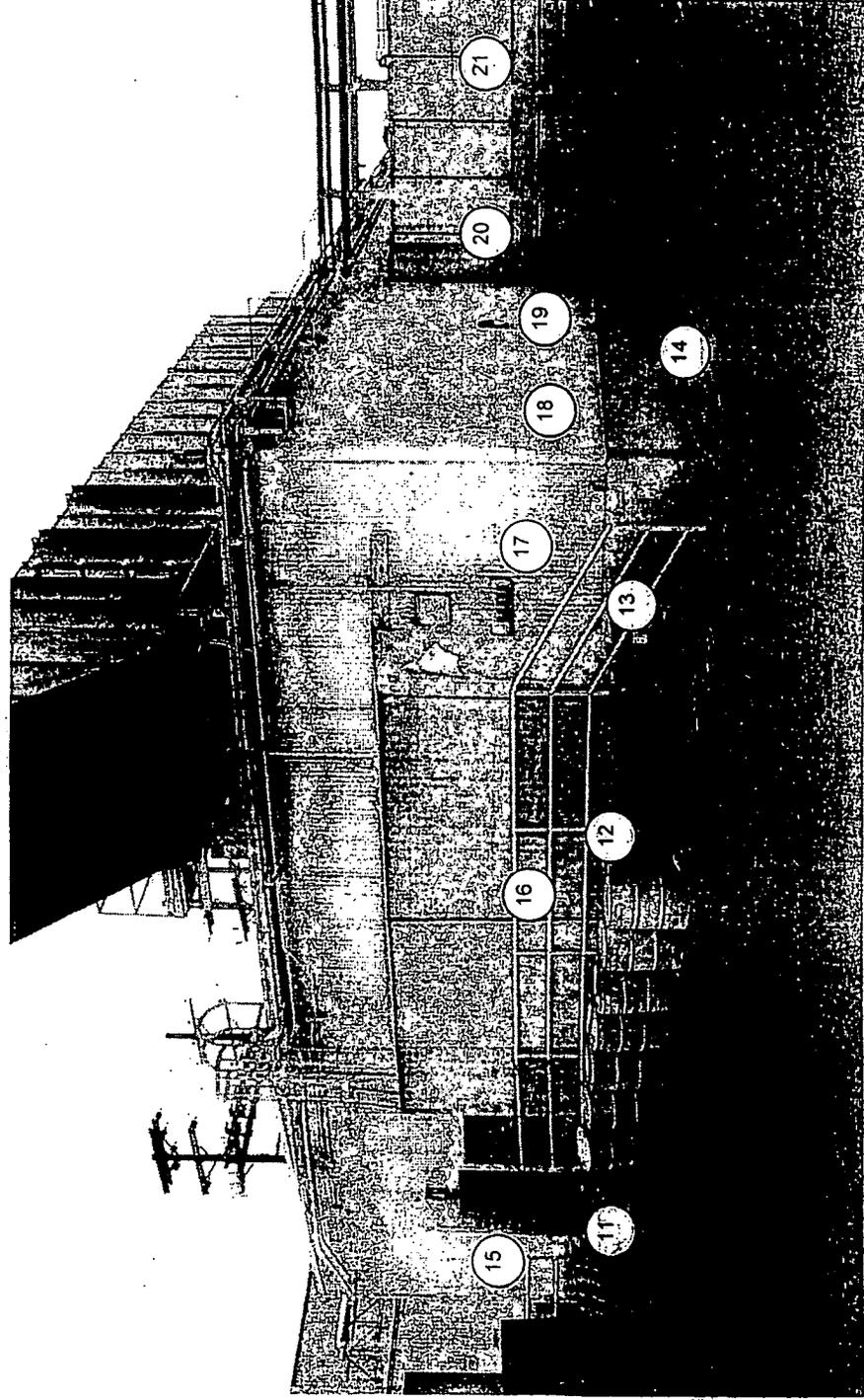
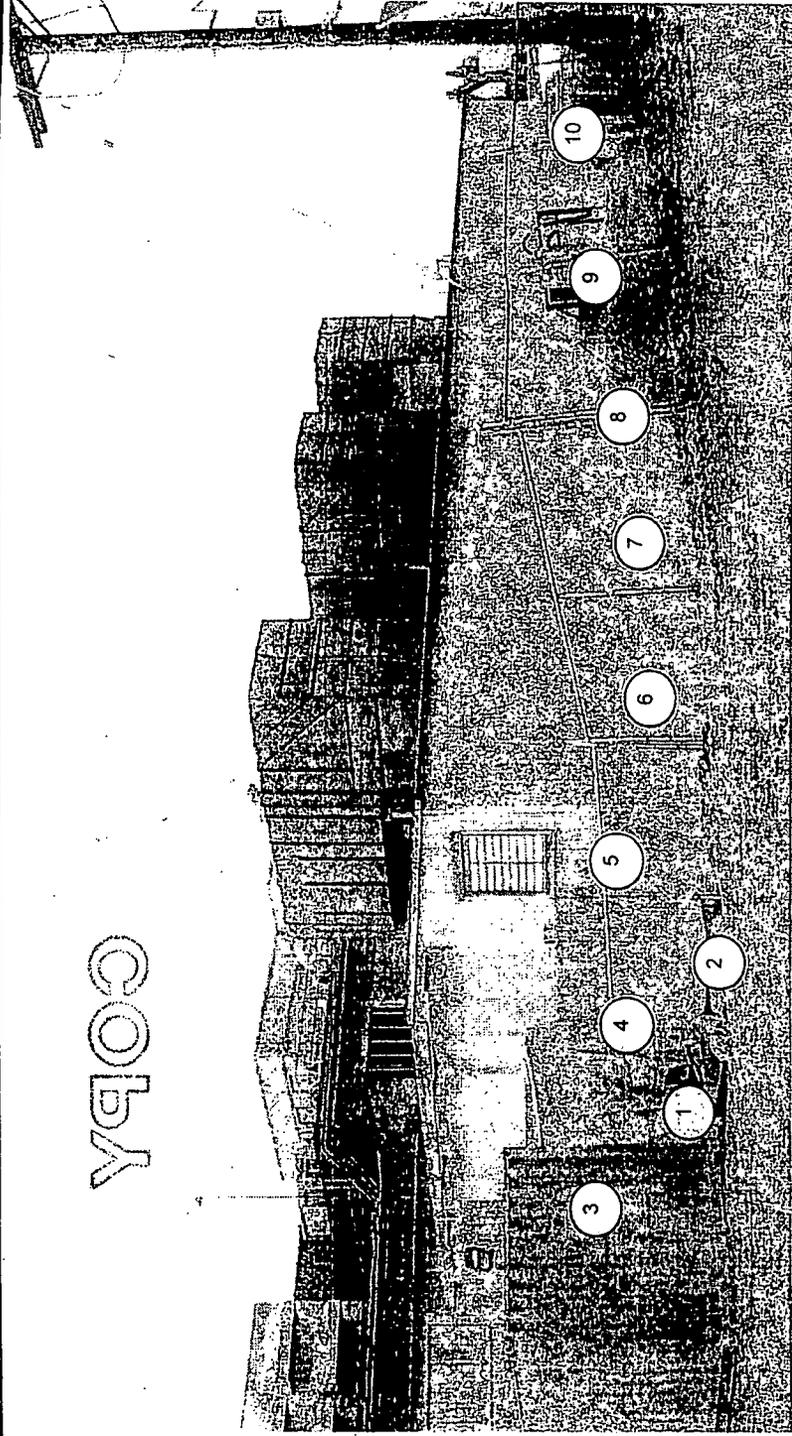
Location: 450 plenum external

Time: 10:00 AM

Purpose: Characterization

COPY

COPY



ATTACHMENT C

Chemical Results and Sample Location Maps

ATTACHMENT C-1

Beryllium Results Table and Sample Location Maps

**Table C-1
Beryllium Data Summary**

Sample Map Location #	Area	RIN	Sample Number	Sample Location	Pre-Fixative or Post-Fixative	Random or Bias	Result (ug/100 cm ²)
1	Post 2nd Stage	05Z0947	450-02212005-313-001	Floor (No Fixative)	Pre-Fixative	Random	< 0.1
2	1st Stage	05Z0944	450-02172005-313-002	Floor, Post-Power Wash	Pre-Fixative	Random	0.130
2	1st Stage	05Z0947	450-02212005-313-002	Floor	Post-Fixative	Random	< 0.1
3	1st Stage	05Z0944	450-02172005-313-003	Floor, Post-Power Wash	Pre-Fixative	Random	0.204
3	1st Stage	05Z0947	450-02212005-313-003	Floor	Post-Fixative	Random	< 0.1
4	Fan Room	05Z0947	450-02212005-313-004	Floor (No Fixative)	Pre-Fixative	Random	< 0.1
5	1st Stage	05Z0944	450-02172005-313-005	Floor, Post-Power Wash	Pre-Fixative	Random	0.251
5	1st Stage	05Z0947	450-02212005-313-005	Floor	Post-Fixative	Random	< 0.1
6	Fan Room	05Z0947	450-02212005-313-006	Floor (No Fixative)	Pre-Fixative	Random	< 0.1
7	1st Stage	05Z0944	450-02172005-313-007	Floor, Post-Power Wash	Pre-Fixative	Random	0.153
7	1st Stage	05Z0947	450-02212005-313-007	Floor	Post-Fixative	Random	< 0.1
8	Fan Room	05Z0947	450-02212005-313-008	Floor (No Fixative)	Pre-Fixative	Random	< 0.1
9	Post 2nd Stage	05Z0947	450-02212005-313-009	Floor (No Fixative)	Pre-Fixative	Random	< 0.1
10	2nd Stage	05Z0944	450-02172005-313-010	Floor, Post-Power Wash	Pre-Fixative	Random	0.105
10	2nd Stage	05Z0947	450-02212005-313-010	Floor	Post-Fixative	Random	< 0.1
11	Fan Room	05Z0947	450-02212005-313-011	Floor (No Fixative)	Pre-Fixative	Random	< 0.1
12	1st Stage	05Z0944	450-02172005-313-012	Floor, Post-Power Wash	Pre-Fixative	Random	< 0.1
13	1st Stage	05Z0944	450-02172005-313-013	Floor, Post-Power Wash	Pre-Fixative	Random	< 0.1
14	Post 2nd Stage	05Z0947	450-02212005-313-014	Floor (No Fixative)	Pre-Fixative	Random	< 0.1
15	1st Stage	05Z0944	450-02172005-313-015	Floor, Post-Power Wash	Pre-Fixative	Random	0.228
15	1st Stage	05Z0947	450-02212005-313-015	Floor	Post-Fixative	Random	< 0.1
16	Post 2nd Stage	05Z0947	450-02212005-313-016	Floor (No Fixative)	Pre-Fixative	Random	< 0.1
17	1st Stage	05Z0944	450-02172005-313-017	Floor, Post-Power Wash	Pre-Fixative	Random	< 0.1
18	1st Stage	05Z0944	450-02172005-313-018	Floor, Post-Power Wash	Pre-Fixative	Random	0.140
18	1st Stage	05Z0947	450-02212005-313-018	Floor	Post-Fixative	Random	< 0.1
19	Fan Room	05Z0947	450-02212005-313-019	Floor (No Fixative)	Pre-Fixative	Random	< 0.1
20	Fan Room	05Z0947	450-02212005-313-020	Floor (No Fixative)	Pre-Fixative	Random	< 0.1
21	Post 2nd Stage	05Z0947	450-02212005-313-021	Floor (No Fixative)	Pre-Fixative	Random	< 0.1
22	Fan Room	05Z0947	450-02212005-313-022	Floor (No Fixative)	Pre-Fixative	Random	< 0.1
23	2nd Stage	05Z0944	450-02172005-313-023	Floor, Post-Power Wash	Pre-Fixative	Random	0.177
23	2nd Stage	05Z0947	450-02212005-313-023	Floor	Post-Fixative	Random	< 0.1

**Table C-1
Beryllium Data Summary**

Sample Map Location #	Area	RIN	Sample Number	Sample Location	Pre-Fixative or Post-Fixative	Random or Bias	Result (ug/100cm ²)
24	Fan Room	05Z0947	450-02212005-313-024	Floor (No Fixative)	Pre-Fixative	Random	< 0.1
25	Fan Room	05Z0947	450-02212005-313-025	Floor (No Fixative)	Pre-Fixative	Random	< 0.1
26	1st Stage	05Z0944	450-02172005-313-026	Wall, West, Post-Power Wash	Pre-Fixative	Bias	< 0.1
27	1st Stage	05Z0944	450-02172005-313-027	Demister Frame, West End, Post-Power Wash	Pre-Fixative	Bias	0.288
27	1st Stage	05Z0947	450-02212005-313-027	Demister Frame, West End	Post-Fixative	Bias	< 0.1
28	1st Stage	05Z0944	450-02172005-313-028	Wall, Northcentral, Post-Power Wash	Pre-Fixative	Bias	0.584
28	1st Stage	05Z0947	450-02212005-313-028	Wall, Northcentral	Post-Fixative	Bias	< 0.1
29	2nd Stage	05Z0944	450-02172005-313-029	Floor, Central, Post-Power Wash	Pre-Fixative	Bias	< 0.1
30	2nd Stage	05Z0944	450-02172005-313-030	Floor, Mid-West, Post-Power Wash	Pre-Fixative	Bias	< 0.1
31	2nd Stage	05Z0944	450-02172005-313-031	Floor, West, Post-Power Wash	Pre-Fixative	Bias	< 0.1
32	1st Stage	05Z0947	450-02212005-313-032	Demister Frame, West Central	Post-Fixative	Bias	< 0.1
33	1st Stage	05Z0947	450-02212005-313-033	Demister Frame, East Central	Post-Fixative	Bias	< 0.1
34	1st Stage	05Z0947	450-02212005-313-034	Demister Frame, East	Post-Fixative	Bias	< 0.1
35	1st Stage	05Z0947	450-02212005-313-035	1st Stage Filter Frame, West	Post-Fixative	Bias	< 0.1
36	1st Stage	05Z0947	450-02212005-313-036	1st Stage Filter Frame, Central	Post-Fixative	Bias	< 0.1
37	1st Stage	05Z0947	450-02212005-313-037	1st Stage Filter Frame, East	Post-Fixative	Bias	< 0.1
38	2nd Stage	05Z0947	450-02212005-313-038	2nd Stage Filter Frame, East	Post-Fixative	Bias	< 0.1
39	2nd Stage	05Z0947	450-02212005-313-039	2nd Stage Filter Frame, Central	Post-Fixative	Bias	< 0.1
40	2nd Stage	05Z0947	450-02212005-313-040	2nd Stage Filter Frame, West	Post-Fixative	Bias	< 0.1
41	Post 2nd Stage	05Z0947	450-02212005-313-041	Floor, East (No Fixative)	Pre-Fixative	Bias	< 0.1
42	Post 2nd Stage	05Z0947	450-02212005-313-042	Wall, Central (No Fixative)	Pre-Fixative	Bias	< 0.1
43	Post 2nd Stage	05Z0947	450-02212005-313-043	Floor, West (No Fixative)	Pre-Fixative	Bias	< 0.1
44	2nd Stage	05Z0947	450-02212005-313-044	Floor, West 2nd Stage Airlock	Post-Fixative	Bias	< 0.1
45	2nd Stage	05Z0947	450-02212005-313-045	Floor, East 2nd Stage Airlock	Post-Fixative	Bias	< 0.1
46	Post 2nd Stage	05Z0947	450-02212005-313-046	Floor, Post-2nd Stage/Pre-Fan Airlock (No Fixative)	Pre-Fixative	Bias	< 0.1
47	Post 2nd Stage	05Z0947	450-02212005-313-047	Directional Louvers (No Fixative)	Pre-Fixative	Bias	< 0.1
48	Post 2nd Stage	05Z0947	450-02212005-313-048	Floor, West (No Fixative)	Pre-Fixative	Bias	< 0.1
49	Post 2nd Stage	05Z0947	450-02212005-313-049	Inside (West) Fan Cowl (No Fixative)	Pre-Fixative	Bias	< 0.1
50	Post 2nd Stage	05Z0947	450-02212005-313-050	Inside (Middle) Fan Cowl (No Fixative)	Pre-Fixative	Bias	< 0.1
51	Post 2nd Stage	05Z0947	450-02212005-313-051	Inside (East) Fan Cowl (No Fixative)	Pre-Fixative	Bias	< 0.1
52	Fan Room	05Z0947	450-02212005-313-052	Wall, Southeast (No Fixative)	Pre-Fixative	Bias	< 0.1

**Table C-1
Beryllium Data Summary**

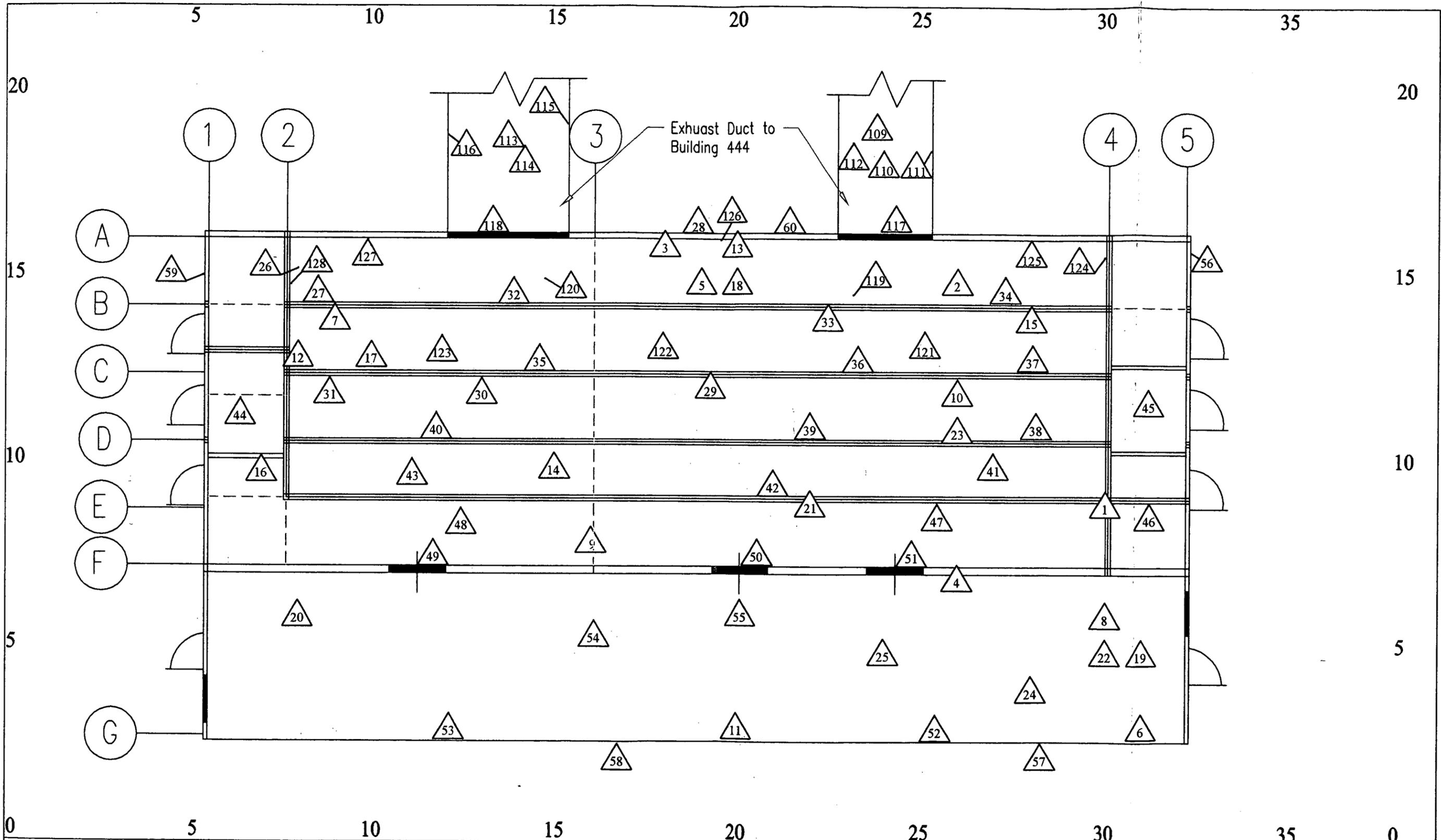
Sample Map Location #	Area	RIN	Sample Number	Sample Location	Pre-Fixative or Post-Fixative	Random or Bias	Result (ug/100 cm ²)
53	Fan Room	05Z0947	450-02212005-313-053	Wall, Southwest (No Fixative)	Pre-Fixative	Bias	< 0.1
54	Fan Room	05Z0947	450-02212005-313-054	Floor, West Central (No Fixative)	Pre-Fixative	Bias	< 0.1
55	Fan Room	05Z0947	450-02212005-313-055	Top of (Middle) Fan Housing (No Fixative)	Pre-Fixative	Bias	< 0.1
56	Outside	05Z0947	450-02212005-313-056	Exterior Wall, Northeast (No Fixative)	Pre-Fixative	Bias	< 0.1
57	Outside	05Z0947	450-02212005-313-057	Exterior Wall, Southeast (No Fixative)	Pre-Fixative	Bias	< 0.1
58	Outside	05Z0947	450-02212005-313-058	Exterior Wall, Southwest (No Fixative)	Pre-Fixative	Bias	< 0.1
59	Outside	05Z0947	450-02212005-313-059	Exterior Wall, Northwest (No Fixative)	Pre-Fixative	Bias	< 0.1
60	Outside	05Z0947	450-02212005-313-060	Exterior Wall, North Central (No Fixative)	Pre-Fixative	Bias	< 0.1
109	East Inlet Duct	05D0512	450-02062005-313-109	Inside Top of Duct, Post-Power Wash	Pre-Fixative	Bias	0.372
109	East Inlet Duct	05Z0947	450-02212005-313-109	Inside Top of Duct	Post-Fixative	Bias	< 0.1
110	East Inlet Duct	05D0512	450-02062005-313-110	Inside Bottom of Duct, Post-Power Wash	Pre-Fixative	Bias	0.308
110	East Inlet Duct	05Z0947	450-02212005-313-110	Inside Bottom of Duct	Post-Fixative	Bias	< 0.1
111	East Inlet Duct	05D0512	450-02062005-313-111	Inside East Wall of Duct, Post-Power Wash	Pre-Fixative	Bias	0.379
111	East Inlet Duct	05Z0947	450-02212005-313-111	Inside East Wall of Duct	Post-Fixative	Bias	< 0.1
112	East Inlet Duct	05D0512	450-02062005-313-112	Inside West Wall of Duct, Post-Power Wash	Pre-Fixative	Bias	0.638
112	East Inlet Duct	05Z0947	450-02212005-313-112	Inside West Wall of Duct	Post-Fixative	Bias	< 0.1
113	West Inlet Duct	05D0512	450-02062005-313-113	Inside Top of Duct, Post-Power Wash	Pre-Fixative	Bias	0.369
113	West Inlet Duct	05Z0947	450-02212005-313-113	Inside Top of Duct	Post-Fixative	Bias	< 0.1
114	West Inlet Duct	05D0512	450-02062005-313-114	Inside Bottom of Duct, Post-Power Wash	Pre-Fixative	Bias	0.869
114	West Inlet Duct	05Z0947	450-02212005-313-114	Inside Bottom of Duct	Post-Fixative	Bias	< 0.1
115	West Inlet Duct	05D0512	450-02062005-313-115	Inside East Wall of Duct, Post-Power Wash	Pre-Fixative	Bias	0.275
115	West Inlet Duct	05Z0947	450-02212005-313-115	Inside East Wall of Duct	Post-Fixative	Bias	< 0.1
116	West Inlet Duct	05D0512	450-02062005-313-116	Inside West Wall of Duct, Post-Power Wash	Pre-Fixative	Bias	0.833
116	West Inlet Duct	05Z0947	450-02212005-313-116	Inside West Wall of Duct	Post-Fixative	Bias	< 0.1
117	1st Stage	05D0512	450-02062005-313-117	East Inlet, Bottom Lip, Post-Power Wash	Pre-Fixative	Bias	0.495
117	1st Stage	05Z0947	450-02212005-313-117	East Inlet, Bottom Lip	Post-Fixative	Bias	< 0.1
118	1st Stage	05D0512	450-02062005-313-118	West Inlet, Bottom Lip, Post-Power Wash	Pre-Fixative	Bias	0.875
118	1st Stage	05Z0947	450-02212005-313-118	West Inlet, Bottom Lip	Post-Fixative	Bias	< 0.1
119	1st Stage	05D0512	450-02062005-313-119	Floor, Pre-Demister, East, Post-Manual Decon (Vac)	Pre-Fixative	Bias	0.532
119	1st Stage	05Z0947	450-02212005-313-119	Floor, Pre-Demister, East	Post-Fixative	Bias	< 0.1
120	1st Stage	05D0512	450-02062005-313-120	Floor, Pre-Demister, West, Post-Manual Decon (Vac)	Pre-Fixative	Bias	0.615

**Table C-1
Beryllium Data Summary**

Sample Map Location #	Area	RIN	Sample Number	Sample Location	Pre-Fixative or Post-Fixative	Random or Bias	Result (ug/100 cm ²)
120	1st Stage	05Z0947	450-02212005-313-120	Floor, Pre-Demister, West	Post-Fixative	Bias	< 0.1
121	1st Stage	05D0512	450-02062005-313-121	Floor, Pre-1st Stage Filters, East, Post-Manual Decon (Vac)	Pre-Fixative	Bias	0.348
121	1st Stage	05Z0947	450-02212005-313-121	Floor, Pre-1st Stage Filters, East	Post-Fixative	Bias	< 0.1
122	1st Stage	05D0512	450-02062005-313-122	Floor, Pre-1st Stage Filters, Central, Post-Man'l Decon (Vac)	Pre-Fixative	Bias	0.423
122	1st Stage	05Z0947	450-02212005-313-122	Floor, Pre-1st Stage Filters, Central	Post-Fixative	Bias	< 0.1
123	1st Stage	05D0512	450-02062005-313-123	Floor, Pre-1st Stage Filters, West, Post-Manual Decon (Vac)	Pre-Fixative	Bias	0.417
123	1st Stage	05Z0947	450-02212005-313-123	Floor, Pre-1st Stage Filters, West	Post-Fixative	Bias	< 0.1
124	1st Stage	05D0512	450-02062005-313-124	Wall, 1st Stage, East, Post-Manual Decon (Vac)	Pre-Fixative	Bias	< 0.1
125	1st Stage	05D0512	450-02062005-313-125	Wall, 1st Stage, Northeast, Post-Manual Decon (Vac)	Pre-Fixative	Bias	0.488
125	1st Stage	05Z0947	450-02212005-313-125	Wall, 1st Stage, Northeast	Post-Fixative	Bias	< 0.1
126	1st Stage	05D0512	450-02062005-313-126	Wall, 1st Stage, Northcentral, Post-Manual Decon (Vac)	Pre-Fixative	Bias	0.213
126	1st Stage	05Z0947	450-02212005-313-126	Wall, 1st Stage, Northcentral	Post-Fixative	Bias	< 0.1
127	1st Stage	05D0512	450-02062005-313-127	Wall, 1st Stage, Northwest, Post-Manual Decon (Vac)	Pre-Fixative	Bias	0.385
127	1st Stage	05Z0947	450-02212005-313-127	Wall, 1st Stage, Northwest	Post-Fixative	Bias	< 0.1
128	1st Stage	05D0512	450-02062005-313-128	Wall, 1st Stage, West, Post-Manual Decon (Vac)	Pre-Fixative	Bias	< 0.1

Footnotes:

- (1) Shaded rows are beryllium results prior to the application of fixative. The unshaded rows are the final "as left" condition sample results. Fixative was applied over all elevated locations of the 1st and 2nd Stages, as well as extending to the boundaries of clean sample locations surrounding the elevated locations. No further investigation sampling is required. All initial sample locations above 0.1 ug/100cm² had fixative applied and were then re-sampled, except # 101, which was manually decontaminated and subsequently sampled to < 0.1 ug/100cm². Also, additional biased pre-fixative and post-fixative samples were collected in the same general area of the initial elevated sample locations.
- (2) Gaps in the sample numbering sequence are acceptable. Some sample numbers were never used. Some sample numbers were elevated, then decontaminated, and then resampled using the same initial sample number or another sample number. Sample numbers 101-108 were pre-power wash and therefore not reported.
- (3) Surfaces associated with samples collected from the post-2nd stage and fan room areas were not applied with fixative; no decon or fixative necessary.



<p align="center">PDS BERYLLIUM SAMPLE MAP</p>				<p align="center">SURVEY POINT LEGEND</p>				<p align="center">N</p>	<p align="center">1 inch = 8 feet</p>	<p align="center">U.S. Department of Energy Rocky Flats Environmental Technology Site</p>	
<p>BLDG: 450 Survey Area: N/A Survey Unit: N/A Classification: N/A</p> <p>Survey Area / Unit Description: Bldg 450 Plenum</p> <p>Floor Area: 369 sq.m Total Area: N/A Grid Spacing for Survey Area: N/A</p>	<p> Radiological RSA & TSA Location Radiological RSA, TSA & Sample Location Beryllium Sample Location RCRA/CERCLA Sample Location </p>			<p> PCB Sample Location Radiological Scan Area Open/Inaccessible Area Area in Another Survey Unit Wall Removed </p>			<p>Prepared by: </p>			<p>Prepared for: KAISER HILL</p>	
<p>File Name: B450 BE MAP.DWG</p>								<p>Sheet: 1 of 1</p>	<p>Rev: 1</p>		

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ATTACHMENT D

Data Quality Assessment (DQA) Detail

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION (V&V) OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question. The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically beryllium).

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed. The radiological survey assessment is provided in Table D-1 and beryllium in Table D-2. A data completeness summary for all results is given in Table D-3.

Relevant Quality records supporting this report are maintained in the RISS Characterization Project File. The report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators. Radiological data are organized into pre and post-fixative surveys. Beryllium data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

The pre and post-fixative surveys were performed per Radiological Safety Practice procedures 3-PRO-165-07.02, *Contamination Monitoring Requirements*, and PRO-267-RSP-09.05, *Radiological Characterization for Surface Contaminated Objects*. The LLW radiological survey Data Quality Objectives (DQOs) were met by following Radiological Safety Practice procedures 3-PRO-165-07.02, *Contamination Monitoring Requirements*, and PRO-267-RSP-09.05, *Radiological Characterization for Surface Contaminated Objects*. The PDSP radiological MDA requirements were met for all radiological surveys.

DQA SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs. All data are useable based on qualifications stated herein and are considered satisfactory without qualification. All media surveyed and sampled yielded results less than their associated action levels and with acceptable certainties, except for the following anomalous conditions:

- All areas of the building will be managed as LLW during demolition.
- After decontamination efforts and prior to application of fixative, several locations had levels of beryllium contamination above action levels. All areas containing loose beryllium contamination above $0.1 \mu\text{g}/100\text{cm}^2$ were immobilized using fixatives to below the unrestricted release limit of $0.2 \mu\text{g}/100\text{cm}^2$. Levels up to $0.875 \mu\text{g}/100\text{cm}^2$ were immobilized using fixative.

Based upon an independent review of the radiological data, it was determined that the original project DQOs were satisfied. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable RSPs, surveys were properly designed and bounded, and instrument performance and calibration were within acceptable limits.

Chain of Custody was intact; documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. Level 2 Isolation Controls have been posted to prevent the inadvertent introduction of further contamination into Building 450. On this basis, Building 450 is acceptable for demolition.

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Table D-1 V&V of Radiological Results - Building 450

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		COMMENTS
QUALITY REQUIREMENTS				
	Parameters	Measure	Frequency	
ACCURACY	Initial calibrations	90%<x<110%	≥1	Multi-point calibration through the measurement range encountered in the field; programmatic records.
	Daily source checks	80%<x<120%	≥1/day	Performed daily/within range.
	Local area background: Field	Typically < 10 dpm	≥1/day	All local area backgrounds were within expected ranges (i.e., no elevated anomalies.)
PRECISION	Field duplicate measurements for TSA	≥5% of real survey points	≥10% of reals	N/A
REPRESENTATIVENESS	MARSSIM methodology: There are no PDS survey units – all surveys are LLW Survey Forms per RSP07.02.	Uniform and biased	NA	N/A
	Survey Maps	NA	NA	Random and biased measurement locations controlled/mapped to ±1m.
	Controlling Documents (Characterization Pkg; RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	Units of measure	dpm/100cm ²	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual surveys	>95%	NA	See Table D-3 for details.
	Usable results vs. unusable	>95%		
SENSITIVITY	Detection limits	TSA: ≤2,500 dpm/100cm ² RA: ≤500 dpm/100cm ²	all measures	PDS MDAs ≤ 50% DCGL _w

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Table D-2 V&V of Beryllium Results - Building 450

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Johns Manville Littleton, Colorado & Data Chem. Salt Lake City, Utah	
		RIN ---->	Numerous RINs – Refer to Table D-3	
QUALITY REQUIREMENTS		Measure	Frequency	All final "as left" PDS results were below unrestricted release levels.
ACCURACY	Calibrations		≥1	
	Initial	Linear calibration	≥1	
	Continuing	80%<%R<120%	≥1	
	LCS/MS	80%<%R<120%	≥1	
	Blanks – lab & field	<MDL	≥1	
	Interference check std (ICP)	NA	NA	
PRECISION	LCSD	80%<%R<120% (RPD<20%)	≥1	
	Field duplicate	All results < RL	≥1	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	Measurement units	Ug/100cm ²	NA	
COMPLETENESS	Plan vs. Actual samples	>95%	NA	
	Usable results vs. unusable	>95%	NA	
SENSITIVITY	Detection limits	MDL of 0.00084 ug/swipe	all measures	

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Table D-3 Data Completeness Summary – Building 450

ANALYTE	Building/Area/Unit	Sample Number Planned (Real & QC) ^A	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Beryllium	Building 450 (interior and exterior)	35 samples (25 random/10 biased)	113 samples (33 random/80 biased)	After application of fixative, no Be contamination found at any location, all results were below associated action levels	10CFR850; OSHA ID-125G RIN05D0512, RIN05Z0877, RIN05Z0944, RIN05Z0947, RIN03D2180 and RIN04Z0198 After application of fixative, all results were below the action level (0.2 ug/100cm ²) and the investigative level (0.1 ug/100cm ²).