

# **NOTICE**

**All drawings located at the end of the document.**

# STATE OF COLORADO

Bill Owens, Governor  
Jane E. Norton, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

HAZARDOUS MATERIALS AND WASTE MANAGEMENT DIVISION  
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Colorado Department  
of Public Health  
and Environment

September 20, 2000

Mr. Joseph A Legare  
Assistant Manager for Environment and Infrastructure  
U.S. Department of Energy, Rocky Flats Field Office  
10808 Highway 93, Unit A  
Golden, CO 80403-8200

RE: Reconnaissance Level Characterization Report (RLCR) for Group B Facilities

Dear Mr. Legare:

The Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division (the Division) has reviewed the RLCR for Group B Facilities, Revision 0 (dated August 2, 2000) received on September 7, 2000. The Group B RLCR includes T881A & B, T883A & B, and T439A & D. The Division is hereby concurring with the Type 1 designation for T881A & B and T883A & B as identified in the Group B RLCR. However, the Division does not concur with the Type 1 designation for T439A & D as identified in the RLCR for the Group B Facilities.

Due to the proximity of T439A & D with Building 444 and that these facilities reside within IHSS 157.2, the Division is concerned with possible beryllium contamination of T439A & D and the lack of any investigation for possible beryllium contamination.

In Section 3.3.1, page 20, it is stated that beryllium sampling is unnecessary in administrative office buildings based on the results of the "RFETS Administrative Equipment Characterization for Beryllium Contamination Project Plan Report, January 1998". Having requested and reviewed this document the Division finds this beryllium characterization report insufficient and does not agree with the conclusion that all administrative buildings do not have any measurable beryllium contamination or risk of beryllium exposure.

Beryllium sampling needs to be conducted for T439A & D. Please provide the results of the beryllium investigation to the Division for our review and concurrence. These two trailers may be designated as Type 1 facilities upon confirmation that they do not have measurable beryllium contamination.

In addition, it is indicated that T881A is still in use and has been re-designated as T771T, which will necessitate additional investigation upon termination of activities in this trailer to confirm that this trailer is still a Type 1 facility.

DOCUMENT CLASSIFICATION  
REVIEW NUMBER PER  
CLASSIFICATION OFFICE

1/257

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Best Available Copy

IA-A-000577

Scott, Tom

**From:** David Kruchek [dakruche@smtpgate.dphe.state.co.us]  
**Sent:** Friday, October 13, 2000 9:55 AM  
**To:** Tom.Scott@rfets.gov  
**Subject:** Re: BERYLLIUM SAMPLING

Tom, here is the letter that was signed concurring with the Type 1 designation for T439A&D.

October 13, 2000

Mr. Joseph A Legare  
Assistant Manager for Environment and Infrastructure  
U.S. Department of Energy, Rocky Flats Field Office  
10808 Highway 93, Unit A  
Golden, CO 80403-8200

RE: Reconnaissance Level Characterization Report (RLCR) for T439A&D

Dear Mr. Legare:

The Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division (the Division) has reviewed "Beryllium Survey Report For Trailers 439A & 439D", dated October 11, 2000. This report is provided as supplemental information for the RLCR of the Group B Facilities, Revision 0 (dated August 2, 2000). Based on the information provided in the RLCR and this supplemental Be Report the Division is hereby concurring with the Type 1 designation for T439A & D as identified in the RLCR for the Group B Facilities.

If you have any questions regarding this correspondence please contact David Kruchek at (303) 692-3328.

Sincerely,

Steven H. Gunderson  
RFCA Project Coordinator

cc: Steve Tower, FCG, RFFO  
Tim Rehder, EPA  
Tom Scott, KH  
Dave Shelton, KH  
Administrative Records Building 850

"Scott, Tom" <Tom.Scott@rfets.gov> 10/11/00 09:44AM >>>  
Good morning- hope you're having a good one!!!!!!!!!!

The attached is our summary report of the sample data regarding the beryllium samples associated with Trailers T439 A & D. All samples are negative. I'll fax to you the data from the lab, once I have a better copy.

2

August 3, 2000

00-RF-01765

Steve Tower  
D&D Program Lead  
DOE, RFFO

TRANSMITTAL OF THE GROUP B FACILITIES RECONNAISSANCE LEVEL  
CHARACTERIZATION REPORT – RTS-006-00

Provided for your review and approval is subject report for Group B Facilities. This Report characterizes the physical, chemical and radiological hazards associated with the Facilities, summarizes the characterization activities, defines the Data Quality Objectives developed for this characterization, and presents the data quality assessment, verification and validation of results. Based upon our results, Trailers 881A, 881B, 883A, 883B, 439A, and 439D are considered Type 1 Facilities and can be released to commerce for sale and/or re-use.

I would greatly appreciate your review and approval by August 17. Upon your approval please forward a copy to the CDPHE for their concurrence. If you have any questions, don't hesitate to call me on extension 2093.



Tom Scott, Senior Program Manager  
D&D Advanced Planning

RTS:ks

Attachments:  
As Stated

Orig. and 1cc: S. Tower

cc w/o enclosure:  
Fred Gerdeman

Call me and let's catch up.

Thanks, Tom--2093

<<T439A & D Be Report-SL1.doc>>

**Scott, Tom**

**From:** Luker, Steve  
**Sent:** Tuesday, July 18, 2000 4:40 PM  
**To:** Mahaffey, Joe  
**Cc:** Bair, William; Johnson, Rick; McKamey, Eric; Scott, Tom; Kelly, Gerard  
**Subject:** Group B RLCR - comment resolution

Joe,

The following responses are provided to Rick Johnson's comments on the Group B RLCR per his memo dated July 13, 2000. The responses are numbered consistent with the original comments.

Please call me or Eric M. if questions or further comments.

Thanks.

1. The TOC was changed to reflect specific contents of each appendix.
2. Edits made per comment.
3. Change made consistent with Comment #1, above.
4. Cover Pages to Appendices were modified to reflect specific contents of each package.
5. Photocopy quality is such that not all of the smallest handwritten notations are legible; however, all data comprising the measurements themselves are legible. Ambiguity (or serious skepticism) relative to authentication of changes to data must be addressed in a larger forum, such as pulling original records, conducting a formal audit that includes interviews with project personnel, and/or independent verification surveys, as applicable.
6. As above. Typed data sheets are not uniformly implemented, nor required, at this time -- but are used when available.
7. Edits made per comment.
8. The "Lab Alpha Spec" bullet was removed, as no radiochemistry samples were taken from the T439A trailer. The cover sheet listing is now accurate.
9. A memo is included in the corresponding data package that describes adoption of the Bldg 779 MARSSIM data sheets (calculations).
10. The pages in question (SAC-4 data for comparison w/ OASIS) were removed.
11. The survey packages can (will) be corrected to reference Table 2 versus Table 7-1. This is an error carried forward during procedure evolution. When the table numbering changed within the procedure, it was missed on the Form itself. This procedure discrepancy can be rectified as part of the next revision.
12. RSP 16.01 provides the values of 1.645 based on recommended decision error percentiles provided in D & D Program documents (0.05). Note that the DQOs are part of the overall documentation provided to support this and other D & D projects. One option is to eliminate the use of calculations and exclusively use the table to determine number of required measurements.
13. With or without the answer provided the individual approving the calculation is responsible for ensuring that it is correct.
14. Is this a procedure issue? The calculation has been developed by the Project RE and approved. Based on the form design, an RESS RE is required to approve the calculation. For all group B calculations, the RE Manager approved the calculations versus an RESS RE. There currently is no procedural provision to have a peer review. Is an additional signature required for an already labor intensive survey package review and approval process?

*sl x7291*

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August 3, 2000

00-RF-01765

Steve Tower  
D&D Program Lead  
DOE, RFFO

TRANSMITTAL OF THE GROUP B FACILITIES RECONNAISSANCE LEVEL  
CHARACTERIZATION REPORT – RTS-006-00

Provided for your review and approval is subject report for Group B Facilities. This Report characterizes the physical, chemical and radiological hazards associated with the Facilities, summarizes the characterization activities, defines the Data Quality Objectives developed for this characterization, and presents the data quality assessment, verification and validation of results. Based upon our results, Trailers 881A, 881B, 883A, 883B, 439A, and 439D are considered Type 1 Facilities and can be released to commerce for sale and/or re-use.

I would greatly appreciate your review and approval by August 17. Upon your approval please forward a copy to the CDPHE for their concurrence. If you have any questions, don't hesitate to call me on extension 2093.

A handwritten signature in black ink that reads 'Tom Scott'.

Tom Scott, Senior Program Manager  
D&D Advanced Planning

RTS:ks

Attachments:  
As Stated

Orig. and 1cc: S. Tower

cc w/o enclosure:  
Fred Gerdeman

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# Rocky Flats Environmental Technology Site

## RECONNAISSANCE-LEVEL CHARACTERIZATION REPORT (RLCR)

### GROUP B FACILITIES

REVISION 0

August 2, 2000

This report was approved by:

TOM SCOTT  
Tom Scott, Project Manager, KH D&D Advanced Planning

8/2/00  
Date

[Signature]  
Jeff Stevens, Manager, Planning & Control, 771 Project

8/2/00  
Date

[Signature]  
Joseph Mahaffey, Manager, Radiological Engineering

8-3-00  
Date

[Signature]  
Rebecca A. Eklund, K-H Occupational Health &  
Industrial Hygiene

8/3/00  
Date

[Signature]  
Stephen Luker, Project Manager, Quality Assurance

8/2/00  
Date

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  - Summary of Radiological Survey/Sample Results
  - Map of Locations
    - Scans
    - Surveys
  - Removable and Total Survey Results – Detail
  - Laboratory Alpha Spec (Sample) Results – Detail
- A-2 T881A – Radiological Survey Data for Interior Survey Unit (4p)
  - Map of Locations
    - Scans
    - Surveys
  - Removable and Total Survey Results – Detail
- A-3 T881A – Asbestos Inspector’s Report (1p)
- A-4 T881A – D&D Facility Characterization Interview Checklist and Type 1 Facility Checklist (3p)

## Appendix B

- B-1 T881B – Radiological Survey Data for Exterior Survey Unit (16p)
  - Summary of Radiological Survey/Sample Results
  - Map of Locations
    - Scans
    - Surveys
  - Removable and Total Survey Results – Detail
  - Laboratory Alpha Spec (Sample) Results – Detail
- B-2 T881B – Radiological Survey Data for Interior Survey Unit (5p)
  - Map of Locations
    - Scans
    - Surveys
  - Removable and Total Survey Results – Detail
- B-3 T881B – Asbestos Inspector's Report (1p)
- B-4 T881B – D&D Facility Characterization Interview Checklist and Type 1 Facility Checklist (3p)

## Appendix C

- C-1 T883A – Radiological Survey Data for Exterior Survey Unit (18p)
  - Summary of Radiological Survey/Sample Results
  - Map of Locations
    - Scans
    - Surveys
  - Removable and Total Survey Results – Detail
  - Laboratory Alpha Spec (Sample) Results – Detail
- C-2 T883A – Radiological Survey Data for Interior Survey Unit (6p)
  - Map of Locations
    - Scans
    - Surveys
  - Removable and Total Survey Results – Detail
- C-3 T883A – Asbestos Inspector's Report (1p)
- C-4 T883A – D&D Facility Characterization Interview Checklist and Type 1 Facility Checklist (3p)

## Appendix D

- D-1 T883B – Radiological Survey Data for Exterior Survey Unit (18p)
  - Summary of Radiological Survey/Sample Results
  - Map of Locations
    - Scans
    - Surveys
  - Removable and Total Survey Results – Detail
  - Laboratory Alpha Spec (Sample) Results – Detail
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- Map of Locations
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- Removable and Total Survey Results – Detail
  - D-3 T883B – Asbestos Inspector's Report (1p)
  - D-4 T883B – D&D Facility Characterization Interview Checklist and Type 1 Facility Checklist (3p)

#### Appendix E

- E-1 T439A – Radiological Survey Data for Exterior Survey Unit (6p)
  - Summary of Radiological Survey/Sample Results
  - Map of Locations
    - Scans
    - Surveys
  - Removable and Total Survey Results – Detail
- E-2 T439A – Radiological Survey Data for Interior Survey Unit (4p)
  - Map of Locations
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  - Removable and Total Survey Results – Detail
- E-3 T439A – Asbestos Inspector's Report (1p)
- E-4 T439A – D&D Facility Characterization Interview Checklist and Type 1 Facility Checklist (3p)

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- F-1 T439D – Radiological Survey Data for Exterior Survey Unit (18p)
  - Summary of Radiological Survey/Sample Results
  - Map of Locations
    - Scans
    - Surveys
  - Removable and Total Survey Results – Detail
  - Laboratory Alpha Spec (Sample) Results – Detail
- F-2 T439D – Radiological Survey Data for Interior Survey Unit (4p)
  - Map of Locations
    - Scans
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  - Removable and Total Survey Results – Detail
- F-3 T439D – Asbestos Inspector's Report (1p)
- F-4 T439D – D&D Facility Characterization Interview Checklist and Type 1 Facility Checklist (3p)

#### Appendix G, General Group B Survey and Sampling Documentation (29p)

- Chain-of-Custody (for Groups B & C samples)
- MARSSIM Pre-Survey Calculations for Survey Frequency

- MARSSIM Post-Survey Calculation for Survey Frequency (typical)
- OASIS QC Data
- Verification of OASIS Results – Offsite (GEL) Alpha Spectroscopy Results

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## ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CBDPP	Chronic Beryllium Disease Prevention Program
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CDPHE	Colorado Department of Public Health and the Environment
DCGL <sub>EMC</sub>	Derived Concentration Guideline Level – elevated measurement comparison
DCGL <sub>LW</sub>	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
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LCS	Laboratory control samples
LLW	Low-level waste
LSDW	Life safety disaster warning
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
OASIS	Oxford Alpha Spectroscopy Integrated System
PAC	Potential area of concern
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
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TRU	Transuranic
TSA	Total surface activity
VOCs	Volatile organic compounds

## EXECUTIVE SUMMARY

A Reconnaissance Level Characterization (RLC) was performed to release Group B Facilities: T881 A (now T771 T), T881 B, T883 A and B, and T439 A and D (B575 was also included in this group but was discussed in a separate report). The RLC included both radiological and chemical characterization. Because these structures were classified as MARSSIM Class 3 (RFCA Type 1) facilities, the RLC also implemented a Pre-Demolition (Final Status) Survey design based upon the Multi-Agency Radiation Survey and Site Investigation Manual (NUREG-1575). Physical, chemical and radiological hazards were assessed based on historical reviews, process knowledge, and newly acquired RLC data.

Results indicate that no radioactive or chemical contamination exists and that no significant physical hazards are present. The trailers contain no friable asbestos, but buyers should be notified that the trailers might contain non-friable asbestos. Based on the assessment, all six facilities are confirmed to be Type I facilities and can be released to commerce (i.e., for sale and re-use).

Since T881A was characterized, the trailer was relocated into the B771 Cluster and renamed T771T. It will be used as an office trailer. Isolation controls will be established to prevent any future contamination and will be posted accordingly. The use of the trailer will be documented, and additional characterization will be performed as necessary in the future to enable off-site release.

## 1.0 INTRODUCTION

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous buildings and structures will be removed. Among these are the Group B Facilities: T881 A (now T771 T), T881 B, T883 A and B, and T439 A and D (B575 was also included in this group but was reported in a separate report). B881 A is located east of B881, B883 A and B are located east of B883, and T439 A and D are located south of B444. Exhibit 1-1 shows the location of the Group B facilities. These facilities, except T881A, no longer support the RFETS mission and need to be removed to reduce Site infrastructure, risks and/or operating costs.

Before the facilities can be released, hazards must first be identified. Hazards will be used to plan final disposition. This document presents the existing physical, radiological and chemical hazards associated with the six facilities, and classifies the facilities pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999; Type 1, 2 or 3). The hazards assessment is based on facility history and process knowledge, operating and spill records, and results of the reconnaissance level characterization (RLC). The RLC was conducted pursuant to the RFETS Decontamination and Decommissioning Characterization Protocol (DDCP; K-H, 1999). The content and outline of this report are consistent with the Kaiser-Hill (K-H) Facility Disposition Program Manual (FDPM; K-H, 1998).

### 1.1 Purpose

The purpose of this report is to communicate and document the results of the RLC effort. The purpose includes summarizing the data into a concise, usable format and interpreting the data for use in management decisions, primarily:

- Definition of individual hazards and overall risk associated with facility decontamination and decommissioning (D&D);
- Typing of facilities based on hazards identified; and
- Ability to release the facilities from the Site.

### 1.2 Scope

This report covers physical, radiological and chemical characterization of the six Group B Facilities (T881 A and B, T883 A and B, and T439 A and D). Based on the hazards identified, the facilities were typed and assessed against release criteria. Environmental media beneath and surrounding the facilities are not within the scope of this characterization. Both facilities and environmental media will be dispositioned pursuant to the Rocky Flats Cleanup Agreement (RFCA).

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## 2.0 OPERATING HISTORY AND PHYSICAL DESCRIPTION

### 2.1 Trailer 881A (now T771T)

This trailer was acquired and installed northeast of Building 881 in June of 1983. The size of this trailer is approximately 14' X 70'. There are two doors leading into this trailer, both of them on the south side. Both entry doors are covered with a wood structure approximately 4' X 4' X 12' high with 4-6 wood steps. The siding and the skirting around the bottom of the trailer, which is approximately 28" high, are enamel on aluminum. Structurally the trailer is sound both inside and outside. The trailer has many signs of roof leaks, which show up in the acoustical ceiling tiles near the outside walls. The tie-down method for the trailer was unknown, because the trailer skirting covered the footing/foundation. The trailer's interior outside walls are wood paneling over insulation, the interior partition walls are wood paneling on stud framing, and the floor is carpet on wood flooring. The trailer has two hard wall rooms, one at each end of the unit. The ceiling is drop type with acoustical tile. The utilities for this trailer consist of an electric heat pump, which was used for both heating and air conditioning. The trailer was hooked up to the Plant Smoke Detection System and the Plant Public Address System.

T881A was used as office and storage space since its original installation. It also was recently used to repair Plant copiers. Solvents used in cleaning copiers include isopropyl alcohol, ethanol, Gust Easy Duster, Tri-flow lubrication-aerosol, Tri-flow lubrication mixture, Speedball, Kleenmaster Brillianize, and Workbeater™ all-purpose cleaner. The trailer did not sit on any Individual Hazardous Substance Site (IHSS) or Potential Area of Concern (PAC). The trailer is now located in the B771 Cluster and used as office space.

### 2.2 Trailer 881B

This trailer was acquired and installed northeast of Building 881 in June of 1983. The size of this trailer is approximately 12' X 60'. There are two doors leading into this trailer, both of them are on the north side. Both entry doors are covered with a wood structure approximately 4' X 4' X 12' high with 4-6 wood steps. The siding and the skirting around the bottom of the trailer, which is approximately 28" high, are enamel on aluminum. Structurally the trailer is sound both inside and outside. The T881B Trailer does not have any signs of roof leaks. The tie-down method for the trailer is unknown, because the trailer skirting covers the footing/foundation. The trailer's interior outside walls are wood paneling over insulation, the interior partition walls are wood paneling on stud framing, and the floor is carpet on wood flooring. The trailer has two hard wall rooms, one at each end of the unit. The ceiling is drop type with acoustical tile. The utilities for this trailer consist of an electric heat pump, which is located on the west end of the trailer, and is used for both heating and air conditioning. The hard wall office on the East End of the trailer has an auxiliary heat/air conditioner unit attached to

the south wall. The trailer is hooked up to the Plant Smoke Detection System and the Plant Public Address System.

Since its installation, T881B was always used as an office trailer until it was vacated in October 1995. The trailer does not sit on any IHSS or PAC.

### **2.3 Trailer 883A**

This trailer was constructed/assembled in 1983 at its present location, Cedar Avenue and Eighth Street directly east of Building 883. The size of this trailer is approximately 28' X 70', and is assembled from 2 trailer units of approximately 14' X 70' feet in size. There are two doors leading into this trailer, which are located on the west side of the trailer. The entry doors are covered and are approximately 4' X 4' X 10' high. The west wall sections of the north door entry cover have been removed and have been stacked on the ground next to the office trailer. The exterior siding is 4' X 8' cedar-like fiberboard siding, which is showing signs of deterioration. The skirting around the bottom of the trailer, which is approximately 18" high, is enameled metal. Structurally the trailer is sound both inside and outside. T883A has as many as 50 roof leaks, which were observed from looking at the ceiling tile. The tie-down method for the unit is unknown, because the trailer skirting covers the footing/foundation. The interior outside walls is wallpaper-clad dry wall over insulation, the interior partition wall is wallpaper-clad dry wall on stud framing, and the floor is carpet on wood flooring. The ceiling is a drop type with acoustical tile. The trailer has two hard wall offices and a small restroom in the southeast corner. The utilities for this trailer consist of two electric heat pumps, which are used for heating and air conditioning and located outside on the north wall of this office trailer. The trailer is connected to the Plant Fire Department Smoke Detection System and the Plant Public Address and Warning System.

Since its installation, T883A was always used as an office trailer until it was vacated in August 1997. The trailer does not sit on any IHSS or PAC.

### **2.4 Trailer 883B**

This trailer was constructed/assembled in 1983 at its present location, Cedar Avenue and Eighth Street directly east of Building 883. The size of this trailer is approximately 28' X 70', and is assembled from 2 trailer units of approximately 14' X 70' feet in size. There are two doors leading into this trailer, which are located on the west side of the trailer. The entry doors are covered and are approximately 4' X 4' X 10' high. The exterior siding is 4' X 8' cedar-like fiberboard siding, which is showing signs of deterioration. The skirting around the bottom of the trailer, which is approximately 18" high, is enameled metal. Structurally the trailer is sound both inside and outside. T883B has several small

roof leaks, which were observed in the ceiling tile panels. The tie-down method for the unit is unknown, because the trailer skirting covers the footing/foundation.

The interior outside walls is wallpaper-clad dry wall over insulation, the interior partition wall is wallpaper-clad dry wall on stud framing, and the floor is carpet on

wood flooring. The ceiling is a drop type with acoustical tile. The trailer has three hard wall offices and a small restroom. The utilities for this trailer consist of two electric heat pumps, which are used for heating and air conditioning and are located outside on the north wall. The trailer is connected to the Plant Fire Department Smoke Detection System and the Plant Public Address and Warning System.

Since its installation, T883B was always used as an office trailer until it was vacated over two years ago. The trailer does not sit on any IHSS or PAC.

## 2.5 Trailer 439A

This trailer was placed on site in June 1972. It is located immediately to the north of Building 439, across the roadway, and south of Building 444. There is a sharp grade drop-off on the north side of this unit. The size of the trailer is approximately 12' x 25' x 10' high. There are two entries, both on the south side. There are no steps up from grade; they have been removed. The unit siding is baked on painted sheet metal. All of the skirting at the bottom of the trailer has been removed. The trailer is supported by stacked concrete blocks, tied by cable to embedded concrete piers. There are two windows in the south wall, one window in the east wall, and four windows in the north wall. The roofing is the rolled granular asphalt probably on plywood. The roof slopes from a high point through the length, down to the side walls. There is a 2' high exhaust stack in the roof of the unit, and there are two small wall fans in the north wall. On the inside of the unit there is one hardwall office, located at the west end, approximately 12' x 15'. The interior perimeter walls consist of Tectum boards, 1/2" thick, over plywood. The two office walls are constructed out of the same board material. The ceiling boards spans the short width of the trailer, held in place with 1" wide wood strips. The ceiling has water stains throughout the east end area. This unit has carpet floor covering over tile. The trailer has a forced air unit, and had three wall A/C units, however they have been removed, and the openings are boarded up. There are 12 surface mounted two tube fluorescent ceiling lights, and many duplex outlets in the perimeter walls.

Since its installation, T439A was always used as an office trailer until it was vacated in 1997. The trailer is located on IHSS 116.2 within Operable Unit 2. The trailer was elevated above grade, where it rests on cinder blocks. Radiological contamination resulting from windblown dispersion is just as likely a mechanism for contamination as contact with soil at grade, therefore, the interior and exterior

surveys conducted were adequate. Radiochemical results from the IHSS surface soils indicate that transuranics were below detection levels (<1 pCi/g), while U isotopes were below 7 pCi/g, respectively (*Technical Memorandum No. 2, OU 12, 400/800 Areas*, February 1995). These levels would translate to well less than unrestricted release levels for either total or removable contamination, even if the trailer, at some time, resided on the soil surface.

## 2.6 Trailer 439D

This trailer was placed on site in January 1985. It is located north of Building 440 and immediately west of Building 439. The trailer is a double-wide module and is 24' x 64' x 12' high. The exterior siding is fiber board, and there is no skirting material. It is supported on concrete blocks and tied by cable to embedded concrete piers. The entry doors are located on the south side of the trailer, but the steps have been removed. There are ten windows in the walls of the trailer (four windows in the north wall, two in the west wall, and four in the south wall). In the south wall, there are five wall fans. At the east end there are two wall heat pumps for heating and cooling, two power disconnects and two high-voltage power boxes, however the wiring is cut. The interior currently consists of a single hardwall office located in the northwest corner. The floor covering is carpet, the ceiling consists of 2' x 4' acoustical tile boards, and the perimeter interior walls is wood paneling. The trailer has 24 fluorescent ceiling lights, 2' x 4', flush with the ceiling, and 24 circular ceiling supply registers with floor return.

Since its installation, T439D was always used as an office trailer until it was vacated in 1997. The trailer is located on IHSS 116.2 within Operable Unit 2. Radiological contamination resulting from windblown dispersion is just as likely a mechanism for contamination as contact with soil at grade, therefore, the interior and exterior surveys conducted were adequate. Radiochemical results from the IHSS surface soils indicate that transuranics were below detection levels (<1 pCi/g), while U isotopes were below 7 pCi/g, respectively (*Technical Memorandum No. 2, OU 12, 400/800 Areas*, February 1995). These levels would translate to well less than unrestricted release levels for either total or removable contamination, even if the trailer, at some time, resided on the soil surface.

### **3.0 SUMMARY OF CHARACTERIZATION ACTIVITIES**

An RLC was designed to demonstrate that DOE-added radioactive materials are not present or have been removed to the extent that residual levels of contamination are below the Derived Concentration Guideline Levels (DCGLs) and that the facilities can either be released or disposed of as sanitary waste (i.e., possessed no radiological or chemical contamination). This section of the RLC Report (RLCR) presents data quality objectives (DQOs) used, historical and process knowledge, and RLC performed to release the facilities. Interviews were also used as historical information, and are considered gross, general information only; levels of detail and historical coverage may vary from facility to facility. Interview information, where available, is included in each applicable Appendix. Section 3.0 also describes the survey units established for characterizing the facilities, and defines the methods used to perform radiological surveys, scans and sampling. The RLC followed the guidance provided in NUREG-1575, the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM).

#### **3.1 Data Quality Objectives**

The following section revisits the original DQOs used in designing the RLC Characterization Package.

##### ***The Problem***

The problem consists of the unknown extent of radiological and chemical contamination on and in floors, walls (interior and exterior), ceilings and roofing.

##### ***The Decision***

The decision is whether release criteria for radiological and chemical constituents have been met, based on types and quantities of any radiological and chemical contamination present.

##### ***Inputs to the Decision***

The inputs to the decision include historical and process knowledge; data collected from this RLC; and release criteria and waste management regulations.

##### ***Decision Boundaries***

The decision boundaries include the floors, walls (interior and exterior), ceilings, roofing and any fixed equipment associated with the six facilities.

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## **Decision Rules**

This section presents the rules to support the characterization decisions, specific to each type of contamination.

### **Radionuclides**

- If all radiological survey and scan measurements are below the surface contamination guidelines provided in DOE Order 5400.5 (Radiation Protection of the Public and Environment), the related surface is considered not radiologically contaminated.
- If any radiological survey or scan measurement exceeds the surface contamination guidelines provided in DOE Order 5400.5, the related survey unit must be evaluated per the statistical tests described in Section 7.0 of the RFETS Pre-Demolition Survey Plan.

### **Beryllium**

If surface concentrations of beryllium are equal to or greater than  $0.2 \mu\text{g}/100 \text{ cm}^2$ , the material is considered beryllium contaminated per the Occupational Safety and Industrial Hygiene Program Manual, Chapter 28, Chronic Beryllium Disease Prevention Program (CBDPP).

### **Polychlorinated Biphenyls (PCBs)**

If an item contains PCBs in regulated concentrations, the item is considered PCB-regulated material and subject to the requirements of 40 CFR 761.

### **Asbestos**

If any one sample of a sample set representing a homogeneous medium results in a positive detection for asbestos (i.e., >1% by volume), then material is considered asbestos containing material (ACM; 40 CFR 763 and 5 CCR 1001-10).

### **Tolerable Limits on Decision Error**

The maximum value for false positive and false negative errors is 5% when calculating the number of samples required.

### **Optimization of Plan Design**

Radiological characterization was conducted on interior floors, walls and ceilings, and exterior walls and roofs as necessary. The following criteria were used to develop the radiological survey/sampling characterization package:

- RFETS Radiological Safety Practices (RSP) 16.01, "Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure."
- RFETS RSP 16.02, "Radiological Surveys of Surfaces and Structures."
- RFETS RSP 16.04, "Radiological Survey/Sample Data Analysis."
- RFETS RSP 16.05, "Radiological Survey/Sample Quality Control."
- RFETS RSP 18.10, "Radiological Material Transfer and Unrestricted Release of Property and Waste."

If beryllium, PCB or asbestos surveys/samples are required, sampling and analysis will be conducted in accordance with Section 6.0 of the D&D Characterization Protocol.

### **3.2 Radiological Characterization**

Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on or in the six facilities. This section discusses the historical radiological information on these facilities (or lack thereof) and the RLC conducted. Radiological hazards are discussed in Section 4.0, and RLC radiological data are presented in Appendices A - G.

#### **3.2.1 Summary of Historical Information**

Historically, radiological surveys for T881A, T881B, T883A, T883B, T439A and T439D may have been performed, but the data are not readily available. There are no Plant Action Tracking System items outstanding on these facilities, which indicates no associated radiological program deficiencies. Also, T881A, T881B, T883A, T883B, T439A and T439D are individually listed in I-P73-HSP-18.10, *Radioactive Material Transfer And Unrestricted Release Of Property And Waste, Appendix 4, Unrestricted Release Building/Facility List*. This listing authorizes the unrestricted release of administrative, non-hazardous property located in the facilities without radiological surveys or Radiological Safety signature for either off-site shipment or transfer to Property Utilization and Disposal. The HSP 18.10 listing and is indicative of structures with a low probability of radioactive contamination based on historical activities associated with the facilities.

### 3.2.2 Summary of RLC Data Collected

Although historical review indicates no use of DOE-added radioactive material, insufficient quantitative radiological data existed to designate Trailers T881A, T881B, T883A, T883B, T439A and T439D as non-impacted pursuant to MARSSIM. Therefore, radiological surveys and scans were performed (refer to RLC Package for Group B Trailers, Integrated Work Control Package (IWCP) Work Control No. T0102834; K-H 2000a). Total surface activity (TSA), removable activity, and surface scans were performed on the interior and exterior of the facilities for alpha and beta contamination per MARSSIM guidance. The interior and exterior of each facility were designated as separate survey units. Surface scans were performed in areas where contamination would be expected to accumulate (i.e., high traffic areas on the floors, etc.). A minimum of 10% of each survey unit was scanned. Twenty-eight randomly selected TSA and removable activity measurements were taken in each survey unit (except for the T881A exterior unit, where 30 measurements were taken). TSA and removable activity measurements were taken independently of the surface scans to maximize the probability of finding contamination. Five of the twenty-eight randomly selected TSA measurement locations were resurveyed by an independent radiological control technician for quality control (QC) purposes. In addition, 5% of the 10% surface scan area was resurveyed for QC purposes.

In general, two roof media samples and a duplicate (three samples total) were collected for each facility that had elevated readings to determine if elevated radioactivity was due to naturally occurring radioactive material (NORM), specifically Po-210 (Polonium). Facilities that had no elevated readings were not sampled (e.g., T439A). Sampling requirements are delineated in the Characterization Package for Sampling and Analysis of Roofing Material from Groups B & C for Isotopic Analysis, March 16, 2000 (K-H 2000b). The characterization strategy was designed to acquire a statistically valid number of samples for a specific media type generic to both Group B and C trailers, which routinely yields elevated total surface activity values. The specific media type of interest was weathered sheet metal, in the form of exterior (trailer) roofs. The strategy also considered results from 15 additional samples acquired from a similar trailer roof, specifically from Trailer 112B. Based on the favorable results from T112B (which both ruled-out DOE-added material and confirmed Po-210 as the cause of elevated TSAs), the sample frequency for Group B and C trailers (cited above) was chosen for each trailer roof to produce a total of 26 samples (not including duplicates) to represent the trailer roofs as one population.

Ventilation systems were not specifically measured for contamination. No system contamination was suspected by Safety and Industrial Hygiene, and the trailers had been cleared for occupation until abandoned. Site fires that could have resulted in contamination of other buildings also occurred prior to the trailers being installed. In addition, exterior and interior measurements were

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used as an indicator for other contamination, including ventilation system contamination.

### **3.2.3 Sampling and Field Measurement Methods, Procedures and Equipment**

TSA measurements for alpha and beta were taken with a NE Electra using a DP-6 probe. Removable activity measurements for alpha and beta were analyzed with an Eberline SAC-4 and BC-4, respectively. Surface scans for alpha and beta were taken with the NE Electra at a scan rate of 1.5 inches per second and 4 inches/second, respectively. Radiological survey packages were developed for each survey unit in accordance with RFETS Radiological Safety Practices (RSP) 16.01, "Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure," RFETS RSP 16.02, "Radiological Surveys of Surfaces and Structures," and RFETS RSP 16.05, "Radiological Survey/Sample Quality Control." Radiological surveys and scans were taken per the requirements of Appendix 8 of RFETS SWP-RFCSS-00002-00, "Reconnaissance Level Characterization", Revision 0, dated February 2000.

Specific TSA and removable measurement locations were selected using a random number generator, while scan locations were biased toward heavy foot-traffic areas and areas likely to collect airborne particulates. Random measurements were taken at the center of each grid location. If grid locations were inaccessible, the measurement was obtained as close as possible to the original grid location, and the new location was annotated on the survey map.

Measurement locations were clearly identified with labels or permanent markings to provide a method of referencing measurement results to survey measurement locations. These measurement locations were incorporated into a grid map at survey densities of 1 m<sup>2</sup>. Measurement results as well as statistical data analyses are presented in the Appendix for each survey unit.

Roof media sampling requirements are delineated in the Characterization Package for Sampling and Analysis of Roofing Material from Groups B & C for Isotopic Analysis, March 16, 2000.

Samples were managed to ensure an accurate record of sample collection, transport, analysis, and disposal. Chain-of-custody documentation captures this process for all samples submitted for laboratory analysis and ensures that samples are neither lost nor tampered with and that the samples analyzed are traceable to a specific location in the field. Chain-of-custody forms are included as part of survey documentation in Appendix G.

### 3.2.4 Laboratory Analysis

Radiological samples were analyzed using the Oxford Alpha Spectroscopy Integrated System (OASIS). Radiological samples used to verify and validate OASIS results were analyzed in accordance with Analytical Services Division contractual requirements, specifically Module RCO1, *Isotopic Determinations by Alpha Spectroscopy*.

All samples collected for RFETS laboratories or approved contracted laboratories were analyzed via a Site-approved method (see Section 5.2.3). The laboratories have an established quality assurance/quality control program that assures the validity of the analytical results. The laboratory analytical methods used are capable of measuring levels at or below 50% of the established release criteria. All results state the detection limit for the analysis. Results are detailed in the Appendices for each individual survey unit.

### 3.3 Chemical Characterization

Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on or in the six facilities: T881A, T881B, T883A, T883B, T439A and T439D). Characterization was based on a review of historical and process knowledge and visual inspections, and is presented in this section. Related hazards are discussed in Section 4.0.

#### 3.3.1 Summary of Historical Information

Information on contaminants of concern (i.e., asbestos, beryllium, RCRA/CERCLA constituents, lead in paint, and PCBs) is presented below.

**Asbestos:** No historical asbestos inspection data exist for any of the Group B facilities. Therefore, an asbestos inspection was required for RLC.

**Beryllium:** There is no record of beryllium operations or storage being conducted in the Group B facilities (refer to *D&D Facility Characterization Interview Checklist*, *Type I Facility Checklist*, and *List of Known Beryllium Areas*). These facilities have been used primarily as administrative office space since their arrival on site. A previous RFETS study confirmed that administrative buildings with no record of beryllium activities (including 60 buildings) have no detectable beryllium contamination (refer to *RFETS Administrative Equipment Characterization for Beryllium Contamination Project Plan Report*, January 1998). Therefore, beryllium sampling is unnecessary and was not conducted.

**RCRA/CERCLA Constituents [including metals and volatile and semi-volatile organic compounds (VOCs & SVOCs)]:** According to historical and process knowledge, no chemicals were used or stored in the six Group B facilities (refer to *D&D Facility Characterization Interview Checklist* and *Type I Facility Checklist*). Solvents were used to clean copier parts in T881A, however, only small quantities were used on rags and wipes. No releases/spills are known to have occurred. Therefore, sampling for chemical contaminants is unnecessary and was not conducted.

**Lead in paint:** Wooden stairs and platforms are attached to the six Group B trailers and are coated with paint that was not characterized for lead content. These stairs and platforms are to be disassembled and disposed of as non-hazardous solid waste as part of a separate operation. Environmental Waste Compliance Guidance #27, *Lead-based Paint (LBP) and Lead-based Paint Debris Disposal*, states that LBP debris generated outside of currently identified high contamination areas shall be managed as non-hazardous solid wastes and need not be sampled unless the potentially lead-containing component is to be scabbled or otherwise comprise a separate waste stream. Therefore, it was necessary to analyze the paint on the stairs and platforms for lead.

The paint on the interior and exterior surfaces of the six facilities has not been characterized for lead in paint. Since the facilities are to be released to commerce, only notification is required that they may contain lead-based paint.

**Polychlorinated Biphenyls (PCBs):** Wooden stairs and platforms are attached to the trailers and are coated with paint that was not characterized for PCB content. These stairs and platforms will be disposed of as part of a separate operation. Environmental Waste Compliance Guidance #25, *Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition*, states that applied dried paints, varnishes, waxes, or other similar coatings or sealants are acceptable for disposal (with notification) in a non-hazardous solid waste landfill as PCB Bulk Product Waste under 40 CFR 761.3 and 40 CFR 761.62 paragraph (b), and therefore, need not be sampled as long as restrictions outlined in 40 CFR 761.62 regarding their disposal are met.

Historical and process knowledge gives no reason to suspect that any specialized paints or coatings containing PCBs were applied to the six facilities. Additionally, for release to commerce, only notification is required that the facilities may contain PCB-containing paints. Therefore, the facilities do not require characterization for PCBs in paint.

Fluorescent light ballasts containing PCBs may exist in the trailers due to their age. If these are leaking, they may not be released to commerce, and must be removed prior to release. Therefore, inspection of fluorescent light ballasts for leakage of PCBs was required for RLC. Trailers containing *intact* PCB-containing

fluorescent light ballasts may be released to commerce provided that notification of that fact is given.

### **3.3.2 Summary of RLC Data Collected**

Based on historical information presented in Section 2.0 and the inspections conducted, the only RLC field activities required were sampling for asbestos-containing material and inspection of fluorescent light ballasts for PCBs. An asbestos inspection of the six facilities was conducted by a CDPHE-certified asbestos inspector. Light ballasts were evaluated by knowledgeable staff. A visual inspection of the facilities' roofs, interior and exterior panels, walls, and floors revealed no evidence of chemical spills or releases (i.e., stains, discoloration, odors, or other physical characteristics).

## 4.0 HAZARDS

This sections presents physical, radiological and chemical hazards by facility, including data from radiological field measurements and laboratory analysis. Data are presented in Appendixes A – G.

The RLC (serving also as the Pre-Demolition Survey, PDS) confirmed that the Group B Facilities (inside and outside) do not contain radiological contamination above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual. The exterior survey units contained numerous total surface activity measurements above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual. These results were suspected to be elevated due to naturally occurring radioactive material (NORM), specifically Po-210, deposited on the roof surface. OASIS results validated the presence of Po-210 and the absence of DOE-added material.

For each trailer, the potential for a chemical hazard due to each of the following contaminants was considered:

- Asbestos.
- Beryllium;
- Lead and other metals;
- VOCs/SVOCs;
- PCBs.

Each potential chemical hazard was evaluated primarily based upon historical and process knowledge coupled with visual inspections, given that the trailers were used exclusively for administrative purposes. In addition, each facility was inspected for asbestos-containing material (ACM) and chemical spills, including PCB leaks from PCB light ballasts. Some samples were taken and analyzed for ACM. The chemical hazards are summarized in Table 4-1.

### 4.1 T881A

#### 4.1.1 Physical Hazards

The trailer presents no special physical hazards. T881A is structurally in good condition and is empty of any hazardous equipment. Current physical hazards associated with the trailer consist of those common to an empty trailer. The trailer is still connected to Site electricity. Physical hazards are controlled by the Site Safety and Industrial Hygiene Program, which is based on OSHA regulations and standard industry practices.

**Table 4-1 Summary of Group B Facilities Chemical Hazards**

Contaminant of Concern	Analysis	Historical or RLC?	Below release limit or regulatory thresholds?
Asbestos	No friable asbestos was detected in any of the facilities.	RLC	Yes <sup>1</sup>
Metals, including Be	No history of use or storage. No sampling was required.	Historical	Yes
VOCs/SVOCs	No history of use or storage, except in T881A. No known releases. No sampling was required.	Historical	Yes
Lead in paint	No sampling is required for release to commerce.	Historical	Yes <sup>2</sup>
PCBs	PCB ballasts were removed; no leaks noted.  No specialized paints or coatings were observed. No sampling for PCB in paint was required.	RLC	Yes <sup>3</sup>

1 Notification of the buyer that asbestos-containing material may be present is required for release to commerce. Trailer may not be released as sanitary waste without further asbestos inspection for non-friable asbestos.

2 Notification of the buyer that lead-based paint may be present is required for release to commerce. Environmental Waste Compliance Guidance #27, *Lead-based Paint (LBP) and Lead-based Paint Debris Disposal*, states that LBP debris generated outside of currently identified high contamination areas shall be managed as non-hazardous (solid) wastes and need not be sampled unless the potentially lead-containing component is to be scabbled or otherwise comprise a separate waste stream.

3 Notification of the buyer that intact PCB ballasts may be present is required for release to commerce. Environmental Waste Compliance Guidance #25, *Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition*, states that applied dried paints, varnishes, waxes, or other similar coatings or sealants are acceptable for disposal (with notification) in a non-hazardous solid waste landfill as PCB Bulk Product Waste under 40 CFR 761.3 and 40 CFR 761.62 paragraph (b) and therefore need not be sampled as long as restrictions outlined in 40 CFR 761.62 regarding their disposal are met.

#### 4.1.2 Radiological Hazards

Based on historical and process knowledge, Trailer T881A is classified as a MARSSIM Class 3 area and a Type I facility pursuant to the DPP. The RLC (serving also as the PDS) confirms that this trailer does not contain radiological contamination above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual.

Trailer T881A was separated into two distinct survey units: Interior and Exterior. The Interior survey unit contained no measurements (Total Surface Activity or Removable Activity) above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual. The Exterior survey unit contained one alpha Total Surface Activity measurement above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual. This result was suspected to be elevated due to naturally occurring radioactive material (NORM), specifically Po-210, deposited on the roof surface. OASIS results indicated the presence of Po-210 and the absence of DOE-added material. Data are presented in Appendix A and are discussed in Section 5.2.

#### 4.1.3 Chemical Hazards

##### 4.1.3.1 Asbestos

No historical asbestos data were available for T881A, so an asbestos inspection was performed as part of RLC. Since T881A is being released to commerce, only material potentially containing *friable* asbestos was required to be sampled. The potential presence of non-friable asbestos must be disclosed to the buyer, but sampling of non-friable material is not required unless the trailer is to be disposed of as waste.

T881A contains no *friable* materials potentially containing asbestos, as determined by a CDPHE-certified asbestos inspector. Therefore, no sampling was required. The trailer has a drywall ceiling, and the ducts are lined with fiberglass.

Buyers should be notified that the trailer may contain non-friable asbestos.

Asbestos inspection data are contained in Appendix A-3.

##### 4.1.3.2 Metals (including beryllium and lead in paint)

According to historical and process knowledge, no metals, including beryllium, were used or stored in the facility, and therefore, no related hazards are present.

The paint on the interior and exterior surfaces of T881A has not been characterized for lead in paint. Since the trailer is to be released to commerce, only notification is required that it may contain lead-based paint.

#### **4.1.3.3 VOCs/SVOCs**

Solvents were used to clean copier parts, however, only small quantities were used on rags and wipes, and no releases/spills are known to have occurred. According to historical and process knowledge, no other chemicals were used or stored in the facility, and therefore, no related hazards are present.

#### **4.1.3.4 PCBs**

All PCB-containing fluorescent light ballasts have been removed. There is no record of PCB product use or storage, and therefore, no related hazards are present.

### **4.2 T881B**

#### **4.2.1 Physical Hazards**

The trailer presents no special physical hazards. T881B is structurally in good condition and is empty of any hazardous equipment. Current physical hazards associated with the trailer consist of those common to an empty trailer. The trailer is still connected to Site electricity. Physical hazards are controlled by the Site Safety and Industrial Hygiene Program, which is based on OSHA regulations and standard industry practices.

#### **4.2.2 Radiological Hazards**

Based on historical and process knowledge, Trailer T881B is classified as a MARSSIM Class 3 area and a Type I facility pursuant to the DPP. The RLC (serving also as the PDS) confirms that this trailer does not contain radiological contamination above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual.

Trailer T881B was separated into two distinct survey units: Interior and Exterior. The Interior survey unit contained no measurements (Total Surface Activity or Removable Activity) above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual. The Exterior survey unit contained three alpha Total Surface Activity measurements above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual. These results were suspected to be elevated due to naturally occurring radioactive material (NORM), specifically Po-210,

deposited on the roof surface. OASIS results indicated the presence of Po-210 and the absence of DOE-added material. Data are presented in Appendix B and are discussed in Section 5.2.

#### **4.2.3 Chemical Hazards**

##### **4.2.3.1 Asbestos**

No historical asbestos data were available for T881B, so an asbestos inspection was performed as part of RLC. Since T881B is being released to commerce, only material potentially containing *friable* asbestos was required to be sampled. The potential presence of non-friable asbestos must be disclosed to the buyer, but sampling of non-friable material is not required unless the trailer is to be disposed of as waste.

T881B contains no *friable* materials potentially containing asbestos, as determined by a CDPHE-certified asbestos inspector. Therefore, no sampling was required. The trailer has a drywall ceiling.

Buyers should be notified that the trailer may contain non-friable asbestos.

Asbestos inspection data are contained in Appendix B-3.

##### **4.2.3.2 Metals (including beryllium and lead in paint)**

According to historical and process knowledge, no metals, including beryllium, were used or stored in the trailer, and therefore, no related hazards are present.

The paint on the interior and exterior surfaces of T881B has not been characterized for lead in paint. Since the trailer is to be released to commerce, only notification is required that it may contain lead-based paint.

##### **4.2.3.3 VOCs/SVOCs**

According to historical and process knowledge, no chemicals were used or stored in the trailer, and therefore, no related hazards are present.

##### **4.2.3.4 PCBs**

All fluorescent light ballasts have been removed. There is no record of PCB product use or storage, and therefore, no related hazards are present.

#### **4.3 T883A**

### 4.3.1 Physical Hazards

The trailer presents no special physical hazards. T883A is structurally in good condition and is empty of any hazardous equipment. Current physical hazards associated with the trailer consist of those common to an empty trailer. The trailer is still connected to Site electricity. Physical hazards are controlled by the Site Safety and Industrial Hygiene Program, which is based on OSHA regulations and standard industry practices.

The trailer has had roof leaks and is showing signs of related deterioration. There may be mold and mildew contamination within the trailer walls.

### 4.3.2 Radiological Hazards

Based on historical and process knowledge, Trailer T883A is classified as a MARSSIM Class 3 area and a Type I facility pursuant to the DPP. The RLC (serving also as the PDS) confirms that this trailer does not contain radiological contamination above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual.

Trailer T883A was separated into two distinct survey units: Interior and Exterior. The Interior survey unit contained no measurements (Total Surface Activity or Removable Activity) above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual. The Exterior survey unit contained ten alpha Total Surface Activity measurements above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual. These results were suspected to be elevated due to naturally occurring radioactive material (NORM), specifically Po-210, deposited on the roof surface. OASIS results indicated the presence of Po-210 and the absence of DOE-added material. Data are presented in Appendix C and are discussed in Section 5.2.

### 4.3.3 Chemical Hazards

#### 4.3.3.1 Asbestos

No historical asbestos data were available for T-883A, so an asbestos inspection was performed as part of RLC. Since T883A is being released to commerce, only material potentially containing *friable* asbestos was required to be sampled. The potential presence of non-friable asbestos must be disclosed to the buyer, but sampling of non-friable material is not required unless the trailer is to be disposed of as waste.

The only friable materials potentially containing asbestos in T-883A are ceiling tiles. Therefore, samples were taken from two separate ceiling tiles by a CDPHE-

certified asbestos inspector. These samples were determined to contain no asbestos.

Buyers should be notified that the trailer may contain non-friable asbestos.

Asbestos inspection data are contained in Appendix C-3.

#### **4.3.3.2 Metals (including beryllium and lead in paint)**

According to historical and process knowledge, no metals, including beryllium, were used or stored in the trailer, and therefore, no related hazards are present.

The paint on the interior and exterior surfaces of T883A has not been characterized for lead in paint. Since the trailer is to be released to commerce, only notification is required that it may contain lead-based paint.

#### **4.3.3.3 VOCs/SVOCs**

According to historical and process knowledge, no chemicals were used or stored in the trailer, and therefore, no related hazards are present.

#### **4.3.3.4 PCBs**

All fluorescent light ballasts have been removed. There is no record of PCB product use or storage, and therefore, no related hazards are present.

### **4.4 T883B**

#### **4.4.1 Physical Hazards**

The trailer presents no special physical hazards. T883B is structurally in good condition and is empty of any hazardous equipment. Current physical hazards associated with the trailer consist of those common to an empty trailer. The trailer is still connected to Site electricity. Physical hazards are controlled by the Site Safety and Industrial Hygiene Program, which is based on OSHA regulations and standard industry practices.

The trailer has had roof leaks and is showing signs of related deterioration. There may be mold and mildew contamination within the trailer walls.

#### **4.4.2 Radiological Hazards**

Based on historical and process knowledge, Trailer T883B is classified as a MARSSIM Class 3 area and a Type I facility pursuant to the DPP. The RLC (serving also as the PDS) confirms that this trailer does not contain radiological

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contamination above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual.

Trailer T883B was separated into two distinct survey units: Interior and Exterior. The Interior survey unit contained no measurements (Total Surface Activity or Removable Activity) above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual. The Exterior survey unit contained eight alpha Total Surface Activity measurements above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual. These results were suspected to be elevated due to naturally occurring radioactive material (NORM), specifically Po-210, deposited on the roof surface. OASIS results indicated the presence of Po-210 and the absence of DOE-added material. Data are presented in Appendix D and are discussed in Section 5.2.

#### **4.4.3 Chemical Hazards**

##### **4.4.3.1 Asbestos**

No historical asbestos data were available for T-883B, so an asbestos inspection was performed as part of RLC. Since T883B is being released to commerce, only material potentially containing *friable* asbestos was required to be sampled. The potential presence of non-friable asbestos must be disclosed to the buyer, but sampling of non-friable material is not required unless the trailer is to be disposed of as waste.

The only friable materials potentially containing asbestos in T-883B are ceiling tiles. Therefore, samples were taken from two separate ceiling tiles by a CDPHE-certified asbestos inspector. These samples were determined to contain no asbestos.

Buyers should be notified that the trailer may contain non-friable asbestos.

Asbestos inspection data are contained in Appendix D-3.

##### **4.4.3.2 Metals (including beryllium and lead in paint)**

According to historical and process knowledge, no metals, including beryllium, were used or stored in the trailer, and therefore, no related hazards are present.

The paint on the interior and exterior surfaces of T883B has not been characterized for lead in paint. Since the trailer is to be released to commerce, only notification is required that it may contain lead-based paint.

#### 4.4.3.3 VOCs/SVOCs

According to historical and process knowledge, no chemicals were used or stored in the trailer, and therefore, no related hazards are present.

#### 4.4.3.4 PCBs

All fluorescent light ballasts have been removed. There is no record of PCB product use or storage, and therefore, no related hazards are present.

### 4.5 T439A

#### 4.5.1 Physical Hazards

The trailer presents no special physical hazards. T439A is structurally in good condition and is empty of any hazardous equipment. Current physical hazards associated with the trailer consist of those common to an empty trailer. The trailer is no longer connected to Site electricity. Physical hazards are controlled by the Site Safety and Industrial Hygiene Program, which is based on OSHA regulations and standard industry practices.

#### 4.5.2 Radiological Hazards

Based on historical and process knowledge, Trailer T439A is classified as a MARSSIM Class 3 area and a Type I facility pursuant to the DPP. The RLC (serving also as the PDS) confirms that this trailer does not contain radiological contamination above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual.

Trailer T439A was separated into two distinct survey units: Interior and Exterior. The Interior and Exterior survey units contained no measurements (Total Surface Activity or Removable Activity) above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual. Data are presented in Appendix E and are discussed in Section 5.2.

#### 4.5.3 Chemical Hazards

##### 4.5.3.1 Asbestos

No historical asbestos data were available for T-439A, so an asbestos inspection was performed as part of RLC. Since T439A is being released to commerce, only material potentially containing *friable* asbestos was required to be sampled. The potential presence of non-friable asbestos must be disclosed to the buyer, but

sampling of non-friable material is not required unless the trailer is to be disposed of as waste.

T-439A contains no *friable* materials potentially containing asbestos, as determined by a CDPHE-certified asbestos inspector. Therefore, no sampling was required. T439A contains fiberboard wall panels, but these are non-friable. The ceiling tiles are composed of drywall. Buyers should be notified that the trailer may contain non-friable asbestos.

Asbestos inspection data are contained in Appendix E-3.

#### **4.5.3.2 Metals (including beryllium and lead in paint)**

According to historical and process knowledge, no metals, including beryllium, were used or stored in the trailer, and therefore, no related hazards are present.

The paint on the interior and exterior surfaces of T439A has not been characterized for lead in paint. Since the trailer is to be released to commerce, only notification is required that it may contain lead-based paint.

#### **4.5.3.3 VOCs/SVOCs**

According to historical and process knowledge, no chemicals were used or stored in the trailer, and therefore, no related hazards are present.

#### **4.5.3.4 PCBs**

All PCB-containing fluorescent light ballasts have been removed. There is no record of PCB product use or storage, and therefore, no related hazards are present.

### **4.6 T439D**

#### **4.6.1 Physical Hazards**

The trailer presents no special physical hazards. T439D is structurally in good condition and is empty of any hazardous equipment. Current physical hazards associated with the trailer consist of those common to an empty trailer. The trailer is not longer connected to Site electricity. Physical hazards are controlled by the Site Safety and Industrial Hygiene Program, which is based on OSHA regulations and standard industry practices.

## 4.6.2 Radiological Hazards

Based on historical and process knowledge, Trailer T439D is classified as a MARSSIM Class 3 area and a Type I facility pursuant to the DPP. The RLC (serving also as the PDS) confirms that this trailer does not contain radiological contamination above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual.

Trailer T439D was separated into two distinct survey units: Interior and Exterior. The Interior survey unit contained no measurements (Total Surface Activity or Removable Activity) above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual. The Exterior survey unit contained four alpha Total Surface Activity measurements above the Surface Contamination values provided in DOE Order 5400.5 and the RFETS Radiological Control Manual. These results were suspected to be elevated due to naturally occurring radioactive material (NORM), specifically Po-210, deposited on the roof surface. OASIS results indicated the presence of Po-210 and the absence of DOE-added material. Data are presented in Appendix F and are discussed in Section 5.2.

## 4.6.3 Chemical Hazards

### 4.6.3.1 Asbestos

No historical asbestos data were available for T-439D, so an asbestos inspection was performed as part of RLC. Since T439B is being released to commerce, only material potentially containing *friable* asbestos was required to be sampled. The potential presence of non-friable asbestos must be disclosed to the buyer, but sampling of non-friable material is not required unless the trailer is to be disposed of as waste.

T-439D contains no *friable* materials potentially containing asbestos, as determined by a CDPHE-certified asbestos inspector. Therefore, no sampling was required. The ceiling tiles are composed of drywall.

Buyers should be notified that the trailer may contain non-friable asbestos.

Asbestos inspection data are contained in Appendix F-3.

### 4.6.3.2 Metals (including beryllium and lead in paint)

According to historical and process knowledge, no metals, including beryllium, were used or stored in the trailer, and therefore, no related hazards are present.

The paint on the interior and exterior surfaces of T439B has not been characterized for lead in paint. Since the trailer is to be released to commerce, only notification is required that it may contain lead-based paint.

#### **4.6.3.3 VOCs/SVOCs**

According to historical and process knowledge, no chemicals were used or stored in the trailer, and therefore, no related hazards are present.

#### **4.6.3.4 PCBs**

All PCB-containing fluorescent light ballasts have been removed. There is no record of PCB product use or storage, and therefore, no related hazards are present.

## 5.0 DATA QUALITY ASSESSMENT (DQA)

Data used in making disposition decisions must be of adequate quality, as required by K-H corporate policies (K-H QAPD, 1997, Section 7.1.4 and 7.2.2), as well as by the customer (DOE, RFFO; Order O 414.1A, Quality Assurance, §4.b.(2)(b)). Regulators and the public also expect decisions and data that are technically and legally defensible. Verification and validation of the data ensure that data used in decisions resulting from the RLC are usable and defensible.

The DQA consists of revisiting the DQOs used for the project and determining whether those objectives were met. This data evaluation also consists of verifying and validating the RLC data, which ensures that data input into decisions are accurate, precise, representative, complete, and comparable.

Original DQOs of the project are stated in Section 3.1, where problems, decisions, decision inputs, project boundaries, and error tolerances were adequately defined. The decision for the Group B facilities is whether contamination levels are below release criteria, for both chemicals and radionuclides. No asbestos was identified in the Group B trailers, nor was any evidence of chemicals (e.g., stains or fluorescent light ballasts with PCBs). The conclusion with respect to radiological contamination is derived from measurements at a 95% confidence level, using MARSSIM methodology in the design of all survey units. Original estimates of survey quantities were confirmed by using measured values (vs. assumed values) in the sample quantity derivation (Appendix G).

The RLC for Group B facilities was conducted in accordance with the FDP and the DDCP. These programs conform with the Site's DOE-approved QA Program, which in turn conforms with DOE Order 414.1A, *Quality Assurance*. The program is also consistent with MARSSIM guidance, which reflects elements of DOE Order 414.1A. Adequate implementation of the quality elements required by the DOE was corroborated through the verification and validation process described within this section.

The DQA presented in this section supports conclusions through implementation of the guidelines taken from the following MARSSIM sections:

- Section 4.9, Quality Control
- Section 8.2, Data Quality Assessment
- Section 9.0, Quality Assurance & Quality Control
- Appendix E, Assessment Phase of the Data Life Cycle
- Appendix N, Data Validation using Data Descriptors

The MARSSIM-recommended criteria for verification and validation of pre-demolition (final status) survey data, listed above, are summarized in Table 5-1. The MARSSIM criteria are listed across the top of the table, whereas the

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**Table 5-1 Group B Final Status Surveys' Compliance with MARSSIM  
Data Quality Guidelines**

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project's proof of implementation is listed along the left side of the table. One or more "checks" per column exhibit compliance with the MARSSIM criterion.

## 5.1 Verification Of Results

Verification ensures that data produced and used by the project are documented and traceable per quality requirements. Verification confirmed that:

- Chain-of-custody was intact from initial sampling through transport and final analysis;
- Preservation and hold-times were within tolerance;
- Format and content of the data are clearly presented relative to goals of the project.

Verification of the Group B dataset also confirmed the presence of records representing implementation of the following quality controls:

- Calibrations/periodic performance checks (alpha spectroscopy, surveys and scans), for accuracy;
- Laboratory control samples (LCS -- alpha spectroscopy), for accuracy;
- Blanks (alpha spectroscopy), for accuracy;
- Lab and field duplicate measurements, for precision;
- Chemical yield (alpha spectroscopy), for accuracy;
- Count times (alpha spectroscopy surveys and scans), for sensitivity;
- Sample preparations (alpha spectroscopy), for accuracy, representativeness.

Upon completion of the data management activities listed above, peer and quality assurance reviews were performed on the data and this, the final report.

In summary, the verification confirmed that documentation and quality records are intact for the project, which in turn corroborates implementation of the required technical quality controls and administrative requirements, particularly verification of those documents and records that will ultimately support the CERCLA Administrative Record. This report and all relevant Quality records associated with the project will be submitted to the CERCLA Administrative Record, for permanent storage, within 30 days of approval of the final report.

## 5.2 Validation Of Results

Validation consisted of a technical review of all data that directly support the RLC decisions. Any limitations of the data relative to project goals are delineated, and the associated data are qualified accordingly. Data were validated relative to quality criteria discussed throughout previously noted MARSSIM sections, RSP requirements, and PARCC parameters (Precision, Accuracy, Representativeness, Comparability, and Completeness). PARCC parameters are consistent with "data descriptors" in MARSSIM and address characteristics of the

data that must be defined for scientific integrity and defensibility. The PARCC parameters also include discussion on bias and sensitivity, two more data descriptors emphasized in MARSSIM.

As described in Section 3.2.2, twenty-six (26) samples from the highest elevated alpha (TSA) locations were acquired collectively across both Group B and C trailer roofs. For all samples, OASIS results indicated 1) the absence of DOE-added material, and 2) Po-210 levels consistent with elevated alpha readings as acquired through the Electra field survey instrumentation. These results corroborate the conclusion that Po-210 is the cause for elevated alpha (survey) results for all trailer roofs sampled and surveyed.

Validation of the OASIS methodology was performed on four (4) samples representing the highest TSA values acquired in the field from both Group B and Group C facilities. Validation of the method consisted of 2 parts: 1) establishing presence/absence of DOE-added material at the sensitivities specified for the OASIS (i.e.,  $\leq 50\%$  DCGL<sub>w</sub>), and 2) quantification of Po-210 concentrations relative to levels measured in the field with hand-held instruments.

Most importantly, the offsite results (4 total) confirmed the absence of DOE-added material at the sensitivities cited for the OASIS (offsite results indicated maximum activity levels at 16 dpm/100cm<sup>2</sup>, well below the sensitivity required for PDS). Of secondary interest were how well OASIS results for Po-210 levels corresponded with standard alpha spectroscopy, includes wet chemistry sample preparations (K-H Module RC01. The offsite lab yielded an average Po-210 value to within 6% of that produced by the OASIS, constituting good comparability (and precision) between the two alpha spectroscopy methods. Further, TSA values as measured with the Electra (field) instrumentation were also comparable with the OASIS values. All of these results, taken collectively, indicate Po-210 as the cause for elevated TSAs measured in the field.

## 5.2.1 Precision

### 5.2.1.1 Radiological Surveys and Scans

Precision of the radiological instrumentation was satisfactory based on tolerance charting of daily source measurements for each individual instrument used on the project, which includes all measurement types (scans and static measures for total contamination and swipes for removable). Adequate precision was established through instrument performance within a  $\pm 20\%$  range as defined by measurement results compared to a standard source value. Based on site protocol (i.e., RSPs), any measurement exceeding the defined tolerance limits required corrective action (repair or replacement) prior to the instrument's use during pre-demolition survey.

Duplicate measurements were acquired for total and removable surface activity measurements at  $\geq 10\%$  frequency per survey unit. All duplicate measurements were within tolerance based on the acceptance criterion that both results be below Derived Concentration Guideline Level-Averaged Measures (DCGL<sub>W</sub>). Note that even if populations were "significantly" different between real and duplicate results, if both duplicate and real population statistics are less than action levels, the difference between duplicate and real values is, ultimately, insignificant relative to release decisions.

### 5.2.1.2 Alpha Spectroscopy

Media samples were analyzed for the presence/absence of DOE-added radionuclides through the use of the onsite OASIS. Acceptable precision of the system was proven through the use of multiple analyses of standard reference materials (<sup>237</sup>Np) within acceptance limits as established through control charting. Acceptable precision (repeatability) is exhibited through multiple measurements consistently falling within  $\pm 3$  standard deviations (i.e., control limits) of an average value, typically illustrated through control charting.

Replicates of project samples, to determine overall sampling precision, were not analyzed through OASIS but were submitted to an offsite laboratory to better evaluate independent repeatability of the results (based on the relatively new application of OASIS in RFETS Pre-Demolition Surveys). Four (4) samples of the collective Group B and C sample sets, or  $\sim 10\%$  of the collective, were submitted for duplicate analyses, consistent with industry-standard quality control sampling frequencies. The four samples were selected and biased with respect to the highest TSA values measured by the OASIS on the trailers. Group B and C sample sets were combined for this evaluation of precision due to the similarity of material types (weathered sheet metals and tarry substrata), and locations (mobile trailer rooftop surfaces). Results from laboratory duplicates indicate adequate repeatability and verify that the elevated alpha readings are due to Po-210 and not DOE-added material (see Appendix G).

### 5.2.2 Accuracy (And Bias)

#### 5.2.2.1 Radiological Surveys and Scans

Accuracy of radiological surveys and scans is satisfactory based on RFETS-programmatic annual calibrations that establish instrument efficiencies and sensitivities for all instrumentation used on this project. Daily source checks also provided periodic checks to ensure that all sensors are within tolerance during daily operations. Calibration and calibration check results were within the RFETS and industry-standard requirement of 20% of the applicable reference standard values. Full-scale, multi-point calibrations provided accuracy of  $\pm 10\%$  prior to implementation of survey instruments in the field, consistent with guidelines put forth in ANSI-N323A. Instrument calibration dates, operability checks, calculated

MDA, and established background data are recorded and included in the RLC Data Package for Group B Facilities.

No significant biases were noted based on tolerance charting of all instrumentation used for scans and surveys. Any runs in the data, as defined by 7 or more consecutive points above or below the reference standard value, remained within the  $\pm 20\%$  acceptable range of the reference value.

### 5.2.2.2 Alpha Spectroscopy

Accuracies of the alpha spectroscopy results were acceptable based on establishing a batch-specific efficiency for the OASIS and measurement of reference standards within control limits ( $^{237}\text{Np}$ , as established by  $\pm 3$  sigma bounds about the arithmetic mean).

Background values were approximately  $1.2 \text{ dpm}/100 \text{ cm}^2$  for the sample batches, which is typical for the OASIS. Background values approaching  $2 \text{ dpm}/100 \text{ cm}^2$  require corrective actions to the OASIS protocol, but this upper limit was not approached during analysis of the Group B samples.

Preparation blanks were not required, as background values were established, and no wet chemistry sample preparations were necessary or performed. Potential cross-contamination of samples was not an issue, considering all transuranic results were below MDA and, of course, below the  $\text{DCGL}_w$  as well. Uncertainties of the OASIS results, per sample, were quantified as  $\pm 1$  sigma error.

Verification and validation sample result accuracies from the offsite lab (GEL) were adequate based on satisfactory percent (tracer) yields and LCS recoveries between 80% and 120%. Random (counting) error was quantified as  $\pm 2$  sigma.

### 5.2.3 Representativeness

Samples, surveys and scans are representative based on the following criteria:

- Familiarity with facilities -- multiple walk-downs and collaborations by management and technical staff;
- Implementation of industry-standard chain-of-custody protocols;
- Compliance with sample preservation and hold times;
- Documented and (site) approved methods, particularly RSPs for scans/surveys and the following documents for alpha spectroscopy:
  - TBD-00143, *Direct Analysis of Alpha Emitters using the Oxford Alpha Spectroscopy Integrated System (OASIS)*
  - TBD-000143, Use of the OASIS for Direct Differentiation between Po-210 and DOE-enhanced Materials (in progress); and

- Standard Work Package: SWP-RFCSS-00002-00, Revisions 0 and 1.0:
  - Characterization Package for Sampling and Analysis of Roofing Material from Groups B & C for Isotopic Analysis, March 16, 2000
  - IWCP Work Control No. T0102834
  - Reconnaissance Level Characterization Package for Group B Trailers, Feb. 2000, Rev. 0
  - IWCP Work Control No. T0102836
  - IWCP Work Control No. T0103087.

Two real and one QC sample (a duplicate) were acquired for each trailer in Group B, with the exception of T439A, where no TSA values near the action level were recorded. Cumulatively, these 10 real samples and 5 QC samples are considered representative of the Group in general (especially relative to characterizing the elevated alpha radiation phenomenon associated with weathered metallic trailer roofs), and each trailer in particular.

#### 5.2.4 Completeness

The data set for this project is complete with respect to surveys, scans, samples and associated quality records ("data packages") resulting from the collective RLC and Pre-Demolition process. Based on process knowledge of the trailers, coupled with detailed visual inspections, chemical (non-radiological) analyses were not warranted for any of the Group B facilities. Completeness of radiological surveys and samples is detailed, by individual survey unit, in each appendix. The complete and original data packages resulting from offsite labs are stored in Building 881 through K-H Analytical Services Division.

Consistent with the DQO process, the sampling design (for the minimum number of MARSSIM-based survey locations) was optimized through back-calculating actual measurement results (acquired during RLC) and comparing model output with original estimates. A representative Post Survey Removable Contamination Summary Statistics Calculation verification worksheet is included in Appendix G. Use of actual sample/survey/scan (result) variances in MARSSIM's DQO model provided confirmation that an adequate number of samples/surveys/scans had been acquired. In some instances, where TSA results were elevated due to Po-210 concentrations, the Post Survey calculations could indicate that more survey points were needed. These numbers are artificially high because the elevated results were due to Po-210, and not due to DOE-added radionuclides. Consequently, where the presence of NORM (specifically Po-210) was confirmed through alpha spec analysis, Post Survey Statistics Calculations that use survey (TSA) results are not applicable as a means of checking TSA survey frequencies, but would show adequate survey frequency if results attained from analytical samples were used instead.

### 5.2.5 Comparability

All results presented are comparable with radiological survey/scan and alpha spectroscopy data on a RFETS- and DOE-complex wide basis. This comparability is based on:

- Use of standardized engineering units in the reporting of measurement results;
- Consistent sensitivities of measurements at approximately 50% or less of the  $DCGL_W$  (approximately 50% or less of the  $DCGL_{EMC}$  for scans); qualifications of selected alpha spectroscopy results are described in the next subsection;
- Use of RFETS-approved procedures;
- Systematic quality controls; and
- Thorough documentation of the planning, sampling/analysis process, and data reduction into formats designed for making decisions based on the project's DQOs.

### 5.2.6 Sensitivity

Adequate sensitivities, in units of  $dpm/100\text{ cm}^2$ , were attained for all surveys/scans and alpha spectroscopy methods implemented based on minimum detectable activities (MDAs) at 50% of the transuranic  $DCGL_W$  ( $\leq 50\%$   $DCGL_{EMC}$  for scans), with the exception of 9 of the 18 samples analyzed by alpha spectroscopy. Limited count times were the cause of the elevated MDAs at  $70\text{ dpm}/100\text{ cm}^2$ , where the MARSSIM-recommended maximum sensitivity, in this case, would be at  $50\text{ dpm}/100\text{ cm}^2$ . These MDAs do not affect final decisions based on the results of verification samples analyzed offsite, which verified the absence of DOE-added materials (Appendix G). In future RLC projects, all count times will comply with MARSSIM guidance

The nominal MDAs for each survey and alpha spectroscopy method are summarized as follows:

- Removable alpha contamination (Eberline SAC-4):  $8.3\text{ dpm}/100\text{ cm}^2$ ;
- Removable beta contamination (Eberline BC-4):  $200\text{ dpm}/100\text{ cm}^2$ ;
- Total alpha contamination (NE Electra):  $49\text{ dpm}/100\text{ cm}^2$ ;
- Total beta contamination (NE Electra):  $351\text{ dpm}/100\text{ cm}^2$ ;
- Alpha spectroscopy (OASIS): 30 -  $79\text{ dpm}/100\text{ cm}^2$  (cumulative transuranics – Am-241 and Pu-239/240).

### 5.2.7 Other QA Elements

All personnel performing activities affecting quality within the RLC project were qualified to perform their specific tasks. Suitable training and qualification - documentation for personnel performing the work, from the laborers to technical

professionals to management, is documented in both the IWCP and the applicable Human Resources department.

### 5.3 DQA Summary

In summary, the data presented in this report have been verified and are valid, with noted qualifications, and complete for comparison with release criteria (action levels) as stated in the DQOs. The qualifications listed for alpha spectroscopy data do not impact the decisions to release the structures/trailers. The results of verification samples from an offsite, independent laboratory (Appendix G) corroborated the absence of DOE-added radionuclides at the highest elevated TSA locations, and likewise confirmed that Po-210 was comparable to activities measured in the field with survey instrumentation and onsite alpha spectroscopy. All media sampled, surveyed and scanned relative to total and removable alpha activities yielded results less than release limits associated with the stated contaminants of concern. Therefore, the Group B facilities, both collectively and individually, meet the release criteria with the statistical and qualitative confidences stated in this section and throughout the report.

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## 6.0 FACILITY CLASSIFICATION

Based on the analysis of radiological, chemical and physical hazards, all of the Group B Facilities: T881A (now T771T), T881B, T883A, T883B, T439A and T439D) are classified as Type I Facilities (i.e., "free of contamination") pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999). Classification was based on a review of historical and process knowledge, and newly acquired RLC data. Results indicate that no radioactive or chemical contamination exists and that no significant physical hazards are present. The trailers contain no friable asbestos but may contain non-friable asbestos.

## 7.0 REFERENCES

ANSI-N323A-1997, *Radiation Protection Instrumentation Test and Calibration*.

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."

EG&G, 1995. *Technical Memorandum No. 2, OU 12, 400/800 Areas*, February 1995.

EPA, 1994. "The Data Quality Objective Process," EPA QA/G-4.

K-H, 1997. "Kaiser-Hill Team Quality Assurance Program", Rev. 5, 12/97.

K-H, 1998. Facility Disposition Program Manual, MAN-076-FDPM, Rev. 1, September 1999.

K-H, 1999. Decontamination and Decommissioning Characterization Protocol, MAN-077-DDCP, Rev. 1, June 19, 2000.

K-H, 1999. Decommissioning Program Plan, June 21, 1999.

K-H, 2000a. Reconnaissance Level Characterization Package for Group B Trailers, Rev. 0, IWCP Work Control No. T0102834, February 2000.

K-H, 2000b. Characterization Package for Sampling and Analysis of Roofing Material from Groups B & C for Isotopic Analysis, March 16, 2000.

MARSSIM – Multi-Agency Radiation Survey and Site Investigation Manual, December, 1997 (NUREG-1575, EPA 402-R-97-016).

RFETS Chronic Beryllium Disease Prevention Program, "List of Known Beryllium Areas" (Maintenance Work Package Planning Package, 1-E33-IWCP-3, Rev. 3) January 1998.

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*

RF/RMRS-97-044, Closeout Report for the Source Removal of Polychlorinated Biphenyls, RMRS, July 1997.

# APPENDICES

## A-1

### T881A – Radiological Survey Data for Exterior Survey Unit

- Summary of Radiological Survey/Sample Results
- Map of Locations
  - Scans
  - Surveys
- Removable and Total Survey Results – Detail
- Laboratory Alpha Spec (Sample) Results – Detail

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## Radiological Survey/Sample Results for T881A

<u>Total Surface Activity Measurements dpm/100 cm<sup>2</sup></u>			<u>Removable Activity Measurements dpm/100 cm<sup>2</sup></u>		
<b>Interior</b>	<b>Alpha</b>	<b>Beta</b>	<b>Interior</b>	<b>Alpha</b>	<b>Beta</b>
	# Required	# Obtained		# Required	# Obtained
	28	28		28	28
MIN	-20.9	-215	MIN	-5	-31.6
MAX	18.2	444	MAX	2	35.2
MEAN	-5.4	50.2	MEAN	0.3	-1.4
STD DEV	10.0	138.6	STD DEV	1.5	20.5
<b>Exterior</b>	# Required	# Obtained	<b>Exterior</b>	# Required	# Obtained
	28	28		28	30
MIN	-7.4	-219.0	MIN	-0.91	-63.2
MAX	84.6	444.4	MAX	3.94	36.8
MEAN	30.6	82.7	MEAN	0.7	-8.9
STD DEV	22.7	211.6	STD DEV	1.4	21.5
DCGL <sub>w</sub>	100	5000	DCGL <sub>w</sub>	20	1000

### Media Sample Activity

# Required	# Obtained
2	2

<u>Contaminant</u>	<u>Y/N</u>	<u>Det. Sens. dpm/100 cm<sup>2</sup></u>
U present	N	79
Pu present	N	79

### Total Po-210 Results dpm/100 cm<sup>2</sup>

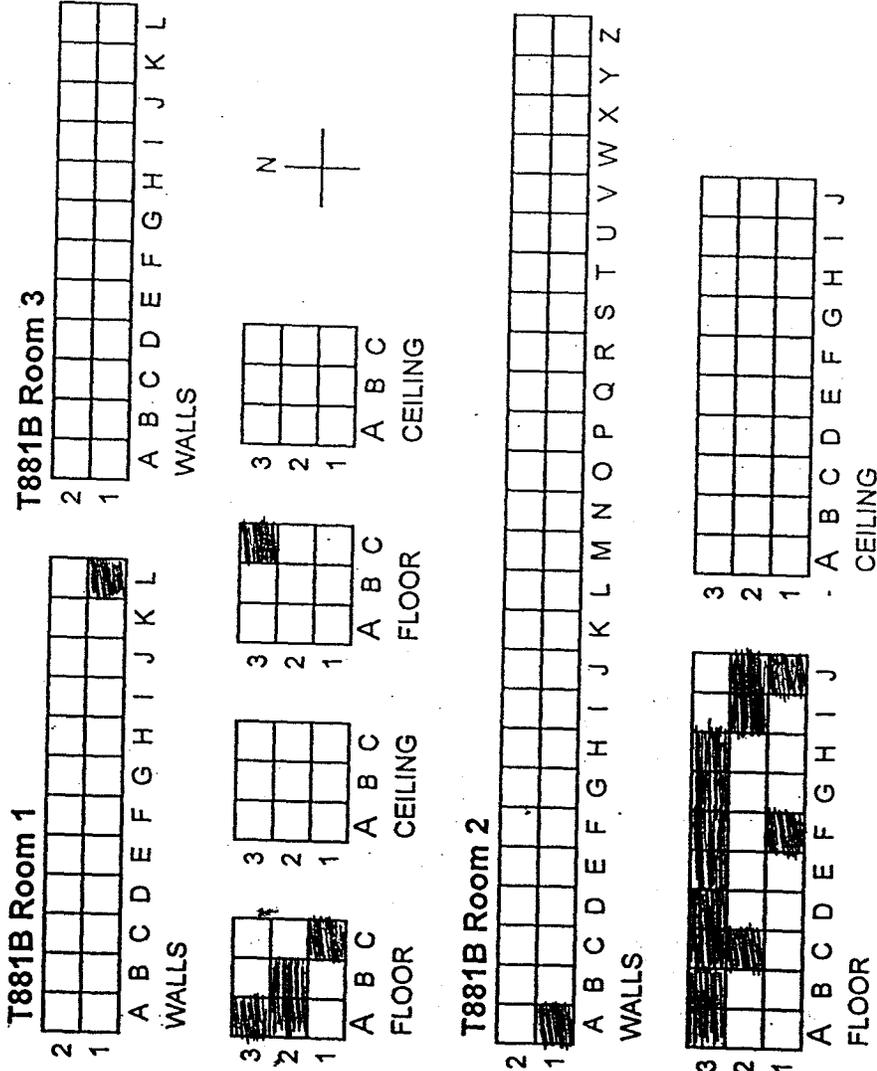
MIN	37.8
MAX	52.5
MEAN	45.2
STD DEV	4.5

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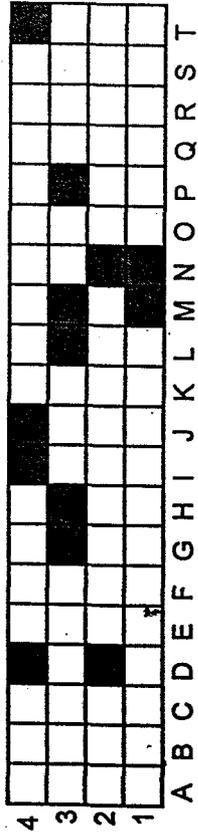


*Scan Locations:*



*NOTE: Scan locations were chosen based on most likely to find contamination due to their "high traffic" likelihood in these areas.*

T881A Exterior Roof



= one square meter  
 = direct & swipe

X Coordinate	Y Coordinate
17	3

X	Y
8	2
14	4
10	1
13	2
14	3
12	2
4	1
7	2
13	4
16	2

X	Y
9	1
4	3
20	1

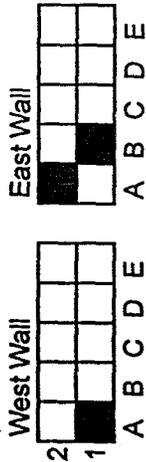
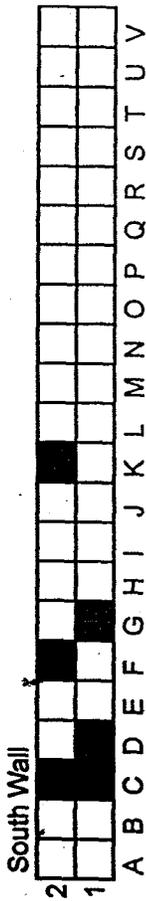
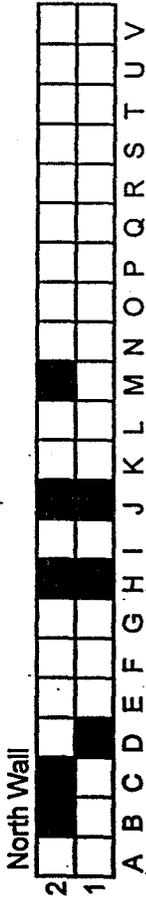
Roof Surveys randomly chosen with original number of survey points (13 survey points)

37a / 242

~~1111~~ 2/28/00

100

**T881A Exterior**



= one square meter

= direct & swipe

Survey Locations Correspond to original randomly placed locations for the walls  
 No change in the survey locations on the walls was necessary for Revision 1

376/242 ~~1111~~ 3/7/00

61







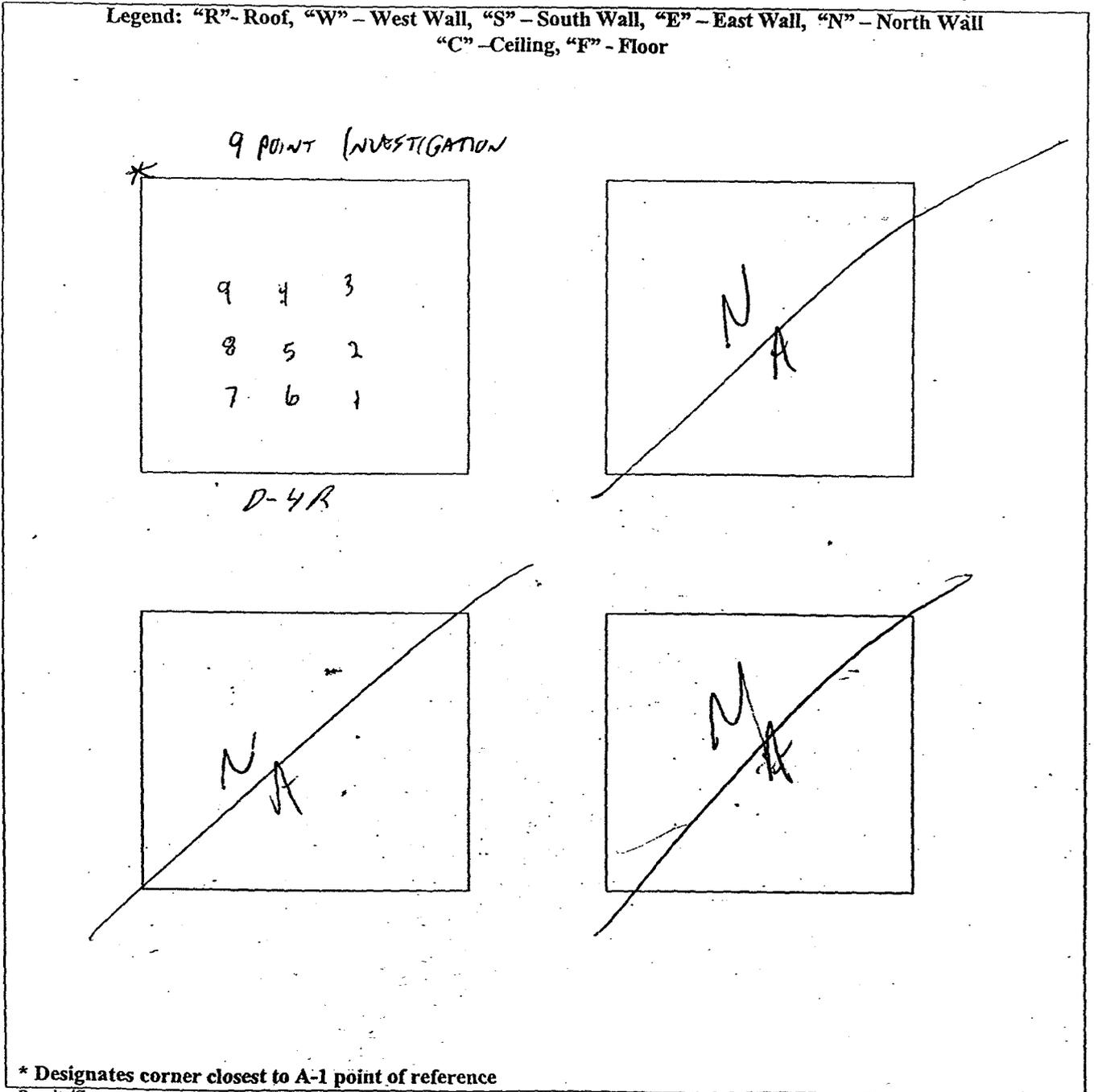


## Final Survey NE Electra Scan & Investigation Survey Map

Survey Area: <i>IVA</i>	Survey Unit: <i>EXTERIOR</i>	Building: <i>T 881A</i>
Survey Unit Description: <i>ROOF</i>		
RCT Initials/Date: <i>PL 3-3-00</i>	RCT Initials/Date: <i>MLA</i>	RCT Initials/Date: <i>NB</i>

Refer to the Final Survey NE Electra Scan & Investigation Survey Form for instrumentation, surveyor & approval information.

Legend: "R"- Roof, "W" - West Wall, "S" - South Wall, "E" - East Wall, "N" - North Wall  
"C" - Ceiling, "F" - Floor



\* Designates corner closest to A-1 point of reference

**Results/Comments:**

Electra alpha scans were performed at the locations detailed on the survey map(s). All required accessible areas were scanned. All initial scan results were <225 dpm/100cm<sup>2</sup>, unless noted on the survey form.

Electra beta scans were performed in required accessible areas. Initial scan results indicated no detectable activity above background unless noted on the survey form.

*66*

## Final Survey NE Electra Scan & Investigation Survey Form

Survey Area: <u>NA</u>			Survey Unit: <u>EXTERIOR</u>			Building: <u>T 881A</u>			
Survey Unit Description: <u>ROOF INVESTIGATION SCAN</u>									
Loc. ID #	Electra DP-6 Beta				Electra DP-6 Alpha				
	RCT ID #	Inst. ID #	Elevated Audible observed? "Y" or "N"	60-sec PAT (dpm/100cm <sup>2</sup> )	RCT ID #	Inst. ID #	4-sec Audible observed? "Y" or "N"	30-sec Static (gcpm)	90-sec PAT (dpm/100cm <sup>2</sup> )
D-4R1					6	12			11.3
D-4R2					6	12			8.7
D-4R3					6	12			13.3
D-4R4			N		6	12	N		10.0
D-4R5			A		6	12	A		11.3
D-4R6					6	12			13.3
D-4R7					6	12			13.3
D-4R8					6	12			28.7
R9					6	12			28.0
<div style="display: flex; justify-content: space-between; align-items: center;"> <span style="font-size: 2em;">}</span> <div style="text-align: right;"> <math display="block">\frac{1m^2 Avg}{15.3}</math> </div> </div>									

# Oasis Device # 2

RFETS; Golden, CO  
Apr 24, 2000 09:53:07

Sample ID: 881A 00A1148-001.001 Type: Unknown  
Batch ID: unknown  
Acquisition Start: April 20, 2000 08:39:27  
Analysis Date: April 24, 2000 09:52:59  
Procedure: polonium210 samples  
Device: Oasis:02:01  
Analysis Method: ROI Analysis  
Spectrum File: 00000290.OXS LiveTime: 10,800.00

## Calibrations:

Energy =  $2.127E+02 + 2.333E+00 * \text{Chn}$  Coeff. of Correlation: -0.998  
Calibration Date: March 14, 2000 09:19:39 Std: 2:1 energy cal  
Shape not Calibrated.  
Efficiency =  $3.393E-01 \pm 4.339E-03$   
Calibration Date: August 11, 1999 13:14:16 Std: AS 4188

External Recovery No Ext.Recovery

Original Sample Amount:

1.000  $\pm$  0.000 samp  
Aliquot Amount: 1.000  $\pm$  0.000 samp

## ROI DATA

ROI ID #	ASSOCIATED NUCLIDE	EXTENTS START	EXTENTS END	PK EN (keV)	FWHM (keV)
1	Po218	5552.6	6077.8	5814.6	2.3
2	Po214	7420.0	7770.1	7594.8	1.2
3	Po212	8521.5	8850.6	8684.3	2.3
4	Po210	2263.7	5402.1	5177.6	2.3

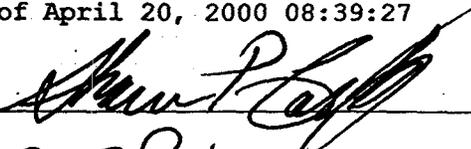
## ROI ANALYSIS RESULTS

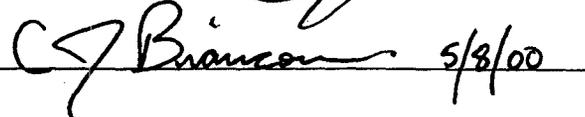
ROI ID	NET COUNTS	BKG/INTERF.	CPM	ROI TYPE
Po218	0.2 $\pm$ 1.0	0.76	1.33E-03 $\pm$ 5.70E-03	Unknown
Po214	-0.1 $\pm$ 0.1	0.07	-3.84E-04 $\pm$ 3.84E-04	Unknown
Po212	0.9 $\pm$ 1.0	0.14	4.79E-03 $\pm$ 5.58E-03	Unknown
Po210	154.7 $\pm$ 13.0	13.35	0.859 $\pm$ 0.072	Unknown

## NUCLIDE ANALYSIS RESULTS

ROI ID	ASSOC NUC	EMM. PROB	ACTIVITY (dpm/samp)	MDA (dpm)
Po218	Po218	1.000	3.92E-03 $\pm$ 0.017	9.29E-02
Po214	Po214	1.000	-1.13E-03 $\pm$ 1.13E-03	5.90E-02
Po212		1.000	0.014 $\pm$ 0.016	6.50E-02
Po210	Po210	1.000	2.532 $\pm$ 0.215	2.48E-01

Activity reported as of April 20, 2000 08:39:27

ANALYSIS REVIEWED BY: 

APPROVED BY:  5/8/00

68

69

OASIS - MCA

File Edit View Help

Library: OAS\_STD.MDB Nuclide: Am241

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Oasis Device # 2

RFETS; Golden, CO

Apr 21, 2000 15:17:03

Sample ID: 881A 00A1148-002.001 Type: Unknown
Batch ID: unknown
Acquisition Start: April 21, 2000 07:49:49
Analysis Date: April 21, 2000 15:14:19
Procedure: polonium210 samples
Device: Oasis:02:01
Analysis Method: ROI Analysis
Spectrum File: 00000297.OXS LiveTime: 26,514.17

Calibrations:
Energy = 2.127E+02 +2.333E+00 \* Chn Coeff. of Correlation: -0.998
Calibration Date: March 14, 2000 09:19:39 Std: 2:1 energy cal
Shape not Calibrated.
Efficiency = 3.393E-01 ± 4.339E-03
Calibration Date: August 11, 1999 13:14:16 Std: AS 4188

External Recovery No Ext.Recovery

Original Sample Amount: 1.000 ± 0.000 samp
Aliquot Amount: 1.000 ± 0.000 samp

ROI DATA

Table with 5 columns: ROI ID #, ASSOCIATED NUCLIDE, EXTENTS START END, PK EN (keV), FWHM (keV). Rows include Po218, Po214, Po212, and Po210.

ROI ANALYSIS RESULTS

Table with 6 columns: ROI ID, NET COUNTS, BKG/INTERF, CPM, ROI TYPE. Rows include Po218, Po214, Po212, and Po210.

NUCLIDE ANALYSIS RESULTS

Table with 5 columns: ROI ID, ASSOC NUC, EMM. PROB, ACTIVITY (dpm/samp), MDA (dpm). Rows include Po218, Po214, Po212, and Po210.

Activity reported as of April 21, 2000 07:49:49

ANALYSIS REVIEWED BY: [Signature]

APPROVED BY: [Signature] 5/8/00

70



Sample ID: 00A1148-003.001

Type: Unknown

Batch ID: unknowns  
Acquisition Start: May 02, 2000 13:02:56  
Analysis Date: May 03, 2000 07:11:03  
Procedure: Po210 count  
Device: Oasis:01:01  
Analysis Method: ROI Analysis  
Spectrum File: 00000522.OXS  
LiveTime: 28,800.00

Calibrations:

Energy = 3.865E+01 +2.790E+00 \* Chn Coeff. of Correlation: -0.998  
Calibration Date: April 03, 2000 17:45:10 Std: 1:1 energy cal  
Shape not Calibrated.  
Efficiency = 3.041E-01 ± 4.004E-03  
Calibration Date: April 07, 2000 09:49:29 Std: TS4189

External Recovery No Ext.Recovery

Original Sample Amount:

1.000 ± 0.000 samp

Aliquot Amount:

1.000 ± 0.000 samp

ROI DATA

ROI ID #	ASSOCIATED NUCLIDE	EXTENTS		PK EN (keV)	FWHM (keV)
		START	END		
1 Po218	Po218	5550.0	6104.5	5826.0	4.2
2 Po214	Po214	6588.5	7874.7	7229.6	2.8
3 Po212	Po212	8393.8	8808.6	8599.7	2.8
4 Po210	Po210	2180.3	5343.3	4531.3	2.8

ROI ANALYSIS RESULTS

ROI ID	NET COUNTS	BKG/INTERF	CPM	ROI TYPE
Po218	19.7 ± 4.7	1.33	0.041 ± 9.75E-03	Unknown
Po214	1.3 ± 1.6	0.67	2.78E-03 ± 3.26E-03	Unknown
Po212	11.3 ± 4.0	2.67	0.024 ± 8.28E-03	Unknown
Po210	161.7 ± 13.9	19.33	0.337 ± 0.029	Unknown

NUCLIDE ANALYSIS RESULTS

ROI ID	ASSOC NUC	EMM. PROB	ACTIVITY (dpm/samp)	MDA (dpm)
Po218	Po218	1.000	0.135 ± 0.032	5.21E-02
Po214	Po214	1.000	9.14E-03 ± 0.011	4.23E-02
Po212	Po212	1.000	0.078 ± 0.027	6.61E-02
Po210	Po210	1.000	1.108 ± 0.097	1.47E-01

Activity reported as of May 02, 2000 13:02:56

ANALYSIS REVIEWED BY:

*Handwritten signature*

APPROVED BY:

*Handwritten signature* 5/8/00

*Spike value:  
22.980 d/m  
Pu 239*

*72*









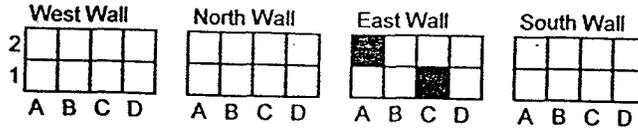
T881A – Radiological Survey Data for Interior Survey Unit

- Map of Locations
  - Scans
  - Surveys
- Removable and Total Survey Results – Detail

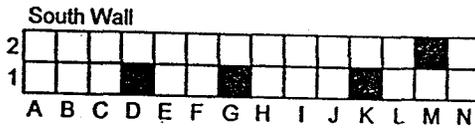
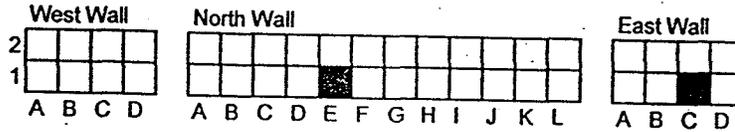
TD

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16

**T881A West Office**

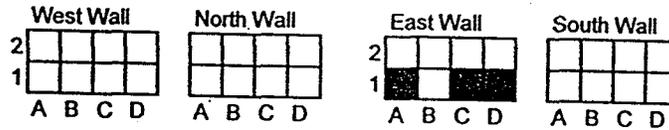


**Middle Office**

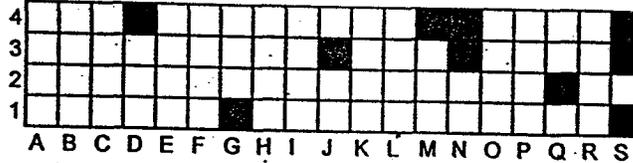


Note: There is a small closet against the south wall. It was included in the room measurement since its east and west walls are less than 1 meter.

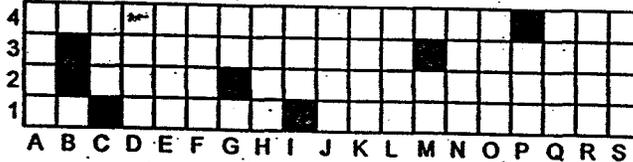
**T881A East Office**



**Floor**



**Ceiling**



X-Coordinate	Y-Coordinate
14	8

Total Surface Area = 284 m<sup>2</sup>

10% Scan Surface Area = 28.4 m<sup>2</sup>

□ = one square meter

■ = direct & swipe

X	Y	X	Y	X	Y
1	7	11	13	21	2
2	21	12	7	22	11
3	11	13	9	23	10
4	13	14	4	24	14
5	16	13	15	25	14
6	10	10	19	26	4
7	13	9	13	27	14
8	12	8	3	28	19
9	7	6	19	10	
10	2	15	17	11	

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3 of 11

### Removable Contamination Data Sheet

Sample Location	RCT ID #	Inst ID #		Gross Counts (gcpm)		Net Counts (cpm)		Removable Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β
<i>West Office</i>									
A.2.E		1	2	0	40.5	-0.3	-1.9	-0.9	-7.6
C.1.E		3	4	.5	33	0.5	-5.7	1.5	-22.8
D.4.F		1	2	0	34.5	-0.3	-7.9	-0.9	-31.6
<i>Ceiling</i>									
C.1-C		3	4	0	46	<del>0.3</del> 0	7.3	<del>0.9</del> 0	29.2
B.2.C		1	2	.5	41.5	.2	-0.9	0.6	-3.6
B.3.C		3	4	.5	39.5	.5	0.8	1.5	3.2
B.2.C		1	2	1	38	.7	-4.4	2.1	<del>13.3</del> -17.6
I.1.C		3	4	.5	39.5	.5	0.8	1.5	3.2
P.4.C		1	2	0	43.5	-0.3	1.1	-0.9	4.4
<i>Open</i>									
I.F		3	4	0	38.5	0	-0.2	0	-0.8
J.3.F		1	2	0	39.5	-0.3	-2.9	-0.9	-11.6
M.4.F		3	4	.5	38	.5	-0.7	1.5	-2.8
N.3.F		1	2	1	48	.7	<del>5.3</del> 5.6	2.1	<del>21.2</del> 22.4
N.4.F		3	4	0	44.5	0	5.8	0	23.2
Q.2.F		1	2	.5	35.5	.2	-6.9	0.6	-27.6
S.1.F		3	4	0	50.5	0	11.8	0	47.2
S.3.F		1	2	.5	35	.2	-7.4	0.6	-29.6
S.4.F		3	4	0	36	0	-2.7	0	-10.8
<i>East Office</i>									
A.1.E		1	2	1	45.5	.7	3.1	2.1	12.4
C.1.E		3	4	.5	47.5	.5	8.8	1.5	35.2
D.1.E		1	2	.5	43.5	.2	1.1	0.6	4.4
<i>Main Office</i>									
C.1.E		3	4	0	38	0	-0.7	0	-2.8
K.1.S		1	2	.5	35	.2	<del>3.9</del> -7.4	0.6	<del>15.6</del> -25.6
G.1.S		3	4	.5	41.5	.5	2.8	1.5	11.2
D.1.S		1	2	0	37	-0.3	-5.4	-0.9	-21.6
E.1.N		3	4	.5	41	.5	2.3	1.5	9.2

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Survey Area: NA Survey Unit: INTERIOR Building: T-881A  
 Survey Unit Description: INTERIOR WALLS, CEILING, FLOOR

### Total Surface Activity Data Sheet

Sample location	RCT ID #	Inst ID #		Survey count time (sec)		LAB (cpm)		Gross Count (gcpm)		Net counts (cpm)		Net Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β	α	β	α	β
D-4F	1	7	7	90	90	6.0	429	2.7	460	-3.2	31	-15.0	101
G-1F				90	90	2.7	459	2.7	417	0.0	-42	6.0	-137
I-3F				90	90	4.0	429	1.3	481	-2.7	52	-12.3	170
M-4F				90	90	3.3	455	1.3	469	-2.0	14	-9.1	46
N-4F				90	90	6.0	463	2.0	473	-4.0	10	-18.2	33
N-3F				90	90	7.3	440	3.3	491	-4.0	51	-18.2	166
Q-2F				90	90	5.3	409	1.3	475	-4.0	66	-18.2	215
S-1F				90	90	3.3	441	6.0	462	2.7	21	12.3	68
S-3F				90	90	7.3	427	4.0	441	-3.3	14	-15.0	46
S-4F				90	90	4.0	422	1.3	473	-2.7	51	-12.3	166
WEST OFFICE A-2E				90	90	6.7	420	6.0	383	-0.7	-37	-3.2	-121
C-1E				90	90	6.0	342	7.3	347	1.3	5	5.9	16
MIDDLE OFFICE E-1N				90	90	6.7	372	3.3	368	-3.4	-4	-15.5	-13
D-1S				90	90	6.0	384	5.3	354	-0.7	-28	-3.2	-91
G-1S				90	90	3.3	357	3.3	375	0.0	18	0.0	59
K-1S				90	90	6.7	369	10.7	370	4.0	1	18.2	370 <sup>3</sup>
M-2S				90	90	4.0	301	4.0	329	0.0	28	0.0	91
C-1E				90	90	3.3	299	2.0	337	-1.3	38	-5.9	124
EAST OFFICE A-1E				90	90	2.7	319	0.7	316	-2.0	-3	-9.1	-10
C-1E				90	90	3.3	301	4.7	308	1.4	7	6.4	23
G-1E				90	90	8.0	329	4.7	355	-3.3	26	-15.0	85
B-2C				90	90	3.3	409	2.0	358	-1.3	-11	-5.9	-36
B-3C				90	90	3.3	423	4.0	357	-0.7	-66	-5.9	-215
C-1C				90	90	3.3	382	2.0	402	-1.3	20	-5.9	65
G-2C				90	90	3.3	381	4.0	314	0.7	-65	-5.9	-212
I-1C				90	90	4.0	372	4.0	353	0.0	21	0.0	68
M-3C	1	7	7	90	90	4.0	314	4.7	450	0.7	136	3.2	444
P-4C	1	7	7	90	90	7.3	345	2.7	422	-4.6	77	-20.9	251
J-3EQC	2	9	9	90	90	6.0	432	4.0	481	-2	49	-6.0	196 <sup>op</sup>
N-3EQC	2	9	9	90	90	4.7	465	5.3	469	0.6	4	0.8	16 <sup>op</sup>
M-1EQC	2	9	9	90	90	2.7	467	4.7	481	2	14	6.0	56 <sup>op</sup>
Q-2EQC	2	9	9	90	90	6.7	436	1.3	483	-5.4	47	-18.2	188 <sup>op</sup>
D-4EQC	2	9	9	90	90	8.7	447	3.3	467	-5.4	20	-18.2	80 <sup>op</sup>

Note: QC measurements are to be collected by a different technician than the original survey. Mark the QC location number in the "Sample Location" column. Material background is assumed to be zero unless otherwise noted. "LAB" - local area background.

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Survey Area: NA | Survey Unit: INTERIOR | Building: T881A  
 Survey Unit Description: INTERIOR

### Removable Contamination Data Sheet

Sample Location	RCT ID #	Inst ID #		Gross Counts (gcpm)		Net Counts (cpm)		Removable Activity (dpm/100cm <sup>2</sup> )	
		$\alpha$	$\beta$	$\alpha$	$\beta$	$\alpha$	$\beta$	$\alpha$	$\beta$
M-3-C	1	1	2	.5	40.5	.1	-0.9	0.30	-3.6
M-2-S	1	1	2	.5	36	.1	-5.4	0.30	-21.6
<div style="display: flex; justify-content: center; align-items: center; gap: 20px;"> <span>N</span> <span>A</span> </div>									

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T881A – Asbestos Inspector's Report

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T881A

ASBESTOS INSPECTOR'S REPORT

I, the undersigned Certified Asbestos Inspector, certification # 1387  
in the state of Colorado, attest to the asbestos inspection and sampling results as  
described below, for the following facility (at RFETS): Trailer 881A.

General Facility Location: northeast of Building 881.

**INSPECTION RESULTS**

Trailer 881A did not contain any suspect friable asbestos containing materials and no samples were collected. The duct system is lined internally with fiberglass, but samples were not collected based on visual observation identifying the material as fiberglass. Fiberglass insulation was found throughout the walls.

**SAMPLE RESULTS**

None required; none taken.

Andre Gonzalez

INSPECTOR'S NAME

Andre Gonzalez

SIGNATURE

7/6/00

DATE

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T881A – D&D Facility Characterization Interview Checklist

Type 1 Facility Checklist

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# D&D Facility Characterization Interview Checklist

ID No.: T-881A  
Date: 05/27/99  
Page 2 of 2  
Groups B & C Series

What timeframe did the interviewee work in the facility? From 1996 until the present (for approximately three years).

Has the building configuration changed since you worked in the building? If so, in what way?

No, the facility is still an office building.

What types of equipment were in the building during the interviewee's time there?

Refrigerator, 2 computer, 2 printer, a fax machine, a water cooler, 3 microwaves, other office equipment such as 8 desks, 8 chairs, 3 tables, bookcases, 3 file cabinets, three parts and copier supplies storage racks, etc.

Where was the equipment located? (specific rooms/areas) In the open area of the trailer, the hard wall room and office, and at either end of the trailer. The refrigerator, full size is sitting against the north wall of T-881A and a small refrigerator is located in the office on the east end of the trailer.

Were any radioactive materials or metals handled in the building? If so, what types? No, none

Which equipment handled radioactive material? N/A

Were any chemicals handled in the building? If so, what types? N/A

Did any spills or uncontrolled releases of radioactive materials or chemicals occur while you were working in the facility? No, none.

Were these spills/releases cleaned-up? How were they cleaned-up? N/A

Where did these spills/releases occur? N/A

Interviewed by: J. R. Sheets

Print Name

J.R. Sheets

Signature

05/26/99

Interview Date

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## Type 1 Facility Checklist

TYPE 1 FACILITY	BUILDING T-881A
CURRENT LANDLORD:	RFCSS
DATE OF COMPLETION:	02/29/00

ITEM	YES	NO
Does the facility contain radiological postings?		X
Does the facility contain chemical postings?		X
Are there any installed hazards?		X
Do the historical surveys (radiological and chemical) indicate the facility is clean?	X	
Are there RCRA units within the facility		X
Is there a history of the building available?	X	
Is there any equipment/furniture left in the facility?		X
Is there a future mission identified for the facility?		X
Will the facility be left unsecured after it is vacated?		X

If any answer to any of the above questions is "Yes", complete the following questions and complete the "graded" PEP in accordance with Chapter 2.

*Note: An answer of "Yes" to any question, specifically one dealing with hazards, may indicate the facility is not a Type 1 Facility. Check with the D&D Programs office.*

If the answer to all question is "No" complete the "graded" PEP in accordance with Chapter 2.

1. List the Radiological Hazards, location, and quantity:

Based on the historical data found and interviews taken there are no hazards in this trailer.

2. List the Chemical Hazards, location, and quantity:

None. Based on historical data and interviews taken no asbestos data exists and the paint may be lead based.

3. List the Physical Hazards:

NONE

T881B – Radiological Survey Data for Exterior Survey Unit

- Summary of Radiological Survey/Sample Results
- Map of Locations
  - Scans
  - Surveys
- Removable and Total Survey Results – Detail
- Laboratory Alpha Spec (Sample) Results – Detail

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## Radiological Survey/Sample Results for T881B

### Total Surface Activity Measurements dpm/100 cm<sup>2</sup>

	Alpha	Beta
<b>Interior</b>	# Required	# Obtained
	28	28
MIN	-3	-394
MAX	22	286
MEAN	7.4	-26.9
STD DEV	7.9	200.6
<b>Exterior</b>	# Required	# Obtained
	28	28
MIN	-6.0	-219.0
MAX	118.2	444.4
MEAN	29.2	82.7
STD DEV	37.7	211.6
DCGL <sub>w</sub>	100	5000

### Removable Activity Measurements dpm/100 cm<sup>2</sup>

	Alpha	Beta
<b>Interior</b>	# Required	# Obtained
	28	28
MIN	-0.3	-52
MAX	2.7	56
MEAN	0.8	-0.4
STD DEV	1.1	29.1
<b>Exterior</b>	# Required	# Obtained
	28	28
MIN	0.0	-26.4
MAX	9.0	49.6
MEAN	2.0	5.5
STD DEV	2.3	17.9
DCGL <sub>w</sub>	20	1000

### Media Sample Activity

# Required	# Obtained
2	2

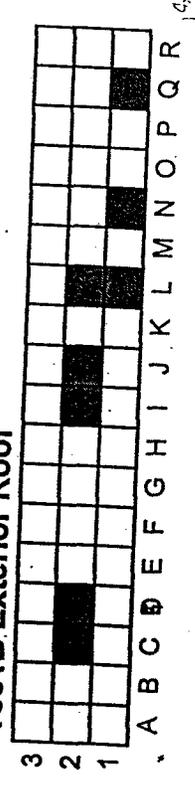
<u>Contaminant</u>	<u>Y/N</u>	<u>Det. Sens. dpm/100 cm<sup>2</sup></u>
U present	N	79
Pu present	N	79

### Total Po-210 Results dpm/100 cm<sup>2</sup>

MIN	60.0
MAX	121.6
MEAN	90.8
STD DEV	6.8



T881B Exterior Roof



X-Coordinate	Y-Coordinate
16	2

= one square meter  
 = direct & swipe

Roof Surveys randomly chosen with original number of survey points (8 survey points)

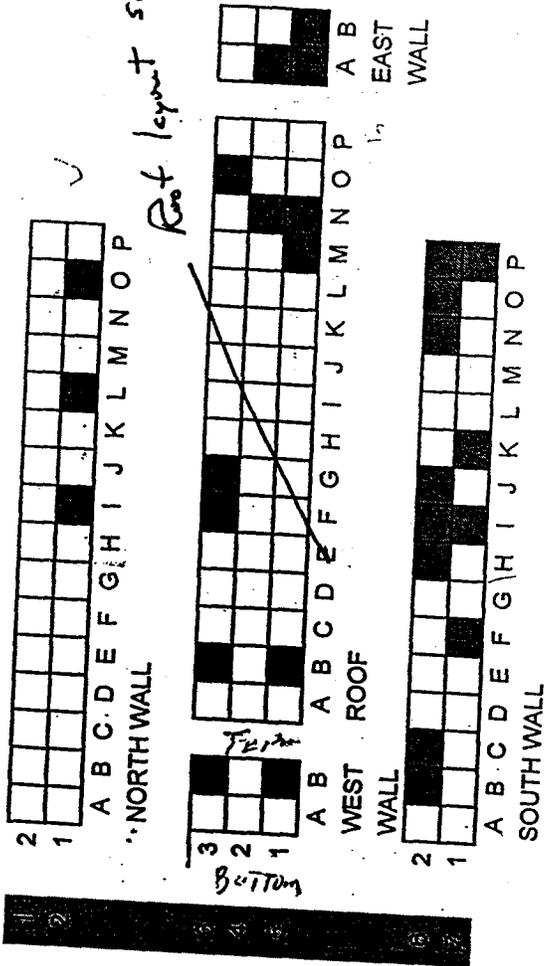
X	Y
9	2
12	2
4	2
12	3
14	3
17	3
3	2
10	2

57a/242

2/24/00

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T881B Exterior



Root layout superceded by Revision 1  
 MM 2/28/00

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----

Serials	Coordinate
11	2

Total Surface Area = 124 m<sup>2</sup>  
 10% Scan Surface Area = 13 m<sup>2</sup>  
 □ = one square meter  
 ■ = direct & swipe

X	Y	X	Y	X	Y
21	5	11	7	9	3
9	6	8	6	16	6
3	6	9	2	17	4
17	5	2	5	22	5
21	4	5	5	5	3
10	3	6	7	26	2
16	5	15	2	27	10
15	6	16	7	28	14
12	2	19	2		
18	3	20	9		

67/282 PO

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Survey Area: N/A | Survey Unit: EXTERIOR | Building: T8813  
 Survey Unit Description: ROOF + WALLS OF TRAILER T8813

BELOW SAMPLE LOCATIONS WERE TAKEN FROM THE 1<sup>ST</sup> (UNREVISED) MAP.

### Removable Contamination Data Sheet

Sample Location	RCT ID #	Inst ID #		Gross Counts (gcpm)		Net Counts (cpm)		Removable Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β
E-1W	2	2	1	0	36	0	-1.6	0	-6.4
L-1W	2	2	1	0	37	0	-0.6	0	-2.4
O-1W	2	2	1	0	39	0	1.4	0	5.6
B-1W	2	2	1	0.5	31	0.5	-6.6	1.5	-26.4
B-3W	2	2	1	0.5	34	0.5	-3.6	1.5	-14.4
A-1E	2	2	1	0.5	36	0.5	-1.6	1.5	-6.4
A-2E	2	2	1	0	40	0	2.4	0	9.6
B-1E	2	2	1	0	40	0	2.4	0	9.6
B-2S	2	2	1	0.5	33	0.5	-4.6	1.5	-18.4
C-2S	2	2	1	0	40	0	2.4	0	9.6
F-1S	2	2	1	0.5	37	0.5	-0.6	1.5	-2.4
A-2S	2	2	1	2.0	31	2.0	-6.6	6.0	-26.4
I-1S	2	2	1	1.0	36	1.0	-1.6	3.0	-6.4
J-1S	2	2	1	1.0	45	1.0	7.4	3.0	29.6
K-1S	2	2	1	1.5	39	1.5	1.4	4.5	5.6
K-1S	2	2	1	0.5	40	0.5	2.4	1.5	9.6
N-2S	2	2	1	2.0	37	2.0	-0.6	6.0	-2.4
O-2S	2	2	1	3.0	42	3.0	4.4	9.0	17.6
P-1S	2	2	1	0.5	40	0.5	2.4	1.5	9.6
B-1R	2	2	1	0	40.5	0	2.9	0	11.6
B-3R	2	2	1	0.5	34	0.5	-3.6	1.5	-14.4
F-3R	2	2	1	0.5	40.5	0.5	2.9	1.5	11.6
G-3R	2	2	1	0	39	0	1.4	0	5.6
M-1R	2	2	1	0	42	0	4.4	0	17.6
N-1R	2	2	1	0.5	40.5	0.5	2.9	1.5	11.6
N-2R	2	2	1	1.5	46	1.5	8.4	4.5	33.6
O-3R	2	2	1	1.5	46	1.5	8.4	4.5	33.6
P-2S	2	2	1	0	50	0	12.4	0	49.6

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Survey Area: <u>N/A</u>	Survey Unit: <u>EXTERIOR</u>	Building: <u>T881B</u>
Survey Unit Description: <u>Roof + Walls of TRAILER T881B</u>		

SAMPLE LOCATIONS BELOW WERE TAKEN FROM TITLE 1<sup>ST</sup> (UNREVISED) MAP.

## Total Surface Activity Data Sheet

Sample location	RCT ID #	Inst ID #		Survey count time (sec)		LAB (cpm)		Gross Count (gcpm)		Net counts (cpm)		Net Activity (dpm/100cm <sup>2</sup> )		
		α	β	α	β	α	β	α	β	α	β	α	β	
I-W	1	7	7	90	90	1.3	349	3.3	361	2.0	12	9	40	
E-W	1	7	7	90	90	2.0	390	4.0	317	2.0	-73	9	-240	
O-W	1	7	7	90	90	2.7	345	6.7	345	4.0	0	18	0	
B-W	1	7	7	90	90	0.7	317	2.0	287	1.3	-30	6	-99	
B-3W	1	7	7	90	90	2.0	377	4.0	381	2.0	4	9	13	
A-1E	1	7	7	90	90	2.7	349	7.3	360	4.6	11	21	36	
A-2E	1	7	7	90	90	2.7	348	8.0	327	5.3	-21	24	-69	
B-1E	1	7	7	90	90	2.7	377	6.0	401	3.3	24	15	79	
B-2S	1	7	7	90	90	2.0	367	6.0	379	4.0	12	18	40	
C-2S	1	7	7	90	90	2.7	370	2.7	327	0.0	-43	0	-142	
F-1S	1	7	7	90	90	1.3	317	2.0	383	0.7	66	3	217	
H-2S	1	7	7	90	90	1.3	310	4.0	370	2.7	60	12	198	
-1S	1	7	7	90	90	2.0	345	6.0	367	4.0	22	18	-72	
-2S	1	7	7	90	90	2.0	391	2.0	377	0.0	-14	0	-46	
J-2S	1	7	7	90	90	1.3	328	6.0	344	4.7	16	21	53	
K-1S	1	7	7	90	90	2.7	344	7.3	349	4.6	5	21	16	
N-2S	1	7	7	90	90	2.0	342	6.7	362	4.7	20	21	66	
O-2S	1	7	7	90	90	2.0	354	6.7	376	4.7	22	21	72	
P-1S	1	7	7	90	90	2.0	362	2.0	370	0.0	8	0	26	
P-2S	1	7	7	90	90	1.3	287	0.0	349	-1.3	62	-6	204	
B-1R	3	9	9	90	90	4.0	400	16.7	467	12.7	67	59.0	224	
B-3R	3	9	9	90	90	11.3	440	11.3	440	0.0	0	0.0	0	
M-1R	3	9	9	90	90	1.3	415	24.7	469	23.4	54	103.4	180	
N-1R	3	9	9	90	90	22.7	440	22.7	477	0.0	37	0.037	124	
N-2R	4	9	9	90	90	5.3	428	30.7	446	18.2	18	118.2	60	
O-3R	4	9	9	90	90	6.0	480	26.0	467	20.0	13	93.1	-43	
F-3R	4	9	9	90	90	4.7	471	24.7	495	20.0	24	93.1	80	
G-3R	4	9	9	90	90	4.7	443	27.3	501	22.6	58	105.2	194	
F-1SQC	8	10	10	90	90	6.7	516	14.0	373	7.3	-143	34.0	-665	478
K-1SQC	8	10	10	90	90	9.3	556	10.7	380	1.4	-176	6.5	-219	589
B-1WQC	8	10	10	90	90	8.0	606	7.3	409	-0.7	-197	-3.3	-917	658
L-1WQC	8	10	10	90	90	4.7	500	6.0	399	+1.3	-101	+6.0	-470	337
E-1WQC	8	10	10	90	90	6.7	522	12.7	367	6.0	-155	27.9	-727	518

Note: QC measurements are to be collected by a different technician than the original survey. Mark the QC location number in the "Sample Location" column. Material background is assumed to be zero unless otherwise noted. "LAB" ~ local area background.

94

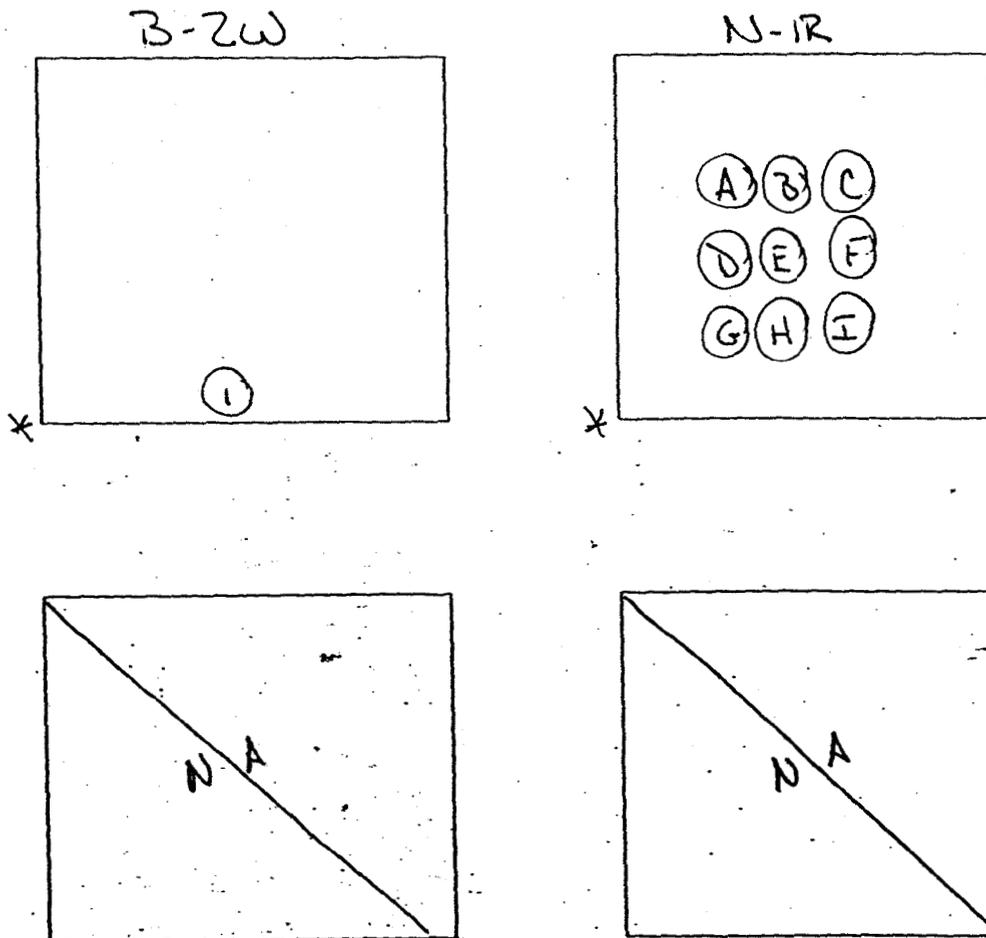
1

# Final Survey NE Electra Scan & Investigation Survey Map

Survey Area: <b>NA</b>	Survey Unit: <b>EXTERIOR</b>	Building: <b>T 881B</b>
Survey Unit Description: <b>WALLS, ROOF</b>		
RCT Initials/Date: <b>me 3-3-00</b>	RCT Initials/Date:	RCT Initials/Date:

Refer to the Final Survey NE Electra Scan & Investigation Survey Form for instrumentation, surveyor & approval information.

**Legend: "R"- Roof, "W" - West Wall, "S" - South Wall, "E" - East Wall, "N" - North Wall  
"C" - Ceiling, "F" - Floor**



**\* Designates corner closest to A-1 point of reference**

**Results/Comments:**

Electra alpha scans were performed at the locations detailed on the survey map(s). All required accessible areas were scanned. All initial scan results were <225 dpm/100cm<sup>2</sup>, unless noted on the survey form.

Electra beta scans were performed in required accessible areas. Initial scan results indicated no detectable activity above background unless noted on the survey form.

95

## Final Survey NE Electra Scan & Investigation Survey Form

Survey Area: <b>NA</b>				Survey Unit: <b>EXTERIOR</b>			Building: <b>T8813</b>			
Survey Unit Description: <b>WALLS, ROOF</b>										
Loc. ID #	Electra DP-6 Beta				Electra DP-6 Alpha					
	RCT ID #	Inst. ID #	Elevated Audible observed? "Y" or "N"	60-sec PAT (dpm/100cm <sup>2</sup> )	RCT ID #	Inst. ID #	4-sec Audible observed? "Y" or "N"	30-sec Static (gcpm)	90-sec PAT (dpm/100cm <sup>2</sup> )	
N-IRA	1	7	NA	NA	1	7	NA	NA	83.7	
N-IRB	1	7			1	7			95.3	
N-IRC	1	7			1	7			95.3	
N-IRD	1	7			1	7			62.6	
N-IRE	1	7			1	7			95.3	
N-IRF	1	7			1	7			53.4	
N-IRG	1	7			1	7			53.4	
N-IRH	1	7			1	7			83.7	
N-IRI	1	7	Y	Y	1	7	Y	Y	95.3	
B-2W1	1	7	N	NA	1	7	Y	8	NA	
L-W	1	7	N	NA	1	7	N	NA	NA	
F-ZS1	2	8	N	NA	2	8	Y	8	NA	
K-ZS1	2	8	N	NA	2	8	Y	12	NA	
O-ZN1	2	8	N	NA	2	8	Y	10	NA	
I-ZN1	2	8	N	NA	2	8	Y	16	NA	
I-ZN2	2	8	N	NA	2	8	Y	6	NA	
I-ZN3	2	8	N	NA	2	8	Y	4	NA	
I-ZN4	2	8	N	NA	2	8	Y	6	NA	
A-3.E	2	8	N	NA	2	8	N	NA	NA	
					<del>NA</del>					

} 1m<sup>2</sup>  
79

96

Sample ID: 00A1148-004.001 Type: Unknown

Batch ID: unknowns
Acquisition Start: April 24, 2000 16:15:32
Analysis Date: April 25, 2000 06:26:04
Procedure: Po210 count
Device: Oasis:01:01
Analysis Method: ROI Analysis
Spectrum File: 00000483.OXS LiveTime: 10,800.00

Calibrations:

Energy = 3.865E+01 +2.790E+00 \* Chn Coeff. of Correlation: -0.998
Calibration Date: April 03, 2000 17:45:10 Std: 1:1 energy cal
Shape not Calibrated.
Efficiency = 3.041E-01 ± 4.004E-03
Calibration Date: April 07, 2000 09:49:29 Std: TS4189

External Recovery No Ext.Recovery

Original Sample Amount:

1.000 ± 0.000 samp
Aliquot Amount: 1.000 ± 0.000 samp

ROI DATA

Table with 6 columns: ROI ID #, ASSOCIATED NUCLIDE, EXTENTS START, EXTENTS END, PK EN (keV), FWHM (keV). Rows include Po218, Po214, Po212, and Po210.

ROI ANALYSIS RESULTS

Table with 6 columns: ROI ID, NET COUNTS, BKG/INTERF, CPM, ROI TYPE. Rows include Po218, Po214, Po212, and Po210.

NUCLIDE ANALYSIS RESULTS

Table with 5 columns: ROI ID, ASSOC NUC, EMM. PROB, ACTIVITY (dpm/samp), MDA (dpm). Rows include Po218, Po214, Po212, and Po210.

Activity reported as of April 24, 2000 16:15:32

ANALYSIS REVIEWED BY:

APPROVED BY:

Handwritten signatures and dates: C. J. Bianconi 5/8/00

97

OASIS MCA

File Edit View Acq/Param 1000 10000 50 816

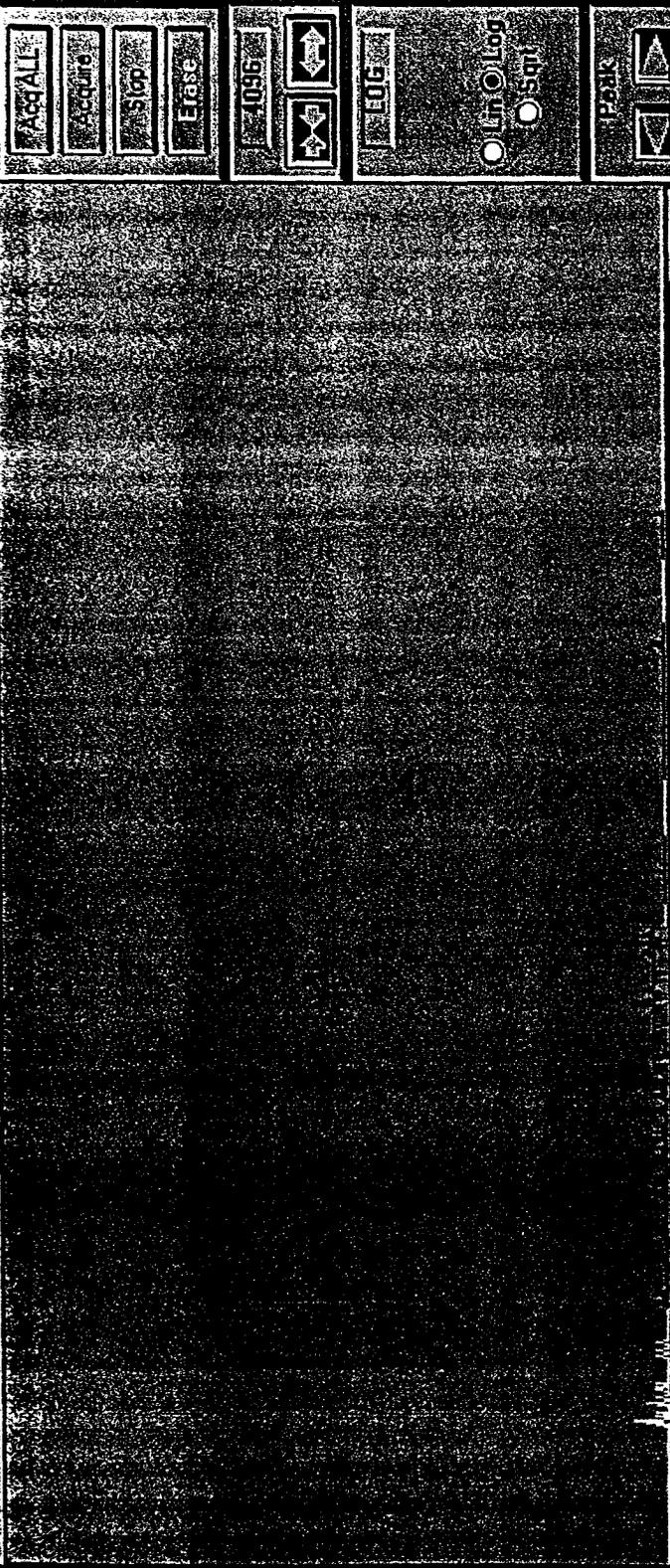


Library: DAS\_STD.MDB

Nuclide: Am241



1: Static: 00000483.DXS



1095

00A1148-004.001

System Data  
05/15/2000 12:08:54

Message Window

Dead Time: 0.0

Elapsed Acquisition Time: 10800.00

Elapsed Acquisition Time: 7107.99/99

Channel: 1363

Integral: 165

ROI#

Energy: 139.94

Peak: 5192.61

PWHM: 0.49

Acq All  
Acquire  
Stop  
Erase

1096  
Left arrow  
Right arrow

LOG

On Log  
Off Log

Peak  
Up arrow  
Down arrow

Presac  
ROI#  
Channels  
Display  
Info  
Acq Disp

Oasis Device # 2

RFETS; Golden, CO

Apr 19, 2000 07:30:58

Sample ID: 881B coupon 00A1148-005.001 Type: Unknown

Batch ID: unknown
Acquisition Start: April 18, 2000 13:05:01
Analysis Date: April 19, 2000 07:30:52
Procedure: polonium210 samples
Device: Oasis:02:01
Analysis Method: ROI Analysis
Spectrum File: 00000282.OXS LiveTime: 10,800.00

Calibrations:

Energy = 2.127E+02 +2.333E+00 \* Chn Coeff. of Correlation: -0.998
Calibration Date: March 14, 2000 09:19:39 Std: 2:1 energy cal
Shape not Calibrated.
Efficiency = 3.393E-01 ± 4.339E-03
Calibration Date: August 11, 1999 13:14:16 Std: AS 4188

External Recovery No Ext.Recovery

Original Sample Amount: 1.000 ± 0.000 samp
Aliquot Amount: 1.000 ± 0.000 samp

ROI DATA

Table with 6 columns: ROI ID #, ASSOCIATED NUCLIDE, EXTENTS START, EXTENTS END, PK EN (keV), FWHM (keV). Rows include Po218, Po214, Po212, and Po210.

ROI ANALYSIS RESULTS

Table with 6 columns: ROI ID, NET COUNTS, BKG/INTERF, CPM, ROI TYPE. Rows include Po218, Po214, Po212, and Po210.

NUCLIDE ANALYSIS RESULTS

Table with 5 columns: ROI ID, ASSOC NUC, EMM. PROB, ACTIVITY (dpm/samp), MDA (dpm). Rows include Po218, Po214, Po212, and Po210.

Activity reported as of April 18, 2000 13:05:01

ANALYSIS REVIEWED BY: [Signature] 07/18/00

APPROVED BY: \_\_\_\_\_

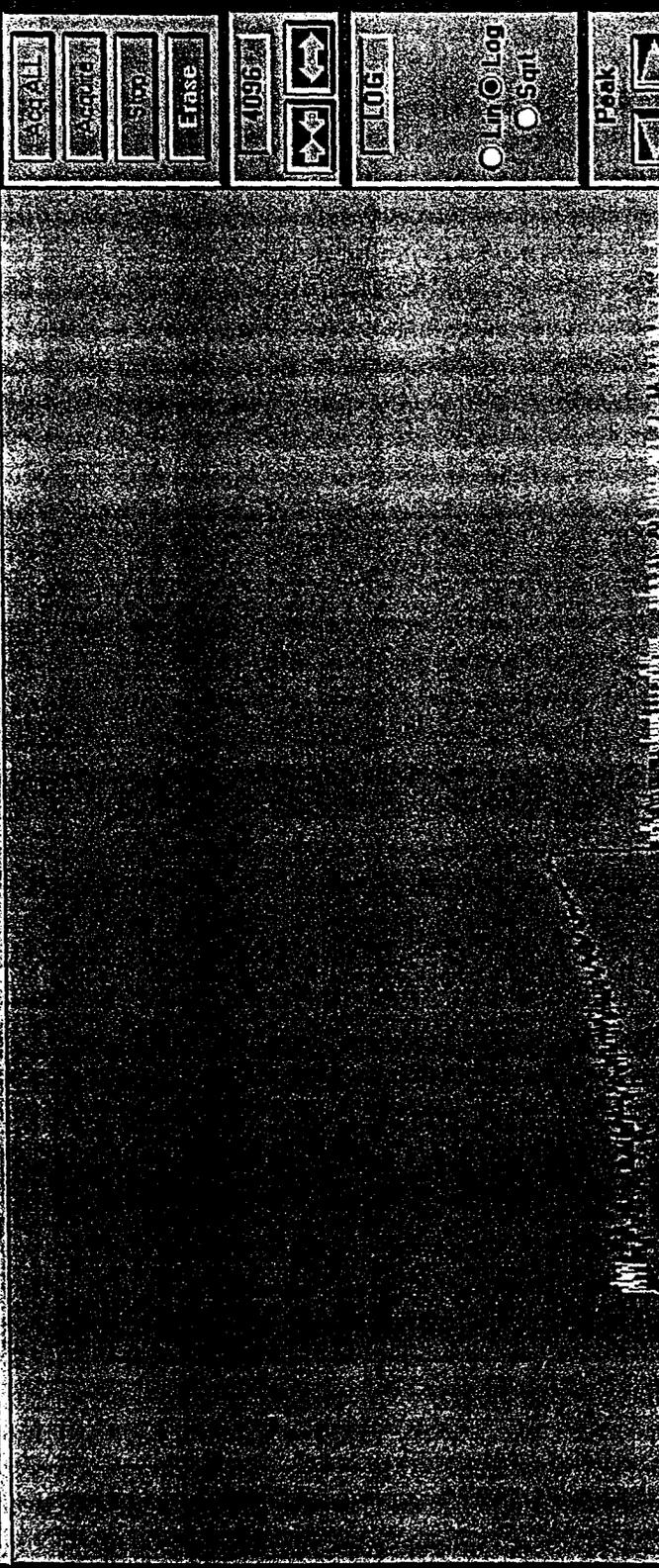
99



Library: DAS STD.MDB

Nuclide: Am241

5-Static: 00000282.DXS



4095

INSTALL  
ACQUIRE  
STOP  
ERASE

4096  
← →

LOG

Lin  Log  
 Sqrt

Peak  
▲ ▼

Presets  
ROIs  
Controls  
Display  
Info  
Aux Disp

881B coupon 00A1148-005.001

SYSTEMS  
10/03/2001 08:47:45

Channel: 692  
Energy: 4231  
Counts: 5  
Elapsed Live Time: 267799.07  
Dead Time: 0.0

Integral: 8,871  
Peak: 5,189.12  
FWHM: 125.20

Sample ID: 00A1148-006.001

Type: Unknown

Batch ID: unknowns  
 Acquisition Start: May 01, 2000 15:37:58  
 Analysis Date: May 02, 2000 06:53:01  
 Procedure: Po210 count  
 Device: Oasis:01:02  
 Analysis Method: ROI Analysis  
 Spectrum File: 00000521.OXS  
 LiveTime: 28,800.00

Calibrations:

-Energy = 5.823E+01 +2.790E+00 \* Chn Coeff. of Correlation: -0.998  
 Calibration Date: April 07, 2000 14:55:56 Std: 1:2 energy cal  
 Shape not Calibrated.  
 Efficiency = 3.089E-01 ± 4.062E-03  
 Calibration Date: April 07, 2000 15:15:30 Std: TS4189

External Recovery No Ext.Recovery

Original Sample Amount:

1.000 ± 0.000 samp

Aliquot Amount:

1.000 ± 0.000 samp

ROI DATA

ROI ID #	ASSOCIATED NUCLIDE	EXTENTS		PK EN (keV)	FWHM (keV)
		START	END		
1 Po218	Po218	5550.0	6104.5	6038.1	2.8
2 Po214	Po214	6588.5	7874.7	7229.6	2.8
3 Po212	Po212	8393.8	8808.6	8775.5	3.5
4 Po210	Po210	2180.3	5343.3	5234.5	3.3

ROI ANALYSIS RESULTS

ROI ID	NET COUNTS	BKG/INTERF	CPM	ROI TYPE
Po218	41.0 ± 6.4	0.00	0.085 ± 0.013	Unknown
Po214	8.3 ± 3.1	0.68	0.017 ± 6.41E-03	Unknown
Po212	48.0 ± 6.9	0.00	0.100 ± 0.014	Unknown
Po210	524.7 ± 23.4	12.31	1.093 ± 0.049	Unknown

NUCLIDE ANALYSIS RESULTS

ROI ID	ASSOC NUC	EMM. PROB	ACTIVITY (dpm/samp)	MDA (dpm)
Po218	Po218	1.000	0.276 ± 0.043	1.82E-02
Po214	Po214	1.000	0.056 ± 0.021	4.21E-02
Po212	Po212	1.000	0.324 ± 0.047	1.82E-02
Po210	Po210	1.000	3.538 ± 0.164	1.19E-01

Activity reported as of May 01, 2000 15:37:58

ANALYSIS REVIEWED BY:

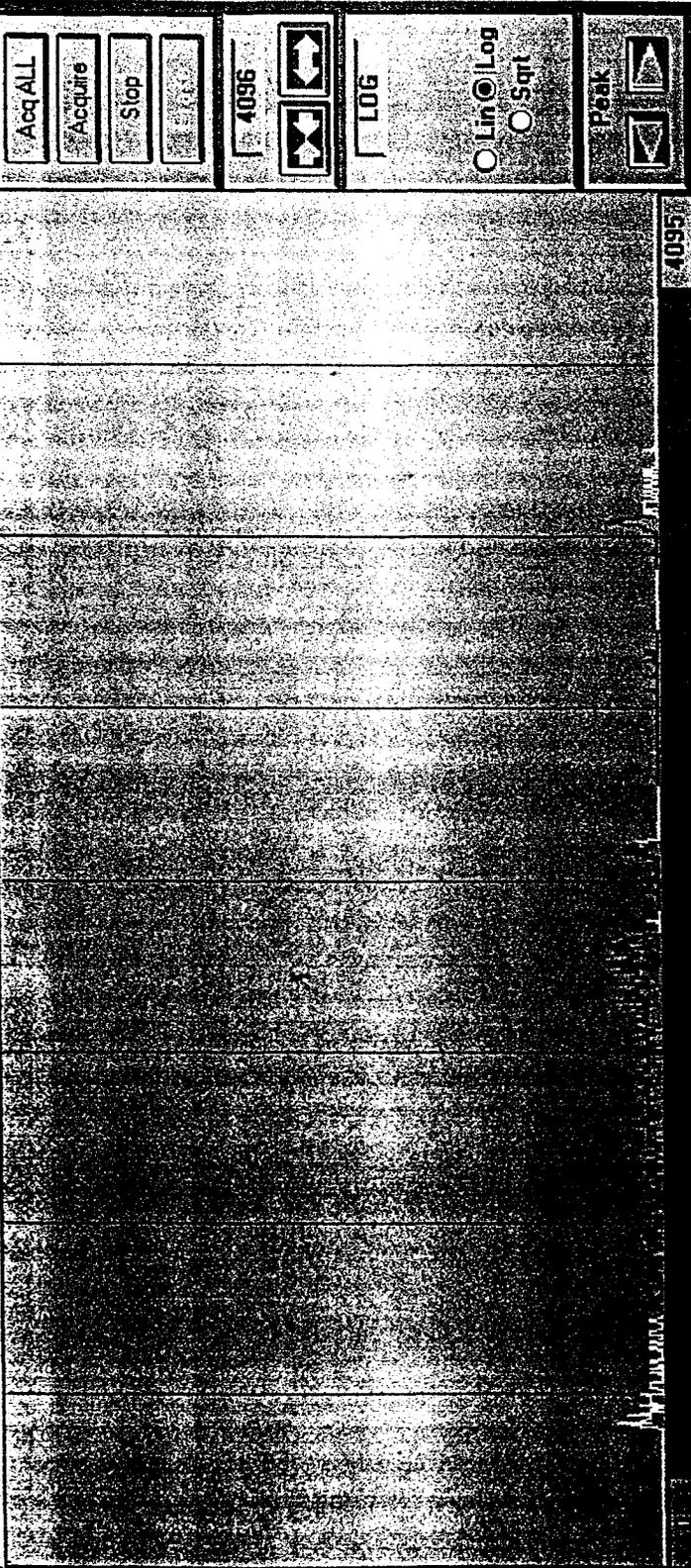
*[Signature]*

APPROVED BY:

*[Signature]* 5/8/00

*spike activity:  
22,990 d/m  
Pu 239*

101



Acq ALL

Acquire

Stop

4096

LOG

Lin Log

Sqrt

Peak

PRESETS

ROI

Controls

Display

Info

Aux Disp

Enable Presets

Report to User

Integral (GR)

Peak (GR)

Time (GR)

Count (GR)

Energy: 5174.5 Count: ROI: Integral: 537 Peak: 5234.46 FWHM: 3.95

00A1148-006.001

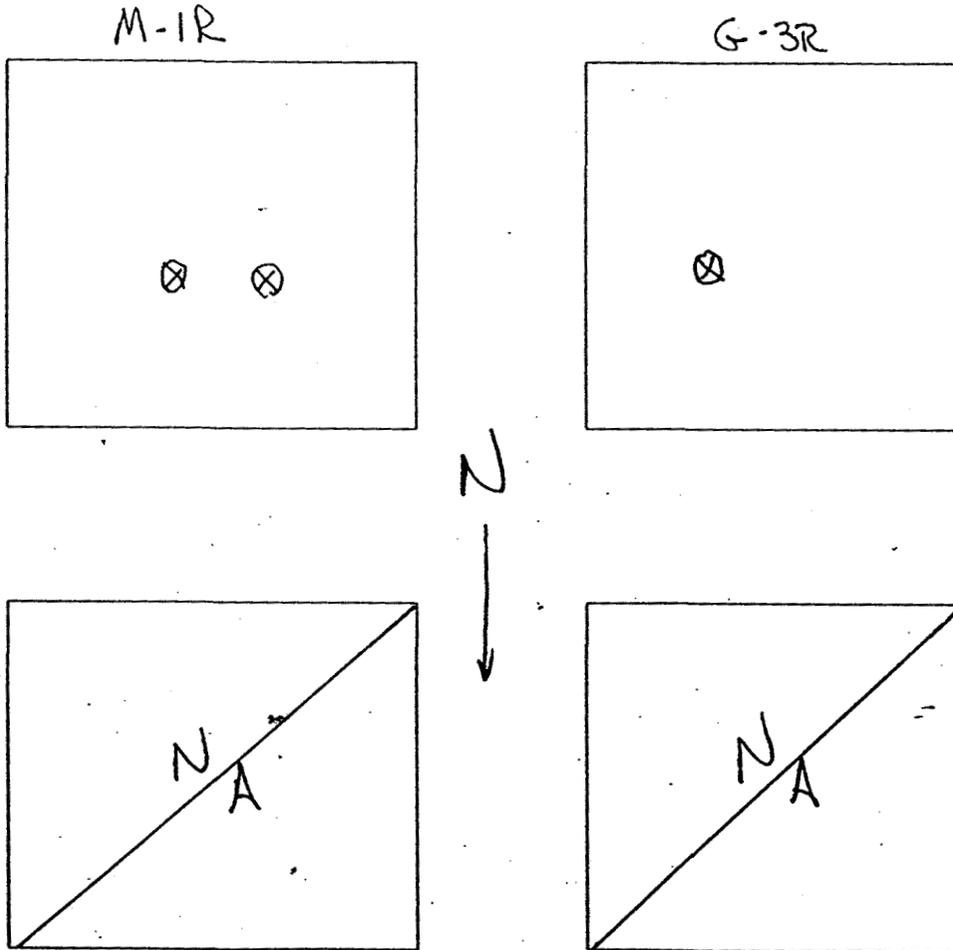
100

## Final Survey NE Electra Scan & Investigation Survey Map

Survey Area: <b>NA</b>	Survey Unit: <b>EXTERIOR</b>	Building: <b>T881B</b>
Survey Unit Description: <b>Roof Sample Location</b>		
RCT Initials/Date: <b>NA 3/28/00</b>	RCT Initials/Date: <b>NA</b>	RCT Initials/Date: <b>NA</b>

Refer to the Final Survey NE Electra Scan & Investigation Survey Form for instrumentation, surveyor & approval information.

Legend: "R"- Roof, "W" - West Wall, "S" - South Wall, "E" - East Wall, "N" - North Wall  
"C" - Ceiling, "F" - Floor



⊗ SAMPLE CUTOUT

\* Designates corner closest to A-1 point of reference

**Results/Comments:**

Electra alpha scans were performed at the locations detailed on the survey map(s). All required accessible areas were scanned. All initial scan results were <225 dpm/100cm<sup>2</sup>, unless noted on the survey form.

Electra beta scans were performed in required accessible areas. Initial scan results indicated no detectable activity above background unless noted on the survey form.

103

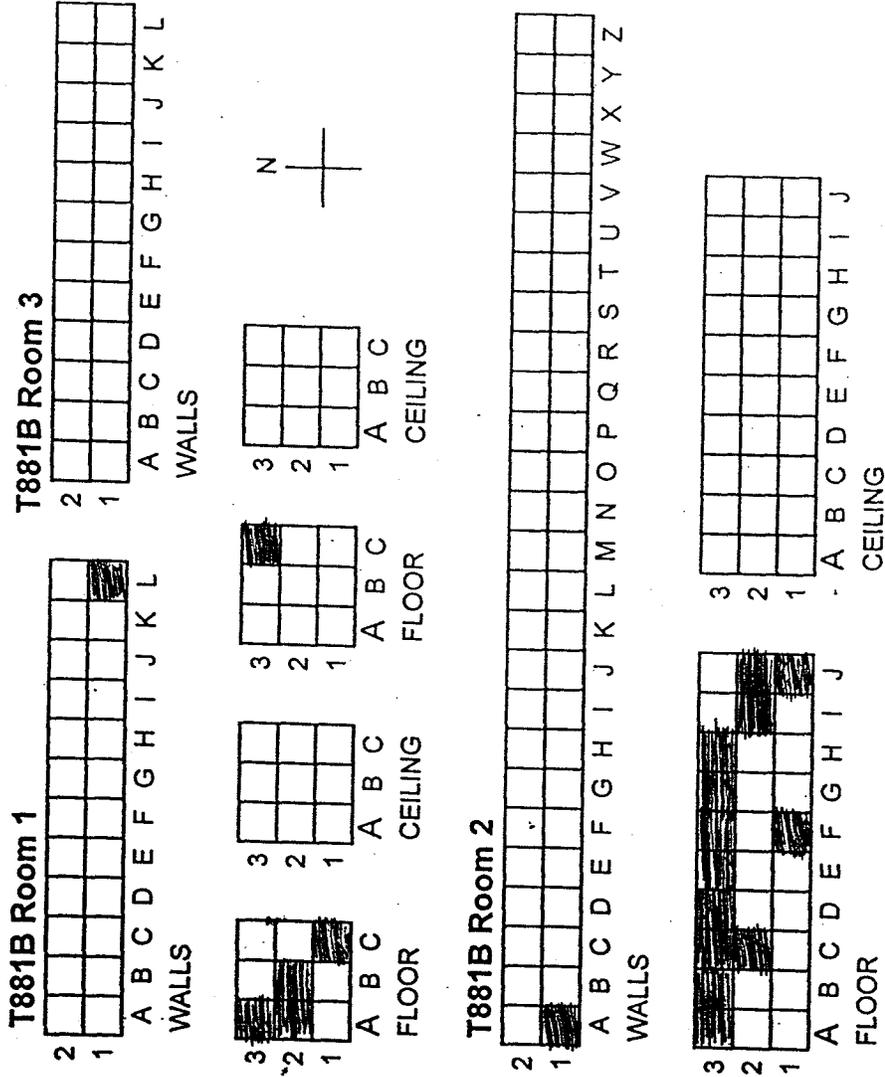


T881B – Radiological Survey Data for Interior Survey Unit

- Map of Locations
  - Scans
  - Surveys
- Removable and Total Survey Results - Detail

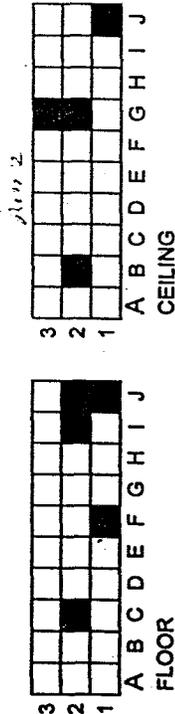
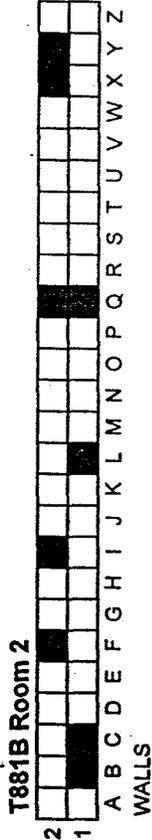
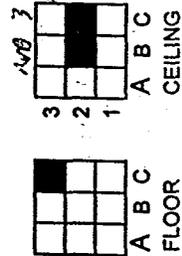
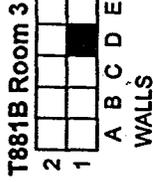
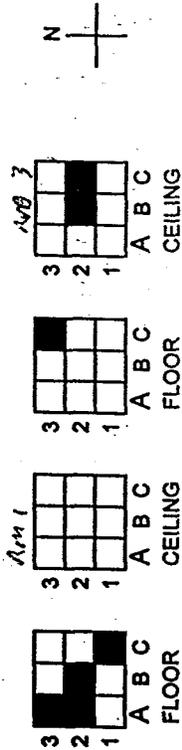
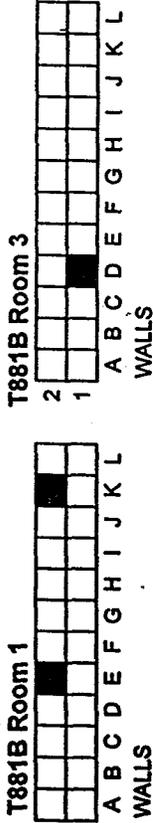
105

*Scan Locations:*



*NOTE: Scan locations were chosen based on most likely to find contamination due to their "high traffic" likelihood in these areas.*

*106*



11	8
----	---

Total Surface Area = 196 m<sup>2</sup>

10% Scan Surface Area = 20 m<sup>2</sup>

□ = one square meter  
 ■ = direct & swipe

X	Y	X	Y	X	Y
18	2	6	6	2	4
19	8	1	3	3	5
10	10	1	4	3	9
17	6	9	6	13	3
11	1	10	9	25	6
9	9	17	7	19	9
12	7	3	7	6	10
2	7	18	4	28	14
5	1	19	24	6	9
17	4	20	22	10	9

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Survey Area: N/A Survey Unit: INTERIOR Building: T881B  
 Survey Unit Description FLOORS, WALLS, + CEILING OF TRAILER T881B

### Total Surface Activity Data Sheet

Sample location	RCT ID #	Inst ID #		Survey count time (sec)		LAB (cpm)		Gross Count (gcpm)		Net counts (cpm)		Net Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β	α	β	α	β
Room 1				90	90								
E-2W	1	7	7	90	90	2.0	477	3.3	371	1.3	-106	6	-345
K-2W	1	7	7	90	90	0.0	370	1.3	336	1.3	-34	6	-111
A-2F	1	7	7	90	90	3.3	468	2.7	525	-0.6	57	-3	186
A-3F	1	7	7	90	90	0.0	454	4.0	498	4.0	44	19	143
B-2F	1	7	7	90	90	1.3	444	2.0	508	0.7	64	3	208
C-1F	1	7	7	90	90	2.7	489	2.7	489	0.0	0.0	0.0	0.0
Room 2				90	90								
B-1W	1	7	7	90	90	2.0	440	6.7	345	4.7	-95	22	-309
C-1W	1	7	7	90	90	2.0	422	2.7	345	0.7	-77	3	-251
F-2W	1	7	7	90	90	1.3	468	4.7	373	3.4	-95	16	-309
I-2W	1	7	7	90	90	2.0	444	6.7	346	4.7	-98	22	-319
L-1W	1	7	7	90	90	2.7	439	2.7	451	0.0	12	0	48 <sup>cpm</sup> 39
M-1W	1	7	7	90	90	3.3	378	3.3	427	0.0	49	0	160
N-2W	1	7	7	90	90	1.3	470	3.3	349	2.0	-121	9	-394
X-2W	1	7	7	90	90	1.3	448	1.3	388	0.0	-60	0	-195
Y-2W	1	7	7	90	90	2.0	451	6.7	370	4.7	-81	22	-264
C-2F	1	7	7	90	90	1.3	472	3.3	512	2.0	40	9	+130
F-1F	1	7	7	90	90	0.0	477	0.7	477	0.7	0	3	0
I-2F	1	7	7	90	90	1.3	465	4.7	459	3.4	-6	16	-20
J-1F	1	7	7	90	90	1.3	444	2.0	479	0.7	35	3	114
J-2F	1	7	7	90	90	1.3	448	1.3	482	0.0	34	0	111
B-2C	3	9	9	90	90	4.0	447	4.0	465	0.0	18	0	60
C-2C	3	9	9	90	90	2.7	429	2.7	466	0.0	37	0	123
C-3C	3	9	9	90	90	1.3	431	3.3	482	2.0	51	11	169
J-1C	3	9	9	90	90	0.7	433	4.0	463	3.3	30	18	100
				90	90								
				90	90								
QC				90	90								
QC				90	90								
QC				90	90								
QC				90	90								
QC				90	90								

Note: QC measurements are to be collected by a different technician than the original survey. Mark the QC location number in the "Sample Location" column. Material background is assumed to be zero unless otherwise noted. "LAB" ~ local area background.  
 Page 6 of 8

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T881B – Asbestos Inspector's Report

111

T881B

ASBESTOS INSPECTOR'S REPORT

I, the undersigned Certified Asbestos Inspector, certification # 1387  
in the state of Colorado, attest to the asbestos inspection and sampling results as  
described below, for the following facility (at RFETS): Trailer 881B

General Facility Location: northeast of Building 881.

**INSPECTION RESULTS**

Trailer 881B is identical to T881A and did not contain any suspect friable  
asbestos containing materials and no samples were collected.

**SAMPLE RESULTS**

None required; none taken.

Andre Gonzalez

INSPECTOR'S NAME

[Signature]

SIGNATURE

7/6/00

DATE

112

T881B – D&D Facility Characterization Interview Checklist

Type 1 Facility Checklist

113





**D&D Facility Characterization  
Interview Checklist**

ID No.: T-881B  
Date: 05/27/99  
Page 2 of 2  
Groups B & C Series

What timeframe did the interviewee work in the facility? N/A The interviewee did not work in this facility. The facility has been vacant for approximately 3.5 years.

Has the building configuration changed since you worked in the building? If so, in what way? \*

N/A The facility is still an unused office building.

What types of equipment were in the building during the interviewee's time there? N/A

Where was the equipment located? (specific rooms/areas) In the open cubicle area of the trailer, the hard wall room and office, and at either end of the trailer. The only equipment remaining in this facility is the desks and chairs in the offices and office cubicles. In addition, the trailer has a Plant Public Address System and a Fire Department Smoke Detection System.

Were any radioactive materials or metals handled in the building? If so, what types? No, none

Which equipment handled radioactive material? N/A

Were any chemicals handled in the building? If so, what types? N/A

Did any spills or uncontrolled releases of radioactive materials or chemicals occur while you were working in the facility? No, none.

Were these spills/releases cleaned-up? How were they cleaned-up? N/A

Where did these spills/releases occur? N/A

Interviewed by: J. R. Sheets | J R Sheets | 05/26/99  
Print Name Signature Interview Date

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## Type 1 Facility Checklist

TYPE 1 FACILITY	BUILDING T-881B
CURRENT LANDLORD:	RFCSS
DATE OF COMPLETION:	02/29/00

ITEM	YES	NO
Does the facility contain radiological postings?		X
Does the facility contain chemical postings?		X
Are there any installed hazards?		X
Do the historical surveys (radiological and chemical) indicate the facility is clean?	X	
Are there RCRA units within the facility		X
Is there a history of the building available?	X	
Is there any equipment/furniture left in the facility?		X
Is there a future mission identified for the facility?		X
Will the facility be left unsecured after it is vacated?		X

If any answer to any of the above questions is "Yes", complete the following questions and complete the "graded" PEP in accordance with Chapter 2.

*Note: An answer of "Yes" to any question, specifically one dealing with hazards, may indicate the facility is not a Type 1 Facility. Check with the D&D Programs office.*

If the answer to all question is "No" complete the "graded" PEP in accordance with Chapter 2.

1. List the Radiological Hazards, location, and quantity:

Based on the historical data found and interviews taken there are no hazards in this trailer.

2. List the Chemical Hazards, location, and quantity:

None. Based on historical data and interviews taken no asbestos data exists and the paint may be lead based.

3. List the Physical Hazards:

NONE

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## C-1

### T883A – Radiological Survey Data for Exterior Survey Unit

- Summary of Radiological Survey/Sample Results
- Map of Locations
  - Scans
  - Surveys
- Removable and Total Survey Results – Detail
- Laboratory Alpha Spec (Sample) Results – Detail

## Radiological Survey/Sample Results for T883A

### Total Surface Activity Measurements dpm/100 cm<sup>2</sup>

	Alpha	Beta
	# Required	# Obtained
Interior	28	28
MIN	-3.4	-205
MAX	51	633
MEAN	6.3	168.7
STD DEV	10.2	226.0
Exterior	28	28
MIN	-2.9	-237
MAX	128.4	458
MEAN	64.2	124.3
STD DEV	42.4	196.2
DCGL <sub>w</sub>	100	5000

### Removable Activity Measurements dpm/100 cm<sup>2</sup>

	Alpha	Beta
	# Required	# Obtained
Interior	28	28
MIN	-1.2	-46.8
MAX	3.6	44.8
MEAN	0.2	7.3
STD DEV	1.5	23.3
Exterior	28	28
MIN	-1.2	-159.6
MAX	6.4	32.4
MEAN	1.0	-18.3
STD DEV	1.8	34.6
DCGL <sub>w</sub>	20	1000

### Media Sample Activity

# Required	# Obtained
2	2

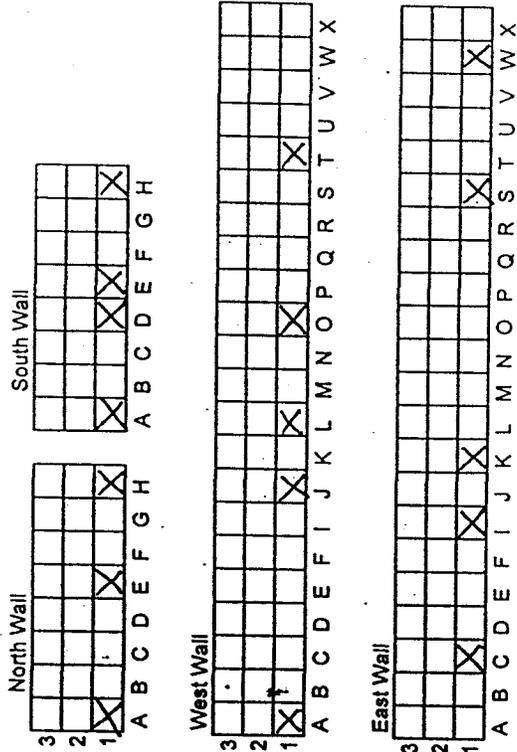
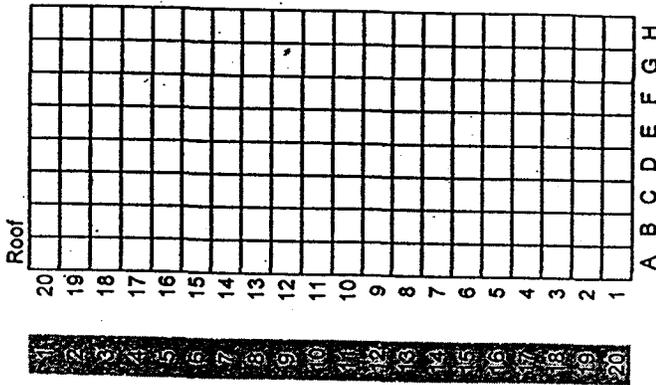
<u>Contaminant</u>	<u>Y/N</u>	<u>Det. Sens. dpm/100 cm<sup>2</sup></u>
U present	N	79
Pu present	N	79

### Total Po-210 Results dpm/100 cm<sup>2</sup>

MIN	71.4
MAX	122.8
MEAN	97.1
STD DEV	5.2

118

T883A Exterior



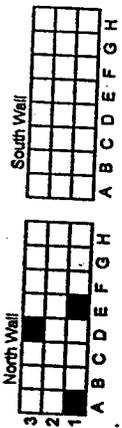
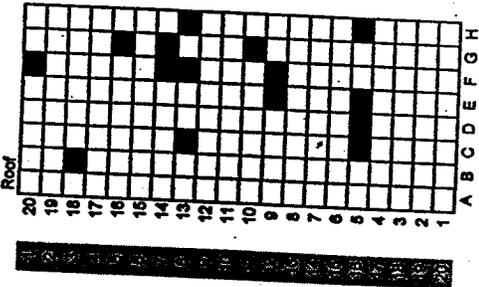
*Scan Locations*

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

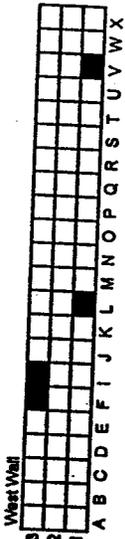
119 C



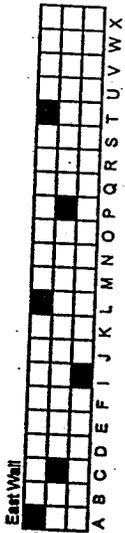
T883A Exterior



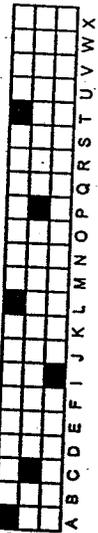
North Wall



South Wall



West Wall



East Wall

24	9
----	---

□ = one square meter  
 ■ = direct & swipe

Total Surface Area = 340 m<sup>2</sup>  
 10% Scan Surface Area = 34 m<sup>2</sup>

X	Y	X	Y	X	Y
13	14	16	7	18	7
11	13	6	8	20	13
8	16	7	5	2	3
30	9	6	16	3	16
24	14	8	8	20	9
6	7	5	12	6	1
15	3	17	15	14	1
28	13	6	12	11	3
7	11	17	7		
4	18	7	7		

97/242 RO

1/21 C

Survey Area: NA	Survey Unit: Exterior	Building: T883A
Survey Unit Description Exterior WALLS		

## Removable Contamination Data Sheet

Sample Location	RCT ID #	Inst ID #		Gross Counts (gcpm)		Net Counts (cpm)		Removable Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β
C-2-E	1	1	2	.5	40	.1	-2.9	0.3	-11.6
I-1-E	1	3	4	0	44	-.4	8.1	-1.2	32.4
L-3-E	1	1	2	1	42	.6	-1.9	1.8	-3.6
P-2-E	1	3	4	.5	32.5	.1	3.4	0.3	13.6
T-3-E	1	1	2	2.5	39.5	2.1	-3.4	<del>6.3</del> 6.4	-13.6
A-1-N	1	3	4	1	42	.6	6.1	1.8	24.4
E-1-N	1	1	2	1	41	.6	-1.9	1.8	-7.6
D-3-N	1	3	4	.5	42.5	.1	6.6	0.3	26.4
<del>A-3-W</del>	1	1	2	.5	40	.1	-2.9	0.3	-11.6
F-3-W	1	3	4	0	34.5	-.4	-1.4	-1.2	-5.6
L-1-W	1	1	2	1	33.5	.6	-9.4	1.8	-37.6
T-3-W	1	3	4	.5	41.5	.1	5.6	0.3	22.4
I-1-W	1	1	2	0	35.5	-.4	-7.4	-1.2	-29.6
<div style="position: relative; width: 100%; height: 100%; border: 1px solid black;"> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); font-size: 2em;">N</div> <div style="position: absolute; top: 20%; left: 40%; font-size: 2em;">A</div> </div>									

122

N



Survey Area: NA	Survey Unit: EXTERIOR	Building: 883A
Survey Unit Description EXTERIOR WALLS AND <sup>212910</sup> CEILING ROOF		

## Total Surface Activity Data Sheet

Sample location	RCT ID #	Inst ID #		Survey count time (sec)		LAB (cpm)		Gross Count (gcpm)		Net counts (cpm)		Net Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β	α	β		
A-1 NW	1	8	8	90	90	2.7	294	12.0	294	9.3	0	45.0	0
D-3 NW	1			90	90	2.3	322	8.7	343	5.4	21	26.2	69
E-1 NW	1			90	90	5.3	303	11.3	335	6.0	32	29.1	105
F-3 WW	1			90	90	3.3	429	12.0	377	8.7	-52	42.2	-171
I-3 WW	1			90	90	7.0	387	8.7	327	4.7	-60	22.8	-197
L-1 WW	1			90	90	11.3	306	14.7	329	3.4	23	46.5	75
V-1 WW	1			90	90	5.3	363	18.0	367	12.7	4	100.5	13
A-3 EW	1			90	90	5.3	333	9.3	331	4.0	-2	19.4	-7
C-2 EW	1			90	90	3.3	336	10.7	313	7.4	-23	35.1	-75
I-1 EW	1			90	90	4.7	277	4.7	298	0	21	0	69
L-3 EW	1			90	90	7.3	307	12.7	323	5.4	16	26.2	53
P-2 EW	1			90	90	5.3	319	4.7	325	-0.6	6	-2.9	20
T-3 EW	1	8	8	90	90	2.7	319	26.8	332	24.1	13	117	43
13R	2	11	11	90	90	2.3	366	24.7	464	22.4	98	100.2	322
15R	2	11	11	90	90	4.7	381	27.3	447	22.6	66	101.1	217
C-13R	2	11	11	90	90	5.3	359	29.3	495	24.0	136	107.4	254
D-5R	2	11	11	90	90	2.7	360	31.3	478	28.6	118	128.0	427
E-5R	2	11	11	90	90	3.3	343	30.7	426	27.4	83	122.6	273
E-9R	2	11	11	90	90	2.0	366	26.0	440	24.0	74	107.4	244
F-9R	2	11	11	90	90	3.3	326	28.0	409	24.7	83	110.5	273
F-13R	2	11	11	90	90	7.3	469	26.0	432	18.7	-37	83.7	-122
F-14R	2	11	11	90	90	11.3	358	26.0	497	14.7	139	65.8	458
F-20R	2	11	11	90	90	4.0	469	30.7	397	26.7	-72	119.5	-237
G-10R	2	11	11	90	90	3.3	344	32.0	455	28.7	111	128.4	366
G-14R	2	11	11	90	90	3.3	315	24.7	406	21.4	91	95.7	300
G-16R	2	11	11	90	90	6.0	332	25.3	440	19.3	108	86.4	356
H-5R	2	11	11	90	90	4.0	364	16.7	386	12.7	22	98	72
H-13R	2	11	11	90	90	6.0	444	18	453	12.0	9	48	30
V-14QC	8	9	9	90	90	2.0	403	5.3	371	3.3	-32	15.4	-107
L-14QC	8			90	90	2.7	511	6.0	328	3.3	-183	15.4	-611
E-14QC	8			90	90	5.3	435	10.0	337	4.7	-98	21.9	-327
T-14QC	8			90	90	6.0	292	8.7	321	2.7	29	12.6	96.9
P-24QC	8	9	9	90	90	3.3	469	9.3	329	6	-140	27.9	-467.6

Note: QC measurements are to be collected by a different technician than the original survey. Mark the QC location number in the "Sample Location" column. Material background is assumed to be zero unless otherwise noted. "LAB" ~ local area background.

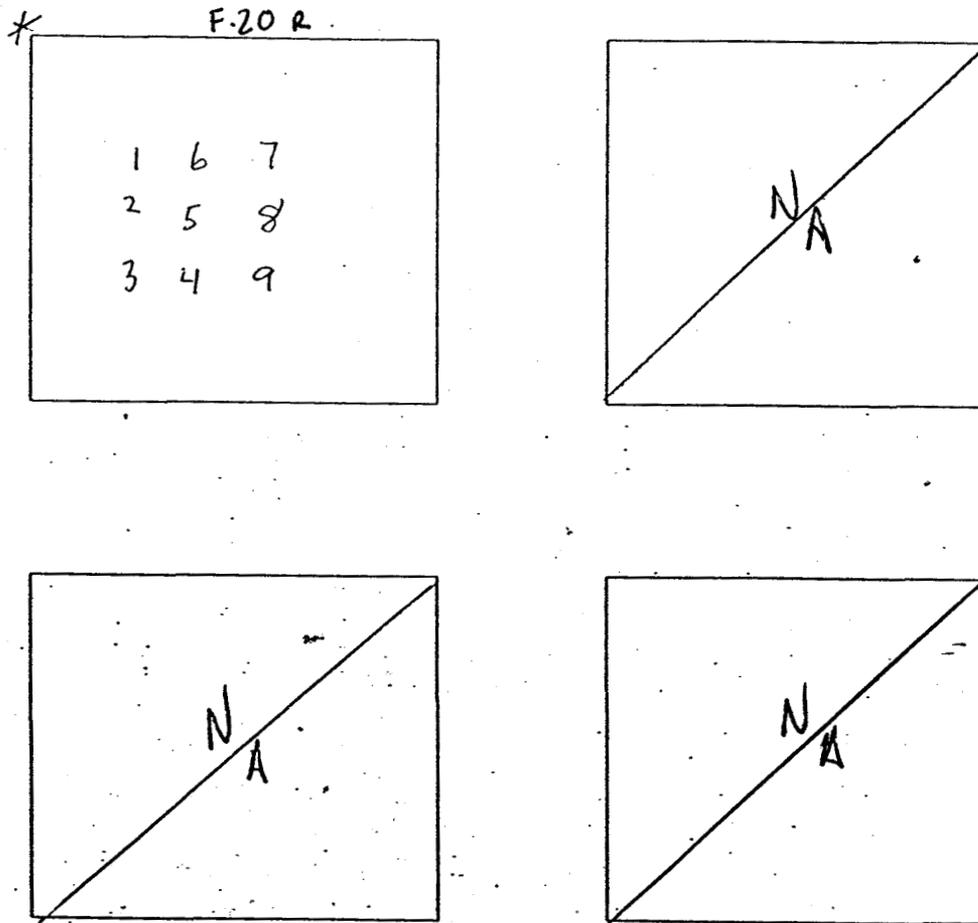
124

## Final Survey NE Electra Scan & Investigation Survey Map

Survey Area: <i>NA</i>	Survey Unit: <i>EXTERIOR</i>	Building: <i>T883A</i>
Survey Unit Description: <i>ROOF 9 PT INVESTIGATION SCAN</i>		
RCT Initials/Date: <i>PC 3-3-00</i>	RCT Initials/Date: <i>NA</i>	RCT Initials/Date: <i>MT</i>

Refer to the Final Survey NE Electra Scan & Investigation Survey Form for instrumentation, surveyor & approval information.

Legend: "R"- Roof, "W" - West Wall, "S" - South Wall, "E" - East Wall, "N" - North Wall  
"C" -Ceiling, "F" - Floor



\* Designates corner closest to A-1 point of reference

**Results/Comments:**

Electra alpha scans were performed at the locations detailed on the survey map(s). All required accessible areas were scanned. All initial scan results were <225 dpm/100cm<sup>2</sup>, unless noted on the survey form.

Electra beta scans were performed in required accessible areas. Initial scan results indicated no detectable activity above background unless noted on the survey form.

125



Oasis Device # 2

RFETS; Golden, CO  
Apr 21, 2000 15:18:44

Sample ID: 881A 00A1148-007.001 Type: Unknown  
Batch ID: unknown  
Acquisition Start: April 21, 2000 07:40:11  
Analysis Date: April 21, 2000 15:12:57  
Procedure: polonium210 samples  
Device: Oasis:02:04  
Analysis Method: ROI Analysis  
Spectrum File: 00000298.OXS LiveTime: 10,800.00

Calibrations:

Energy = 1.412E+02 +2.389E+00 \* Chn Coeff. of Correlation: -0.998  
Calibration Date: April 05, 2000 09:30:14 Std: AS 4188  
Shape not Calibrated.  
Efficiency = 3.398E-01 ± 4.596E-03  
Calibration Date: April 05, 2000 09:40:39 Std: AS 4188

External Recovery No Ext.Recovery

Original Sample Amount:

1.000 ± 0.000 samp  
Aliquot Amount: 1.000 ± 0.000 samp

ROI DATA

ROI ID #	ASSOCIATED NUCLIDE	EXTENTS START	EXTENTS END	PK EN (keV)	FWHM (keV)
1	Po218	5552.6	6077.8	5815.3	2.4
2	Po214	7420.0	7770.1	7595.2	1.2
3	Po212	8521.5	8850.6	8684.6	1.2
4	Po210	2263.7	5402.1	5026.9	2.4

ROI ANALYSIS RESULTS

ROI ID	NET COUNTS	BKG/INTERF	CPM	ROI TYPE
Po218	1.3 ± 1.5	0.72	7.14E-03 ± 8.10E-03	Unknown
Po214	-0.2 ± 0.2	0.18	-9.93E-04 ± 9.93E-04	Unknown
Po212	-0.4 ± 0.3	0.36	-1.99E-03 ± 1.40E-03	Unknown
Po210	210.7 ± 15.2	17.34	1.170 ± 0.084	Unknown

NUCLIDE ANALYSIS RESULTS

ROI ID	ASSOC NUC	EMM. PROB	ACTIVITY (dpm/samp)	MDA (dpm)
Po218	Po218	1.000	0.021 ± 0.024	9.36E-02
Po214	Po214	1.000	-2.92E-03 ± 2.92E-03	6.89E-02
Po212	Po212	1.000	-5.85E-03 ± 4.13E-03	7.92E-02
Po210	Po210	1.000	3.444 ± 0.253	2.87E-01

Activity reported as of April 21, 2000 07:40:11

ANALYSIS REVIEWED BY: *Shawn P. [Signature]*

APPROVED BY: *CJ Bianconi 5/8/00*

127

Sample ID: 00A1148-008.001 Type: Unknown

Batch ID: unknowns  
Acquisition Start: May 02, 2000 16:31:11  
Analysis Date: May 03, 2000 08:08:44  
Procedure: Po210 count  
Device: Oasis:01:02  
Analysis Method: ROI Analysis  
Spectrum File: 00000517.OXS LiveTime: 28,800.00

Calibrations:

-Energy = 5.823E+01 +2.790E+00 \* Chn Coeff. of Correlation: -0.998  
Calibration Date: April 07, 2000 14:55:56 Std: 1:2 energy cal  
Shape not Calibrated.  
Efficiency = 3.089E-01 ± 4.062E-03  
Calibration Date: April 07, 2000 15:15:30 Std: TS4189

External Recovery No Ext.Recovery

Original Sample Amount:

1.000 ± 0.000 samp  
Aliquot Amount: 1.000 ± 0.000 samp

ROI DATA

ROI ID #	ASSOCIATED NUCLIDE	EXTENTS		PK EN (keV)	FWHM (keV)
		START	END		
1 Po218	Po218	5550.0	6104.5	5826.0	2.8
2 Po214	Po214	6588.5	7874.7	7229.6	2.8
3 Po212	Po212	8393.8	8808.6	8599.7	2.8
4 Po210	Po210	2180.3	5343.3	5245.6	6.5

ROI ANALYSIS RESULTS

ROI ID	NET COUNTS	BKG/INTERF	CPM	ROI TYPE
Po218	6.0 ± 2.4	0.00	0.013 ± 5.10E-03	Unknown
Po214	0.3 ± 1.2	0.68	6.58E-04 ± 2.52E-03	Unknown
Po212	3.0 ± 1.7	0.00	6.25E-03 ± 3.61E-03	Unknown
Po210	878.7 ± 30.0	12.31	1.831 ± 0.062	Unknown

NUCLIDE ANALYSIS RESULTS

ROI ID	ASSOC NUC	EMM. PROB	ACTIVITY (dpm/samp)	MDA (dpm)
Po218	Po218	1.000	0.040 ± 0.017	1.82E-02
Po214	Po214	1.000	2.13E-03 ± 8.17E-03	4.21E-02
Po212	Po212	1.000	0.020 ± 0.012	1.82E-02
Po210	Po210	1.000	5.926 ± 0.217	1.19E-01

Activity reported as of May 02, 2000 16:31:11

ANALYSIS REVIEWED BY:

*[Signature]*

APPROVED BY:

*[Signature]* 5/8/00

spike value:  
22.892 dpm  
Pu 239

128

Po 211

C

**DASIS - MCA**

File Edit View Acq Param Log Report Data Help

Library: **Nuclide:** Am241  **QAS STD.MDB**

Acq ALL Acq All Stop Erase

LOG LOG

Lin Off Log

PEAK

Acquire Filter Region Filter Plot

Amplitude

00A1148-008.001

Message Window

Dead Time: 0.00

Integration: 991

Peak: 5245.63

FWHM: 6.51

Energy: 4797.9 Count: 2 ROI: 80

629

Sample ID: 00A1148-009.001 Type: Unknown

Batch ID: unknowns
Acquisition Start: May 03, 2000 08:42:23
Analysis Date: May 03, 2000 16:42:46
Procedure: Po210 count
Device: Oasis:01:04
Analysis Method: ROI Analysis
Spectrum File: 00000527.OXS LiveTime: 28,800.00

Calibrations:

-Energy = 8.600E+01 +2.746E+00 \* Chn Coeff. of Correlation: -0.998
Calibration Date: April 12, 2000 10:28:56 Std: 1:4 energy cal
Shape not Calibrated.
Efficiency = 3.084E-01 ± 4.055E-03
Calibration Date: April 12, 2000 11:45:10 Std: TS4189

External Recovery No Ext.Recovery

Original Sample Amount:

1.000 ± 0.000 samp
Aliquot Amount: 1.000 ± 0.000 samp

ROI DATA

Table with 6 columns: ROI ID #, ASSOCIATED NUCLIDE, EXTENTS START, EXTENTS END, PK EN (keV), FWHM (keV). Rows include Po218, Po214, Po212, and Po210.

ROI ANALYSIS RESULTS

Table with 6 columns: ROI ID, NET COUNTS, BKG/INTERF, CPM, ROI TYPE. Rows include Po218, Po214, Po212, and Po210.

NUCLIDE ANALYSIS RESULTS

Table with 5 columns: ROI ID, ASSOC NUC, EMM. PROB, ACTIVITY (dpm/samp), MDA (dpm). Rows include Po218, Po214, Po212, and Po210.

Activity reported as of May 03, 2000 08:42:23

ANALYSIS REVIEWED BY: [Signature]

APPROVED BY: [Signature] 5/8/00

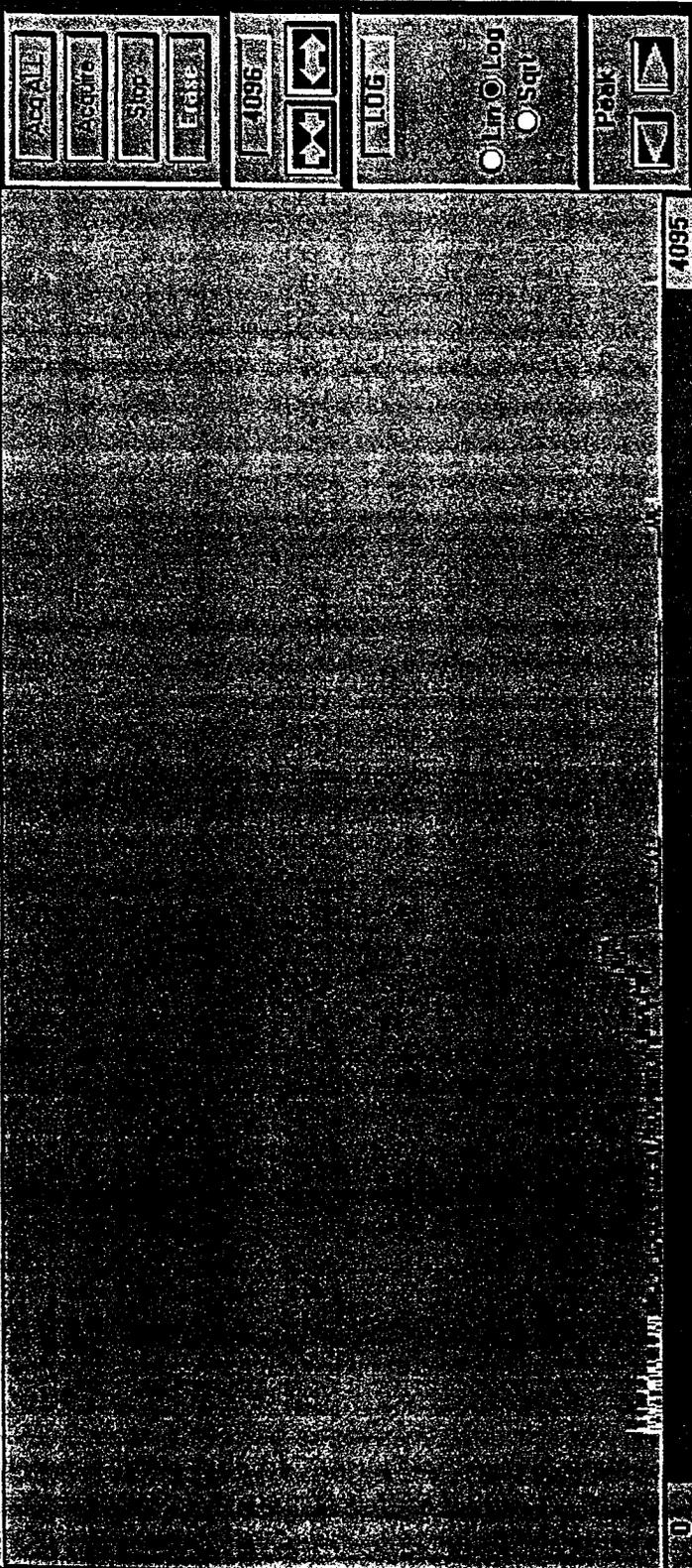
130

OASIS - MCA

File Edit View Acq Params Tools Reports Data Help

Library: DAS\_STD.MDB Nucclide: Am241

2-Static: 00000527.OXS



Acq Ale  Acq Par  Stop  EGSE  
 4096  LOG  Lin  Log  SQI  
 Peak

Spectrum ID

00A1148-009.001

System Date  
09 May 2000 15:15:11

Message Window

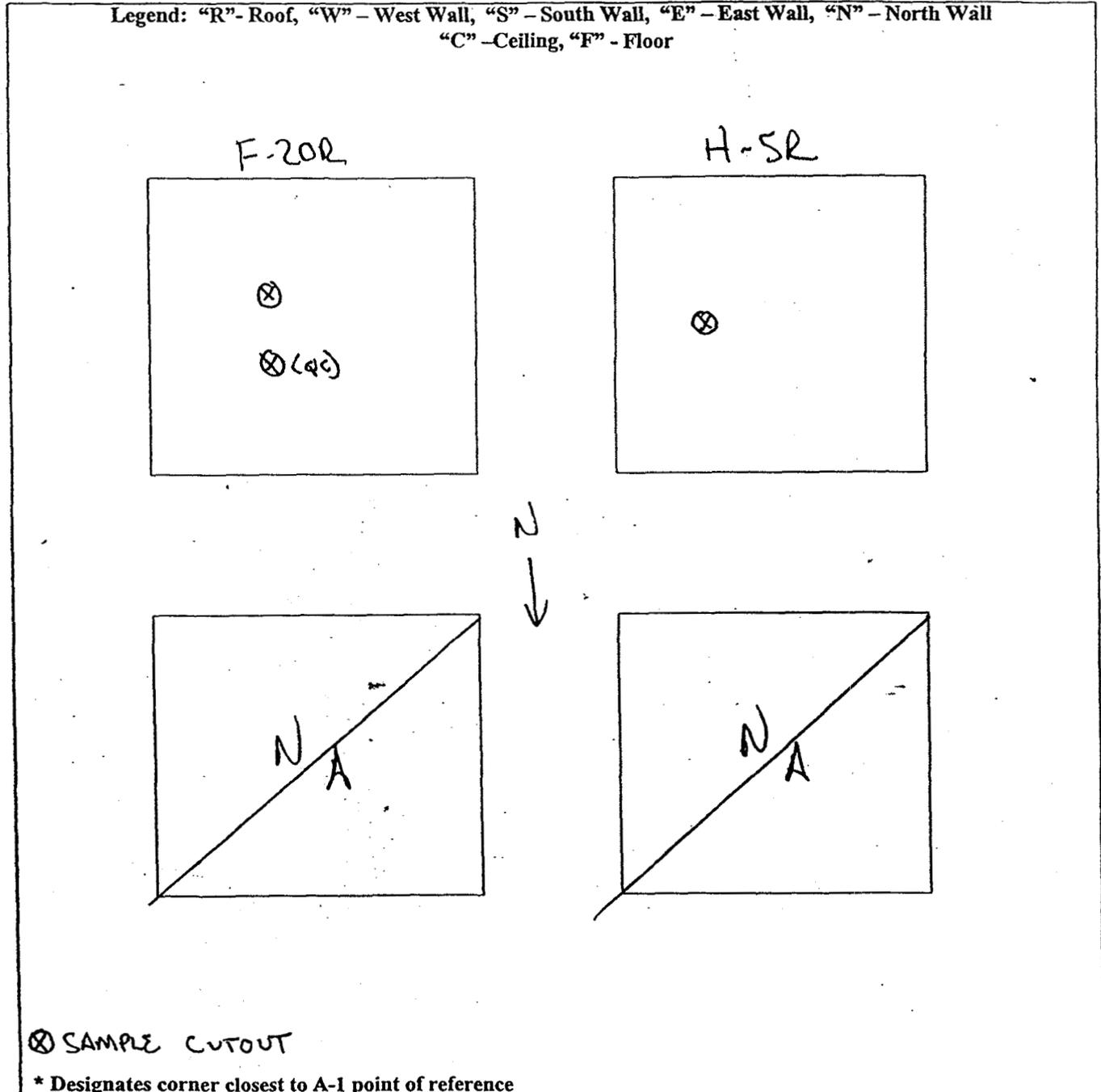
Channel: 1534 Elapsed (Real) Time: 28800.17 Elapsed Live Time: 28800.00 Dead Time: 0.0

Energy: 4298.6 Count: 0 BDI Integral: 564 Peak: 5,186.24 FWHM: 3.57

## Final Survey NE Electra Scan & Investigation Survey Map

Survey Area: <u>NA</u>	Survey Unit: <u>EXTERIOR</u>	Building: <u>T883A</u>
Survey Unit Description: <u>Roof Sample Location</u>		
RCT Initials/Date: <u>NA 3-28-00</u>	RCT Initials/Date: <u>NA</u>	RCT Initials/Date: <u>NA</u>

Refer to the Final Survey NE Electra Scan & Investigation Survey Form for instrumentation, surveyor & approval information.



**Results/Comments:**

Electra alpha scans were performed at the locations detailed on the survey map(s). All required accessible areas were scanned. All initial scan results were <25 dpm/100cm<sup>2</sup>, unless noted on the survey form.

Electra beta scans were performed in required accessible areas. Initial scan results indicated no detectable activity above background unless noted on the survey form.



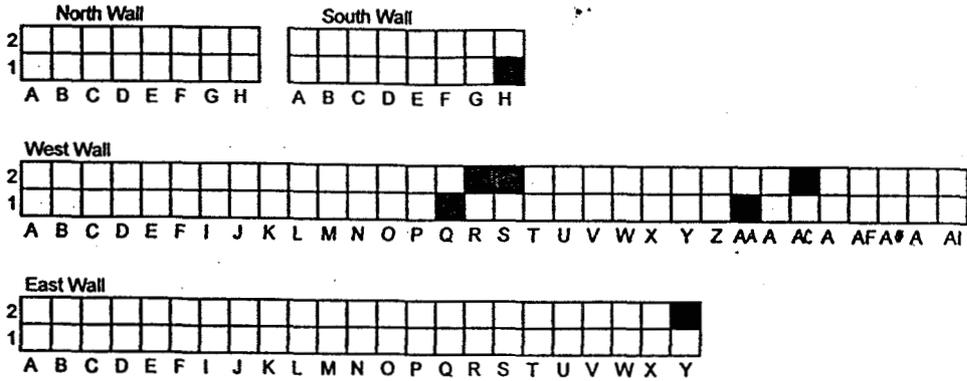


T883A – Radiological Survey Data for Interior Survey Unit

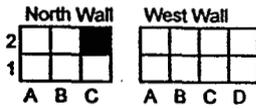
- Map of Locations
  - Scans
  - Surveys
- Removable and Total Survey Results - Detail

135

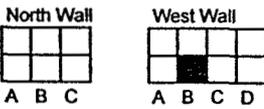
**T883A Main Area**



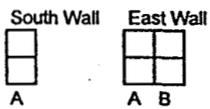
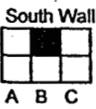
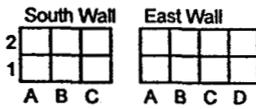
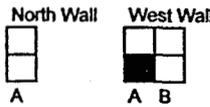
**South Office**



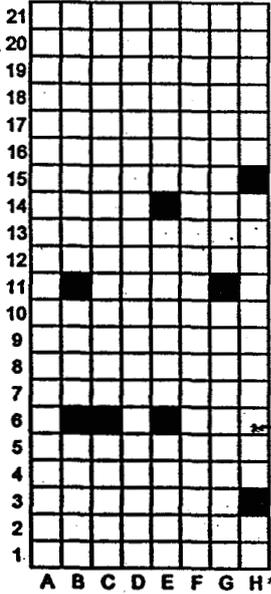
**North Office**



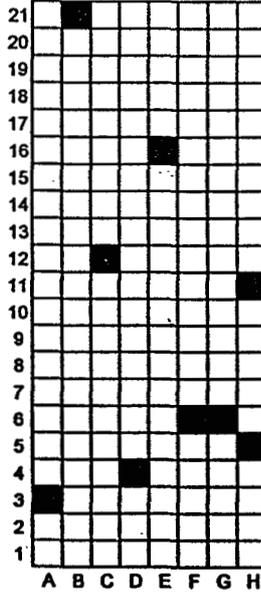
**Southeast Closet**



**T883A Floor**



**T883A Ceiling**



10	11
----	----

Total Surface Area = 546 m<sup>2</sup>

10% Scan Surface Area = 54.6 m<sup>2</sup>

□ = one square meter

■ = direct & swipe

X	Y	X	Y	X	Y
2	21	18	28	20	21
23	5	3	26	27	3
7	21	17	2	5	26
24	8	13	29	15	20
18	26	17	3	2	26
8	29	5	18	20	27
11	9	16	3	8	17
19	26	14	11	17	16
15	4	16	8		
3	7	20	25	4	

136

15418

Survey Area: NA

Survey Unit: INTERIOR

Building: T883A

Survey Unit Description

INTERIOR WALLS, Floor, and Ceiling

### Removable Contamination Data Sheet

Sample Location	RCT ID #	Inst ID #		Gross Counts (gcpm)		Net Counts (cpm)		Removable Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β
B.21.C	2	1	2	1	41.5	.6	3.7	1.8	14.8
E.16.C	2	3	4	0	44.5	-.3	4.8	-0.9	19.2
C.12.C	2	1	2	0	46	-.4	8.2	-1.2	32.8
H.11.C	2	3	4	.5	34.5	.2	-5.2	0.6	-20.8
G.16.C	2	1	2	1.5	36.5	1.1	-1.3	3.3	-5.2
F.6.C	2	3	4	1.5	30.5	1.2	-9.2	3.6	-36.8
D.4.C	2	1	2	.5	44.5	.1	6.7	0.3	26.8
H.5.C	2	3	4	1	38	.7	-1.7	2.1	-6.8
A.3.C	2	1	2	0	42.5	-.4	4.7	-1.2	18.8
AC.2.W	2	3	4	0	33	-.3	-6.7	-0.9	-26.8
AA.1.W	2	1	2	0	39	-.4	1.2	-1.2	4.8
Q.1.W	2	3	4	0	38	-.3	-1.7	-0.9	-6.8
P.2.W	2	1	2	.5	48.5	.1	10.7	0.3	42.8
R.3.W	2	3	4	0	36	-.3	-3.7	-0.9	-14.8
S.4.W	2	1	2	1.5	40	.1	2.2	0.3	8.8
V.2.E	2	3	4	0	28	-.3	-11.7	-0.9	-46.8
H.15.F	2	1	2	.5	43	.1	5.2	0.3	20.8
E.14.F	2	3	4	.5	35.5	.2	-4.2	0.6	-12.8-16.8
B.11.F	2	1	2	0	44	-.4	6.2	-1.2	-1.2 24.8
G.11.F	2	3	4	.5	44	.2	4.3	0.6	0.6 17.2
C.6.F	2	1	2	1	47.5	.6	9.7	1.8	38.8
B.6.F	2	3	4	1.5	44	1.2	4.3	3.6	17.2
F.6.F	2	1	2	.5	42	.1	4.2	0.3	-12.8 16.8
H.3.F	2	3	4	0	38.5	-.3	-1.2	-0.9	-4.8
NORTH Office									
B.1.W	2	1	2	0	43	-.4	5.2	-1.2	20.8
B.2.S	2	3	4	.5	41	.2	1.3	0.6	5.2
South Office + 2 <sup>nd</sup>									
C.2.N	2	1	2	0	49	-.4	11.2	-1.2	44.8
Southeast Closet									
A.1.W	2	3	4	0	43.5	-.3	3.8	-0.9	15.2

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Survey Area: NA    Survey Unit: Interior    Building: 885A  
 Survey Unit Description  
 Interior Floor, Walls, Ceiling

### Total Surface Activity Data Sheet

Sample location	RCT ID #	Inst ID #		Survey count time (sec)		LAB (cpm)		Gross Count (gcpm)		Net counts (cpm)		Net Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β	α	β	α	β
MAIN AREA				90	90								
B-6F	3	8	8	90	90	2.0	403	2.7	417	0.7	14	3.4	47.8 47
C-6F	3	8	8	90	90	0.7	410	0.7	422	0.0	12	0.0	40.3 40
B-11F	3	8	8	90	90	2.0	423	2.7	534	0.7	111	3.4	374
E-6F	3	8	8	90	90	3.3	407	32.0	479	28.7	72	140.3	242
E-14F	3	8	8	90	90	1.3	383	0.7	451	-0.6	68	-2.9	229
G-11F	3	8	8	90	90	1.3	429	2.0	455	0.7	26	3.4	88
H-3F	3	8	8	90	90	0.7	437	0.0	457	-0.7	20	-3.4	67
H-15F	3	8	8	90	90	2.0	414	2.0	457	0.0	43	0.0	145
Q-1W	3	8	8	90	90	2.7	342	3.3	314	0.6	-28	2.9	-94
Z-2W	3	8	8	90	90	2.0	318	2.7	332	0.7	14	3.4	47
S-2W	3	8	8	90	90	2.7	360	3.3	300	0.6	-60	2.9	-202
A-1W	3	8	8	90	90	1.3	312	0.7	330	-0.6	18	-2.9	61
L-2W	3	8	8	90	90	2.0	300	4.7	328	2.7	20	13.2	94
Y-2E	3	8	8	90	90	3.3	370	2.7	319	-0.6	51	-2.9	172
H-1S	3	8	8	90	90	2.0	327	2.7	344	0.7	17	3.4	57
A-3C	3	8	8	90	90	2.0	383	4.0	537	2.0	154	9.8	519
B-2C	3	8	8	90	90	1.3	407	3.3	478	2.0	71	9.8	239
C-12C	3	8	8	90	90	2.7	412	4.7	510	2.0	98	9.8	330
D-4C	3	8	8	90	90	0.7	336	1.3	524	0.6	188	2.9	633
E-16C	3	8	8	90	90	2.0	374	2.0	478	0.0	104	0.0	350
F-6C	3	8	8	90	90	2.7	360	3.3	497	0.6	137	2.9	461
G-16C	3	8	8	90	90	0.7	407	2.7	522	2.0	115	9.8	387
H-5C	3	8	8	90	90	0.0	328	2.0	476	2.0	148	9.8	498
H-11C	3	8	8	90	90	1.3	391	2.7	466	1.4	75	6.8	253
NORTH OFFICE				90	90								
B-1W	3	8	8	90	90	0.7	387	2.7	326	2.0	-61	9.8	-205
B-2S	3	8	8	90	90	0.7	348	5.3	301	4.6	-47	22.5	-159
E-6FQC	8	11	11	90	90	5.3	386	11.3	448	6.3	62	29.3	207
G-11FQC	8	11	11	90	90	4.7	425	4.3	414	-0.4	-11	-1.9	36.7 37
E-14FQC	8	11	11	90	90	6.7	460	8.7	473	2.0	13	9.3	43.4 43
B-11FQC	8	11	11	90	90	6.0	423	2.0	493	-4.0	70	-18.6	233.8 234
R-6FQC	8	11	11	90	90	6.0	392	4.7	414	-1.3	22	-6.0	73.5 73

Note: QC measurements are to be collected by a different technician than the original survey. Mark the QC location number in the "Sample Location" column. Material background is assumed to be zero unless otherwise noted. "LAB" - local area background.  
 Page 16 of 18

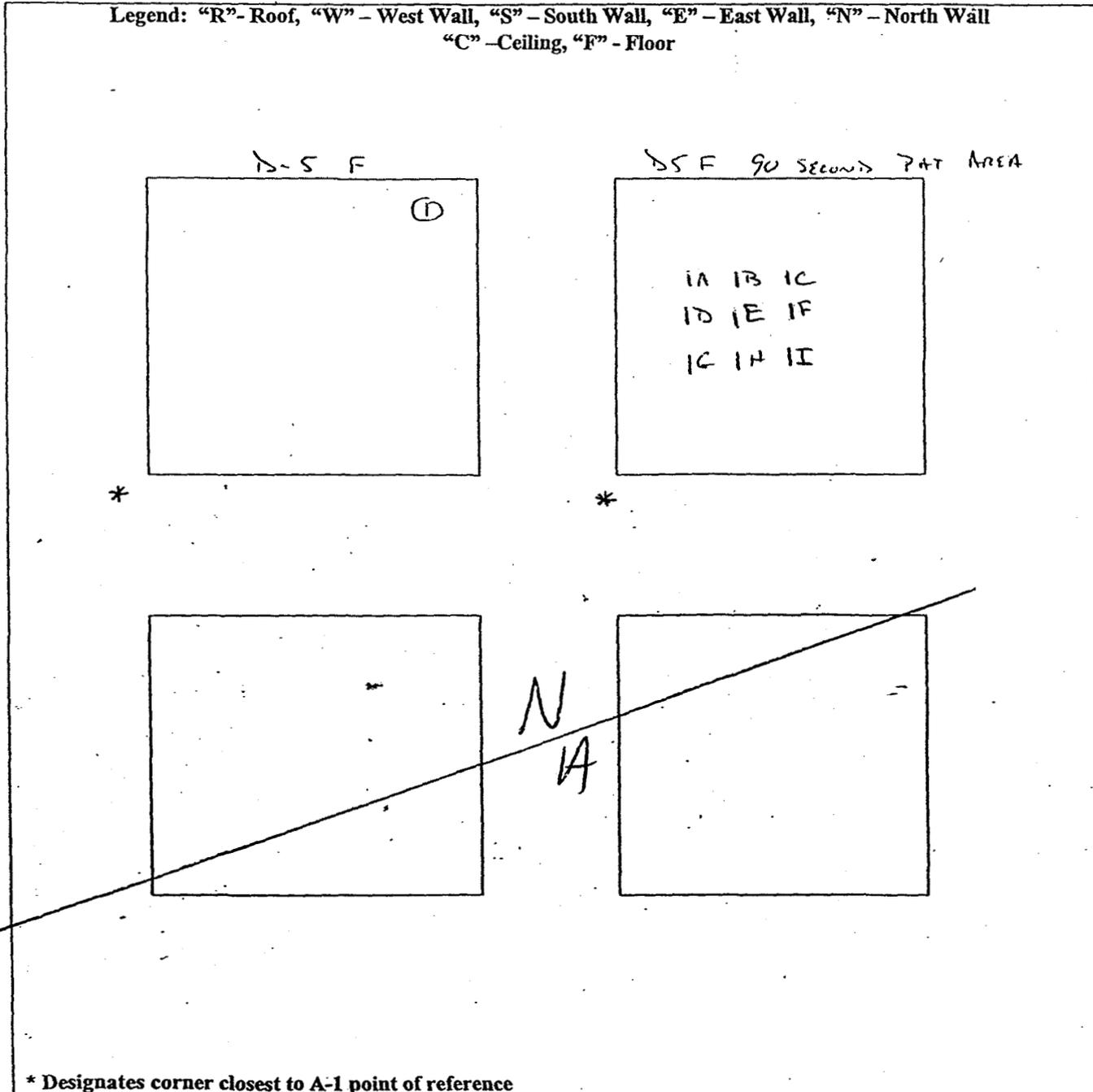
138



## Final Survey NE Electra Scan & Investigation Survey Map

Survey Area: <u>NA</u>	Survey Unit: <u>INTERIOR</u>	Building: <u>T-883A</u>
Survey Unit Description: <u>INTERIOR FLOOR</u>		
RCT Initials/Date: <u>ABC / 3.1.00</u>	RCT Initials/Date: <u>N/A</u>	RCT Initials/Date: <u>N/A</u>

Refer to the Final Survey NE Electra Scan & Investigation Survey Form for instrumentation, surveyor & approval information.



**Results/Comments:**

Electra alpha scans were performed at the locations detailed on the survey map(s). All required accessible areas were scanned. All initial scan results were <225 dpm/100cm<sup>2</sup>, unless noted on the survey form.

Electra beta scans were performed in required accessible areas. Initial scan results indicated no detectable activity above background unless noted on the survey form.

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**Final Survey NE Electra  
Scan & Investigation Survey Form  
(Continuation Sheet)**

Survey Area: <b>NA</b>		Survey Unit: <b>INTERIOR</b>			Building: <b>T883A</b>				
Survey Unit Description: <b>INTERIOR FLOOR SCANS</b>									
Loc. ID #	<i>Electra DP-6 Beta</i>				<i>Electra DP-6 Alpha</i>				
	RCT ID #	Inst. ID #	Elevated Audible observed? "Y" or "N"	60-sec PAT (dpm/100cm <sup>2</sup> )	RCT ID #	Inst. ID #	4-sec Audible observed? "Y" or "N"	30-sec Static (gcpm)	90-sec PAT (dpm/100cm <sup>2</sup> )
E-7F	1	7	N	NA	1	7	N	NA	NA
G-1F					3	8	N	NA	
B-1F1					3	8	Y	8	
B-2F1					3	8	Y	10	
E-4F					4	9	N	NA	
H-4F					4	9	N		
G-4F					4	9	N		
F-4F					4	9	N	Y	
B-3F1					5	10	Y	12.0	
B-4F1					5	10	Y	14.0	
A-5F					5	10	N	NA	
B-5F					5	10	N		
C-5F	Y	Y	Y	Y	5	10	N	Y	Y
<b>NA</b>									

T883A – Asbestos Inspector's Report

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T883A

ASBESTOS INSPECTOR'S REPORT

I, the undersigned Certified Asbestos Inspector, certification # 1387  
in the state of Colorado, attest to the asbestos inspection and sampling results as  
described below, for the following facility (at RFETS): Trailer 883A.

General Facility Location: north-northeast of Building 881.

**INSPECTION RESULTS**

Trailer 883A contains friable ceiling tile. Fiberglass insulation was found throughout the walls. The following table summarizes the results of the samples collected and the percent and type of asbestos detected:

**SAMPLE RESULTS**

Sample Number	Material Sampled & Location	Analytical Results
T883A-03012000-05-001	Miscellaneous material: 2' x 4' white ceiling tile. Coordinate D4C	None Detected
T883A-03012000-05-002	Miscellaneous material: 2' x 4' white ceiling tile. Coordinate C12C	None Detected

Andre Gonzalez

INSPECTOR'S NAME

Andre Gonzalez

SIGNATURE

7/6/00

DATE

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T883A – D&D Facility Characterization Interview Checklist

Type 1 Facility Checklist

C

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**D&D Facility Characterization  
Interview Checklist**

ID No.: T-883A  
Date: 06/08/99  
Page 2 of 2  
Groups B & C Series

What timeframe did the interviewee work in the facility? From the Fall of 1995 until August 1997 (for approximately 2 years).

Has the building configuration changed since you worked in the building? If so, in what way? Yes, the facility had up to a maximum 15 people during the time SSOC Residue Stabilization occupied the office trailer facility.

Yes, all the office cubicles have been removed, the electrical wiring is being totally redone. It appears that the facility might be getting prepared to be a computer training facility and would hold approximately 30 people.

What types of equipment were in the building during the interviewee's time there?

Approximately 15 computers, approximately 12 printers, a fax machine, a photocopier machine, other office equipment such as desks, 12 chairs, 3 tables, bookcases, 8 file cabinets, etc

Where was the equipment located? (specific rooms/areas) In the hard wall offices and the office cubicles. The prior occupants (prior to March 1995) an Information Resource Management group that did software support for AutoCad and software support for CAD/CAM for Building 460 Machining Operations. The IR Management group had approximately 12 employees in T-883A from 1991 until March 1995. Computers, printers, fax machine, photocopier, and office equipment were in the hard wall offices and office cubicles during this 1991 to March 1995 time frame.

Were any radioactive materials or metals handled in the building? If so, what types? No, none

Which equipment handled radioactive material? N/A

Were any chemicals handled in the building? If so, what types? N/A

Did any spills or uncontrolled releases of radioactive materials or chemicals occur while you were working in the facility? No, none.

Were these spills/releases cleaned-up? How were they cleaned-up? N/A

Where did these spills/releases occur? N/A

Interviewed by: J. R. Sheets / JR Sheets / 06/03/99  
Print Name Signature Interview Date

## Type 1 Facility Checklist

TYPE 1 FACILITY	BUILDING T-883A
CURRENT LANDLORD:	RFCSS
DATE OF COMPLETION:	02/29/00

ITEM	YES	NO
Does the facility contain radiological postings?		X
Does the facility contain chemical postings?		X
Are there any installed hazards?		X
Do the historical surveys (radiological and chemical) indicate the facility is clean?	X	
Are there RCRA units within the facility		X
Is there a history of the building available?	X	
Is there any equipment/furniture left in the facility?		X
Is there a future mission identified for the facility?		X
Will the facility be left unsecured after it is vacated?		X

If any answer to any of the above questions is "Yes", complete the following questions and complete the "graded" PEP in accordance with Chapter 2.

*Note: An answer of "Yes" to any question, specifically one dealing with hazards, may indicate the facility is not a Type 1 Facility. Check with the D&D Programs office.*

If the answer to all question is "No" complete the "graded" PEP in accordance with Chapter 2.

1. List the Radiological Hazards, location, and quantity:

Based on the historical data found and interviews taken there are no hazards in this trailer.

2. List the Chemical Hazards, location, and quantity:

None. Based on historical data and interviews taken no asbestos data exists and the paint may be lead based.

3. List the Physical Hazards:

NONE

T883B – Radiological Survey Data for Exterior Survey Unit

- Summary of Radiological Survey/Sample Results
- Map of Locations
  - Scans
  - Surveys
- Removable and Total Survey Results – Detail
- Laboratory Alpha Spec (Sample) Results – Detail

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## Radiological Survey/Sample Results for T883B

### Total Surface Activity Measurements dpm/100 cm<sup>2</sup>

	Alpha	Beta
	# Required	# Obtained
<b>Interior</b>	28	28
MIN	-3.1	-356
MAX	33	405
MEAN	14.5	-51.0
STD DEV	10.8	225.0
<b>Exterior</b>	28	28
MIN	0.0	-295
MAX	137.4	392
MEAN	64.2	71.7
STD DEV	40.2	211.7
DCGL <sub>w</sub>	100	5000

### Removable Activity Measurements dpm/100 cm<sup>2</sup>

	Alpha	Beta
	# Required	# Obtained
<b>Interior</b>	28	28
MIN	-1.5	-45
MAX	0.0	24
MEAN	-0.7	-10.5
STD DEV	1.0	15.3
<b>Exterior</b>	28	28
MIN	-0.9	-39.6
MAX	5.5	43.2
MEAN	1.5	-1.5
STD DEV	1.9	21.6
DCGL <sub>w</sub>	20	1000

### Media Sample Activity

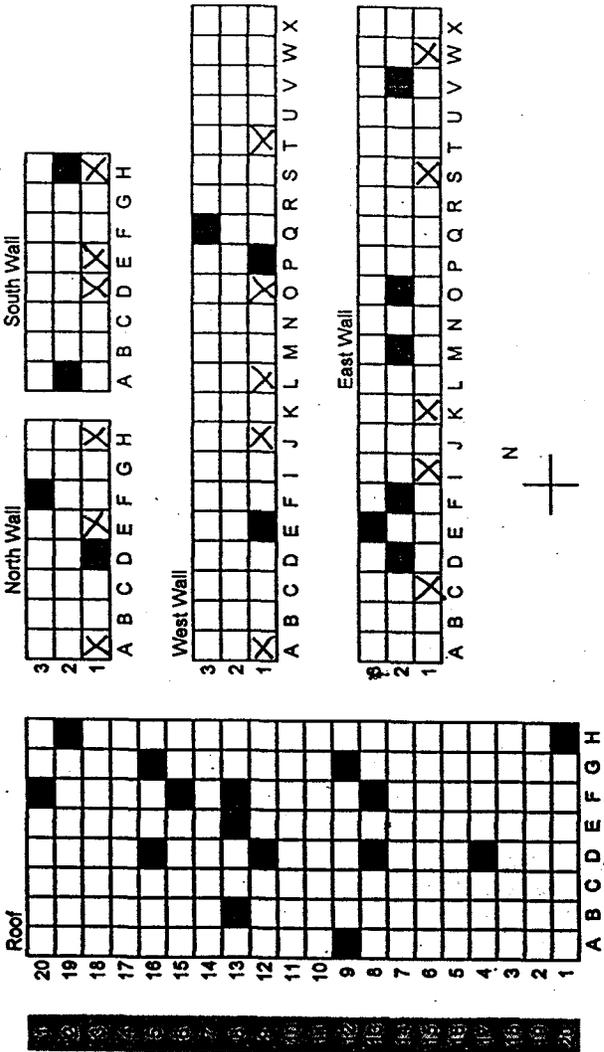
# Required	# Obtained
2	2

<u>Contaminant</u>	<u>Y/N</u>	<u>Det. Sens. dpm/100 cm<sup>2</sup></u>
U present	N	79
Pu present	N	79

### Total Po-210 Results dpm/100 cm<sup>2</sup>

MIN	85.7
MAX	89.8
MEAN	87.8
STD DEV	5.8

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Area	30	5
------	----	---

□ = one square meter  
 ■ = direct & swipe

X	Y	X	Y	X	Y
25	7	23	14	7	12
20	2	6	6	7	5
15	9	15	13	14	3
2	8	1	12	8	20
14	14	4	5	21	14
30	14	24	9	16	1
6	1	27	2	6	8
4	17	8	2	23	5
16	14	4	9	5	8
6	13	20	4		
10	6	13	20		

Total Surface Area = 340 m<sup>2</sup>  
 10% Scan Surface Area = 34 m<sup>2</sup>

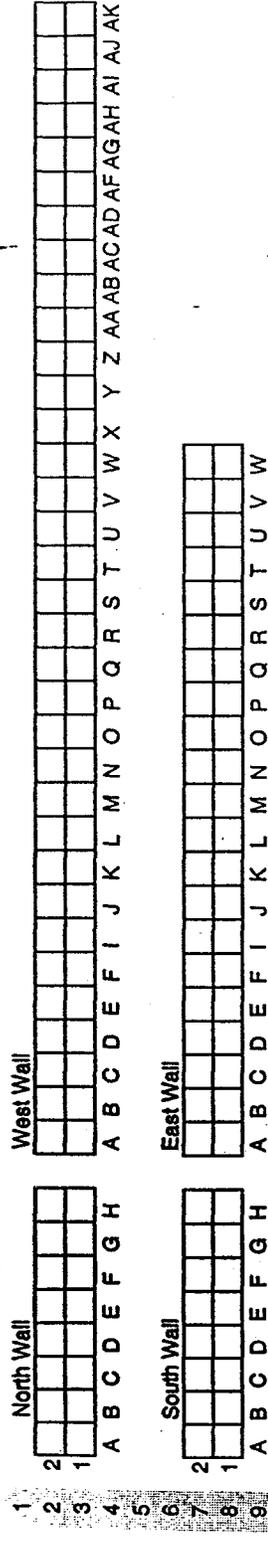
"X" Represents Scan Locations

127/242 R0

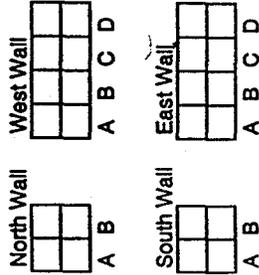
150

DR 3 of 11

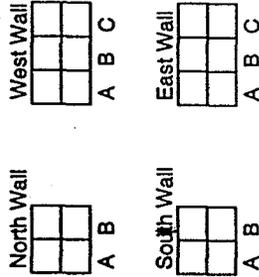
T883B Main Area



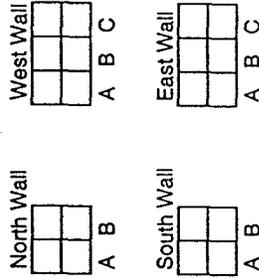
Southwest Office



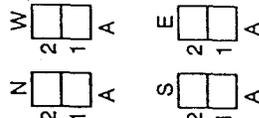
West Middle Office



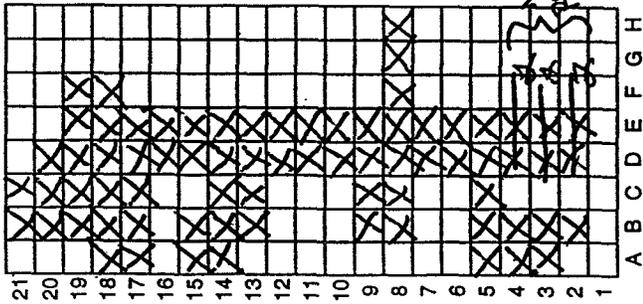
Northwest Office



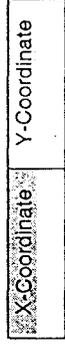
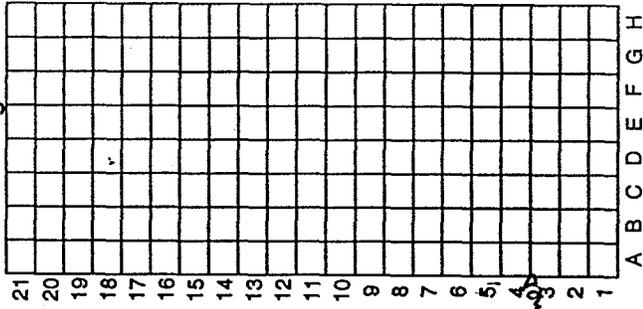
Bathroom



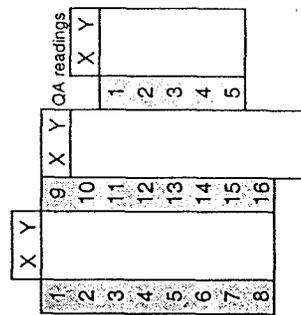
T883B Floor



T883B Ceiling

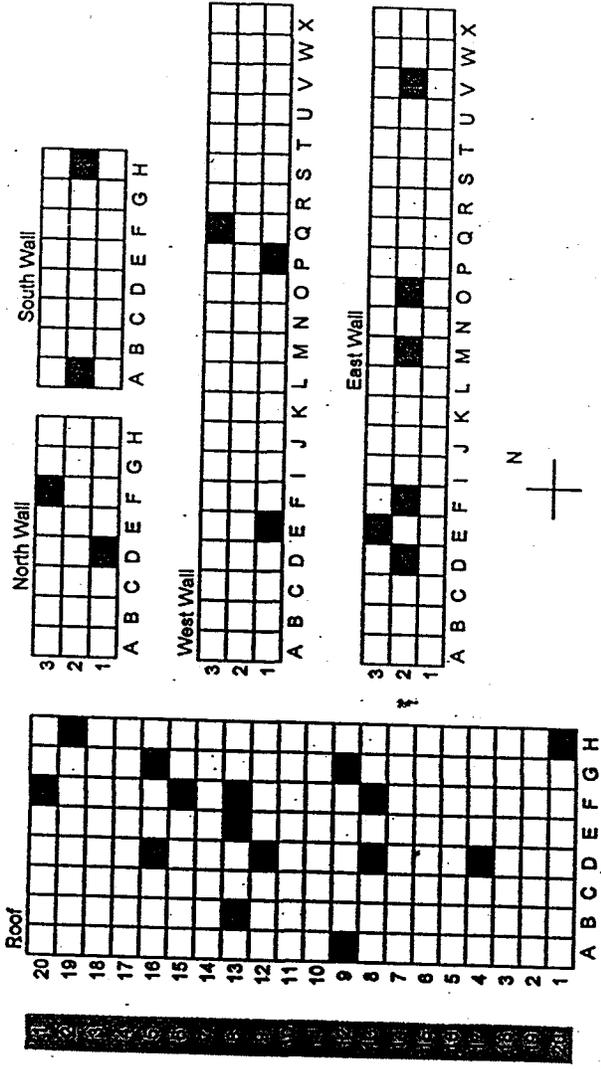


- [White box] = one square meter
- [Light gray box] = 1.5"/sec scan
- [Diagonal lines] = direct & smear
- [Dark gray box] = additional QA survey



NOTE: SCAN AREA DETERMINED UPON HEIGHT TOLERANCE MEAS.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42



X	Y	X	Y	X	Y
25	7	23	14	7	12
20	2	6	6	7	5
15	9	15	13	14	3
2	8	1	12	8	20
14	14	4	5	21	14
30	14	24	9	16	1
6	1	27	2	6	8
4	17	8	2	5	8
16	14	4	9		
6	13	4	13		

Total Surface Area = 340 m<sup>2</sup>  
 10% Scan Surface Area = 34 m<sup>2</sup>

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Survey Area: N/A	Survey Unit: Exterior	Building: T883B
Survey Unit Description Exterior Roof		

### Removable Contamination Data Sheet

Sample Location	RCT ID #	Inst ID #		Gross Counts (gcpm)		Net Counts (cpm)		Removable Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β
A-9R	4	5	6	0.0	39.5	-0.3	-2.9	-0.9	-11.6
B-13R	4	5	6	2.0	75	1.7	-7.4	5.2 <del>5.1</del>	-29.6
D-4R	4	5	6	0.0	35	-0.3	-7.4	-0.9	-29.6
D-8R	4	5	6	1.0	48	0.7	5.6	2.1	22.4
D-12R	4	5	6	1.0	46	0.7	3.6	2.1	14.4
D-16R	4	5	6	0.0	33.5	-0.3	-8.9	-0.9	-35.6
E-13R	4	5	6	1.0	38.5	0.7	-3.9	2.1	-15.6
F-9R	4	5	6	1.0	37.5	0.7	-4.9	2.1	-19.6
F-13R	4	5	6	0.0	71	-0.3	-1.4	-0.9	-5.6
F-15R	4	5	6	1.0	42.5	0.7	0.1	2.1	0.4
F-20R	4	5	6	1.0	35.5	0.7	-6.9	2.1	-27.6
G-9R	4	5	6	1.0	37	0.7	-5.4	2.1	-21.6
G-16R	4	5	6	0.0	32.5	-0.3	-9.9	-0.9	-39.6
I-1R	4	5	6	1.0	46.5	0.7	4.1	2.1	16.4
I-19R	4	5	6	0.0	38	-0.3	-4.4	-0.9	-17.6
N/A									

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Library: **OAS\_STD.MDB** Nuclide: **Am241**

5-Static: 00000298.DXS

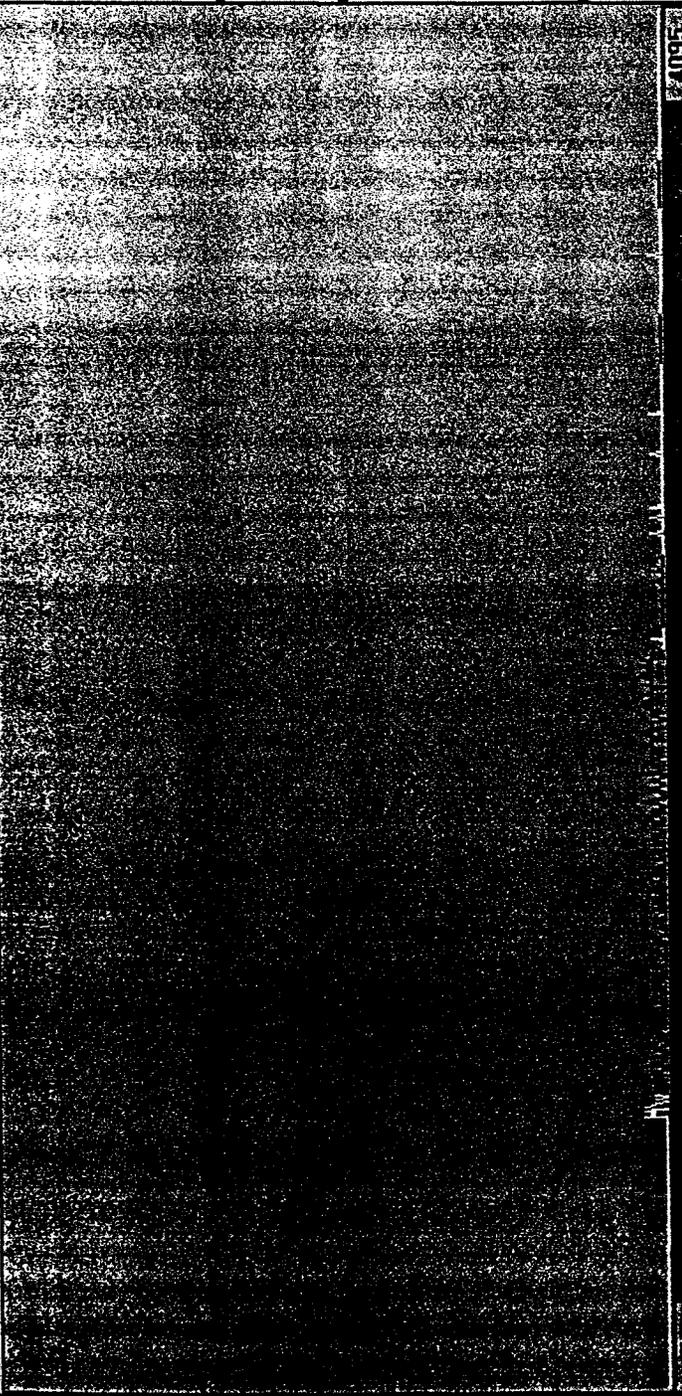
Acq ALL  
Acquire  
Stop  
Edge

4096  
LOG

Lin  Log  Sqt

Peak  
4095

Presets  
ROI  
Spectrum  
Display  
Info  
Param Display



881A 00A1148-007.001

Message Window

Exp: 00000298.DXS

Integral: 228

Peak: 55.02690

FWHM: 239

Survey Area: <i>MH</i>	Survey Unit: <i>EXTERIOR</i>	Building: <i>87373</i>
Survey Unit Description <i>EXTERIOR WALL / ROOF</i>		

## Total Surface Activity Data Sheet

Sample location	RCT ID #	Inst ID #		Survey count time (sec)		LAB (cpm)		Gross Count (gcpm)		Net counts (cpm)		Net Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β	α	β	α	β
F-1 WW	2	7	7	90	90	2.7	338	6.0	327	3.3	-11	16.0	-36
P-1 WW	2			90	90	5.0	281	11.3	341	3.3	6.0	16.0	197
A-2 SW	2			90	90	2.7	323	10.7	373	8.0	50	38.7	164
H-2 SW	2			90	90	4.0	316	14.0	361	10.0	45	48.4	148
D-2 EW	2			90	90	3.3	323	6.7	341	3.4	18	16.4	59
F-2 EW	2			90	90	6.0	309	15.3	371	5.3	62	25.6	203
M-2 EW	2			90	90	9.3	335	16.0	375	6.7	40	32.4	131
G-2 EW	2			90	90	5.3	429	5.3	365	0.0	-64	0.0	210
V-2 EW	2			90	90	3.3	323	11.3	357	8.0	34	38.7	112
D-1 WW	2			90	90	6.0	316	8.7	355	2.7	69	13.1	226
F-3 WW	2			90	90	5.3	421	17.0	331	8.7	-98	42.1	-322
E-3 EW	2			90	90	4.7	429	16.0	353	11.3	-76	54.7	249
Q3 WW	2	7	7	90	90	6.0	338	15.3	323	7.5	-15	35.3	-49
9R	3	11	11	90	90	4.0	467	17.3	391	13.3	-78	59.5	-257
-13R	3	11	11	90	90	3.3	340	18.0	403	14.7	63	65.8	208
D-4R	3	11	11	90	90	14.7	451	25.3	399	10.6	-52	47.4	-171
D-8R	3	11	11	90	90	2.7	440	25.3	436	22.6	-4	101.1	-13
D-12R	3	11	11	90	90	3.3	332	34.0	437	30.7	105	137.4	346
D-16R	3	11	11	90	90	3.3	403	17.3	441	14.0	38	62.6	125
E-13R	3	11	11	90	90	4.0	326	20.0	427	16.0	101	71.6	333
F-8R	3	11	11	90	90	6.7	340	31.3	441	24.6	101	71.6	333
F-13R	3	11	11	90	90	6.0	345	30.7	459	24.7	114	110.5	375
F-15R	3	11	11	90	90	7.3	399	34.0	454	26.7	55	119.5	181
F-20R	3	11	11	90	90	3.3	406	32.0	418	28.7	12	128.4	40
G-9R	3	11	11	90	90	7.3	360	28.0	406	20.7	46	92.6	152
G-16R	3	11	11	90	90	6.7	478	29.3	411	22.6	-67	101.1	-221
H-1R	3	11	11	90	90	2.0	366	22.7	485	20.7	119	92.6	392
H-19R	3	11	11	90	90	4.0	485	30.7	419	26.7	-66	119.5	-217
A-25QC	8	9	9	90	90	2.7	508	8.7	361	6.0	-147	27.9	-491.0
H-25QC	8			90	90	2.7	439	4.0	339	1.3	-100	6.0	-334.0
D-25QC	8			90	90	3.3	411	6.7	325	3.4	-86	15.8	-287
D-19QC	8			90	90	4.0	525	12.7	333	8.7	-192	40.5	-641.3
E-19QC	8	9	9	90	90	3.3	391	4.0	287	0.7	-104	3.26	-347

Note: QC measurements are to be collected by a different technician than the original survey. Mark the QC location number in the "Sample Location" column. Material background is assumed to be zero unless otherwise noted. "LAB" ~ local area background.

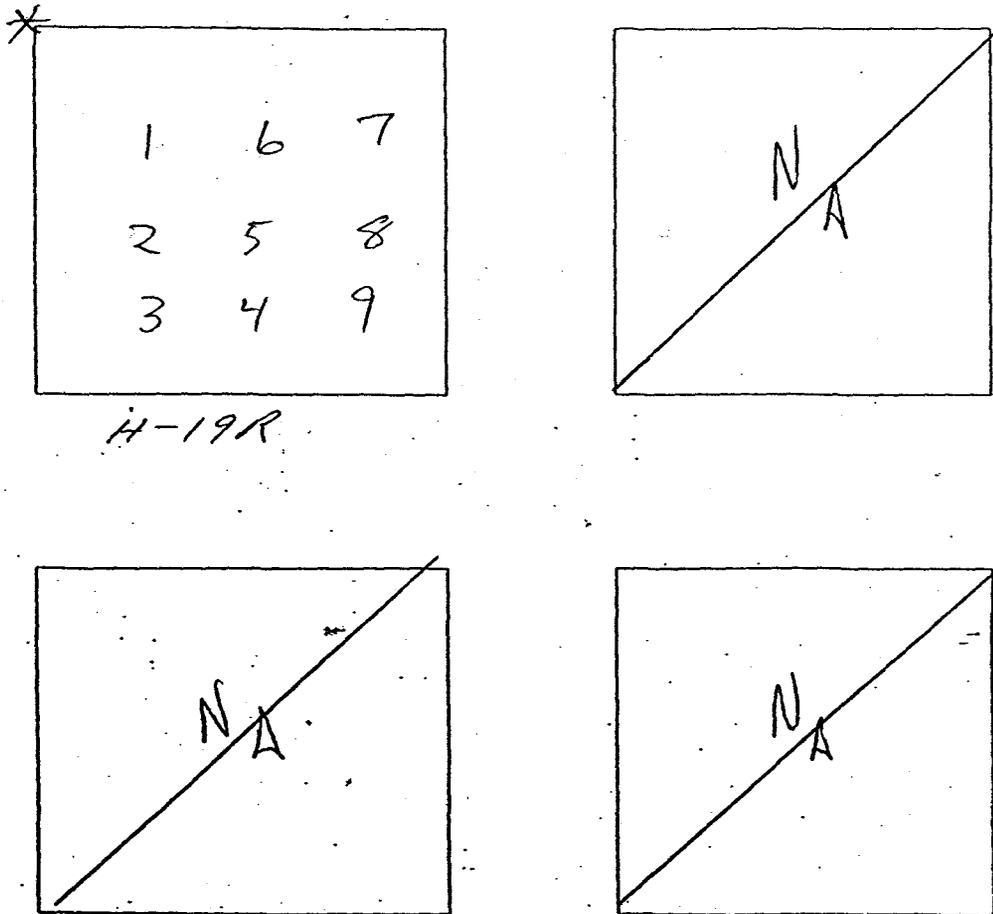
156

## Final Survey NE Electra Scan & Investigation Survey Map

Survey Area: <i>NA</i>	Survey Unit: <i>EXTERIOR</i>	Building: <i>T 883 C</i>
Survey Unit Description: <i>ROOF 9 PT INVESTIGATION SCAN</i>		
RCT Initials/Date: <i>PC 3-3-00</i>	RCT Initials/Date: <i>N/A</i>	RCT Initials/Date: <i>N/A</i>

Refer to the Final Survey NE Electra Scan & Investigation Survey Form for instrumentation, surveyor & approval information.

Legend: "R"- Roof, "W" - West Wall, "S" - South Wall, "E" - East Wall, "N" - North Wall  
"C" - Ceiling, "F" - Floor



\* Designates corner closest to A-1 point of reference

**Results/Comments:**

Electra alpha scans were performed at the locations detailed on the survey map(s). All required accessible areas were scanned. All initial scan results were <25 dpm/100cm<sup>2</sup>, unless noted on the survey form.

Electra beta scans were performed in required accessible areas. Initial scan results indicated no detectable activity above background unless noted on the survey form.

157

## Final Survey NE Electra Scan & Investigation Survey Form

Survey Area: <span style="font-size: 1.2em;">NA</span>				Survey Unit: <span style="font-size: 1.2em;">EXTERIOR</span>			Building: <span style="font-size: 1.2em;">T 883 B</span>		
Survey Unit Description: <span style="font-size: 1.2em;">ROOF 9 PT INVESTIGATION SCAN</span>									
Loc. ID #	Electra DP-6 Beta				Electra DP-6 Alpha				
	RCT ID #	Inst. ID #	Elevated Audible observed? "Y" or "N"	60-sec PAT (dpm/100cm <sup>2</sup> )	RCT ID #	Inst. ID #	4-sec Audible observed? "Y" or "N"	30-sec Static (gcpm)	90-sec PAT (dpm/100cm <sup>2</sup> )
H-19R1					1	7			23.3
H-19R2					1	7			27.3
H-19R3					1	7			17.3
H-19R4					1	7			20.0
H-19R5			N		1	7		A	27.3
H-19R6			A		1	7			17.3
H-19R7					1	7			27.3
H-19R8					1	7			17.3
H-19R9					1	7			20.0
								1m <sup>2</sup> Avg →	21.9
<span style="font-size: 2em;">N/A</span>									

158

Oasis Device # 2

RFETS; Golden, CO

Apr 18, 2000 14:46:41

Sample ID: 883B coupon 00A1148-010.001 Type: Unknown

Batch ID: unknown
Acquisition Start: April 18, 2000 13:06:25
Analysis Date: April 18, 2000 14:46:35
Procedure: polonium210 samples
Device: Oasis:02:03
Analysis Method: ROI Analysis
Spectrum File: 00000284.OXS LiveTime: 6,005.32

Calibrations:

Energy = 1.604E+02 +2.389E+00 \* Chn Coeff. of Correlation: -0.998
Calibration Date: April 04, 2000 15:34:53 Std: 2:3 energy cal
Shape not Calibrated.
Efficiency = 3.357E-01 ± 4.547E-03
Calibration Date: April 05, 2000 09:20:34 Std: AS 4188

External Recovery No Ext.Recovery

Original Sample Amount: 1.000 ± 0.000 samp
Aliquot Amount: 1.000 ± 0.000 samp

ROI DATA

Table with 6 columns: ROI ID #, ASSOCIATED NUCLIDE, EXTENTS START, END, PK EN (keV), FWHM (keV). Rows include Po218, Po214, Po212, and Po210.

ROI ANALYSIS RESULTS

Table with 6 columns: ROI ID, NET COUNTS, BKG/INTERF, CPM, ROI TYPE. Rows include Po218, Po214, Po212, and Po210.

NUCLIDE ANALYSIS RESULTS

Table with 5 columns: ROI ID, ASSOC NUC, EMM. PROB, ACTIVITY (dpm/samp), MDA (dpm). Rows include Po218, Po214, Po212, and Po210.

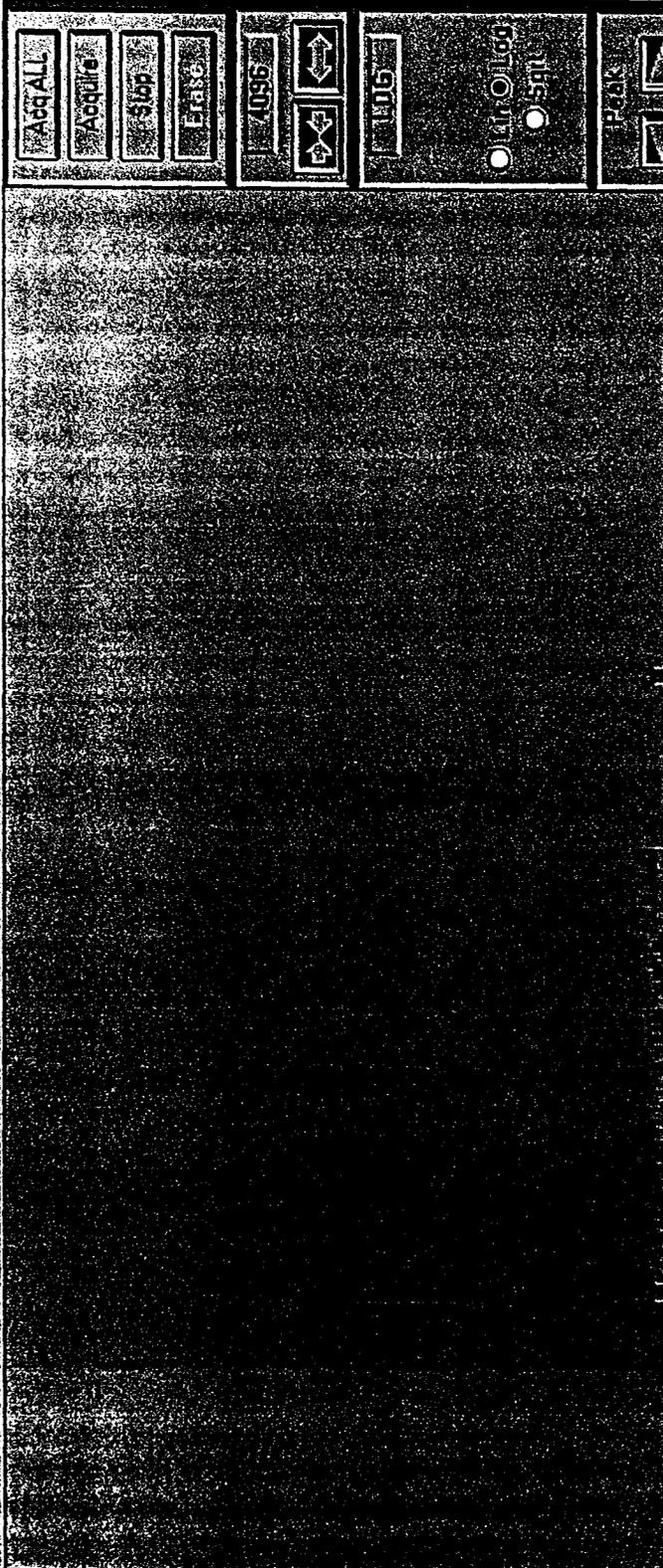
Activity reported as of April 18, 2000 13:06:25

ANALYSIS REVIEWED BY: [Signature]

APPROVED BY: [Signature] 5/8/00

159

Library: **OAS STD.MDB** Nuclide: **Am241** 5:Static: **00000284.OXS**



4096

8838 coupon 00A1148-010.001

Message Window

4096

Peak: 5.915291

AcqAll Acquire Stop Erase

4096

4096

Peak

Preset ROI's Controls Display Info 4096500

4096

Peak: 5.915291

1670

Oasis Device # 2

RFETS; Golden, CO

Apr 24, 2000 09:54:10

Sample ID: 883B coupon 00A1148-011.001 Type: Unknown

Batch ID: unknown
Acquisition Start: April 18, 2000 13:06:24
Analysis Date: April 24, 2000 09:54:04
Procedure: polonium210 samples
Device: Oasis:02:02
Analysis Method: ROI Analysis
Spectrum File: 00000283.OXS LiveTime: 10,800.00

Calibrations:

Energy = 1.436E+01 +2.491E+00 \* Chn Coeff. of Correlation: -0.998
Calibration Date: April 04, 2000 15:25:18 Std: 2:2 energy calibration
Shape not Calibrated.
Efficiency = 3.436E-01 ± 4.641E-03
Calibration Date: April 05, 2000 09:05:57 Std: AS 4188

External Recovery No Ext.Recovery

Original Sample Amount: 1.000 ± 0.000 samp
Aliquot Amount: 1.000 ± 0.000 samp

ROI DATA

Table with 6 columns: ROI ID #, ASSOCIATED NUCLIDE, EXTENTS START END, PK EN (keV), FWHM (keV). Rows include Po218, Po214, Po212, and Po210.

ROI ANALYSIS RESULTS

Table with 6 columns: ROI ID, NET COUNTS, BKG/INTERF, CPM, ROI TYPE. Rows include Po218, Po214, Po212, and Po210.

NUCLIDE ANALYSIS RESULTS

Table with 5 columns: ROI ID, ASSOC NUC, EMM. PROB, ACTIVITY (dpm/samp), MDA (dpm). Rows include Po218, Po214, Po212, and Po210.

Activity reported as of April 18, 2000 13:06:24

ANALYSIS REVIEWED BY: [Signature]

APPROVED BY: C. J. Bianconi 5/8/00

161



Sample ID: 00A1148-012.001 Type: Unknown

Batch ID: unknowns  
Acquisition Start: May 03, 2000 16:57:27  
Analysis Date: May 04, 2000 07:06:32  
Procedure: Po210 count  
Device: Oasis:01:03  
Analysis Method: ROI Analysis  
Spectrum File: 00000538.OXS LiveTime: 28,800.00

Calibrations:

Energy = 6.596E+01 +2.779E+00 \* Chn Coeff. of Correlation: -0.998  
Calibration Date: April 24, 2000 13:03:27 Std: 1:3 Energy Cal  
Shape not Calibrated.  
Efficiency = 3.120E-01 ± 4.098E-03  
Calibration Date: April 24, 2000 10:05:48 Std: TS4189

External Recovery No Ext.Recovery

Original Sample Amount:

1.000 ± 0.000 samp

Aliquot Amount:

1.000 ± 0.000 samp

ROI DATA

ROI ID #	ASSOCIATED NUCLIDE	EXTENTS		PK EN (keV)	FWHM (keV)
		START	END		
1 Po218	Po218	5550.0	6104.5	6055.4	2.8
2 Po214	Po214	6588.5	7874.7	7231.0	2.8
3 Po212	Po212	8393.8	8808.6	8601.2	2.8
4 Po210	Po210	2180.3	5343.3	5179.9	3.9

ROI ANALYSIS RESULTS

ROI ID	NET COUNTS	BKG/INTERF	CPM	ROI TYPE
Po218	18.7 ± 4.6	1.33	0.039 ± 9.52E-03	Unknown
Po214	-1.7 ± 1.7	2.67	±3.47E-03 ± 3.47E-03	Unknown
Po212	9.0 ± 3.0	0.00	0.019 ± 6.25E-03	Unknown
Po210	836.0 ± 29.4	18.00	1.742 ± 0.061	Unknown

NUCLIDE ANALYSIS RESULTS

ROI ID	ASSOC NUC	EMM. PROB	ACTIVITY (dpm/samp)	MDA (dpm)
Po218	Po218	1.000	0.125 ± 0.031	5.08E-02
Po214	Po214	1.000	-1.11E-02 ± 0.011	6.44E-02
Po212	Po212	1.000	0.060 ± 0.020	1.81E-02
Po210	Po210	1.000	5.582 ± 0.210	1.38E-01

Activity reported as of May 03, 2000 16:57:27

ANALYSIS REVIEWED BY:

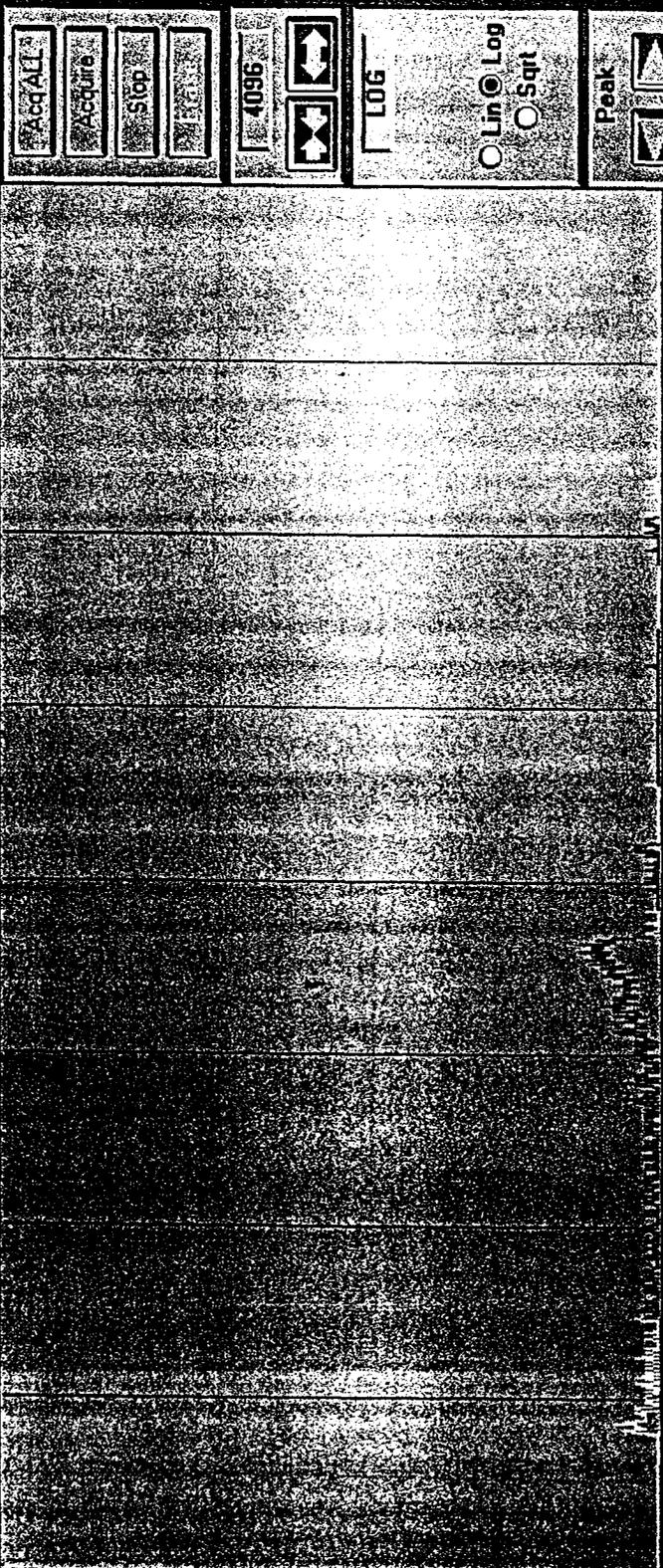
*[Signature]*

APPROVED BY:

*CJ Bianconi 5/8/00*

*Spike value  
22.892 dpm  
PV 239*

*113*



Acq ALL

Acquire

Stop

4096

LOG

Lin  Log

Sqrt

Peak

Presets

RDI's

Controls

Display

Info

Aux Disp

00A1148-012.001

System Date  
17 JUN 2000 07:12:30

Message Window

Channel: 179

Elapsed Real Time: 2890.05

Elapsed Live Time: 2880.00

Dead Time: 0.0

Energy: 4933.2

Count: 3

RDI: 854

Integral: 5.179.88

Peak: 3.94

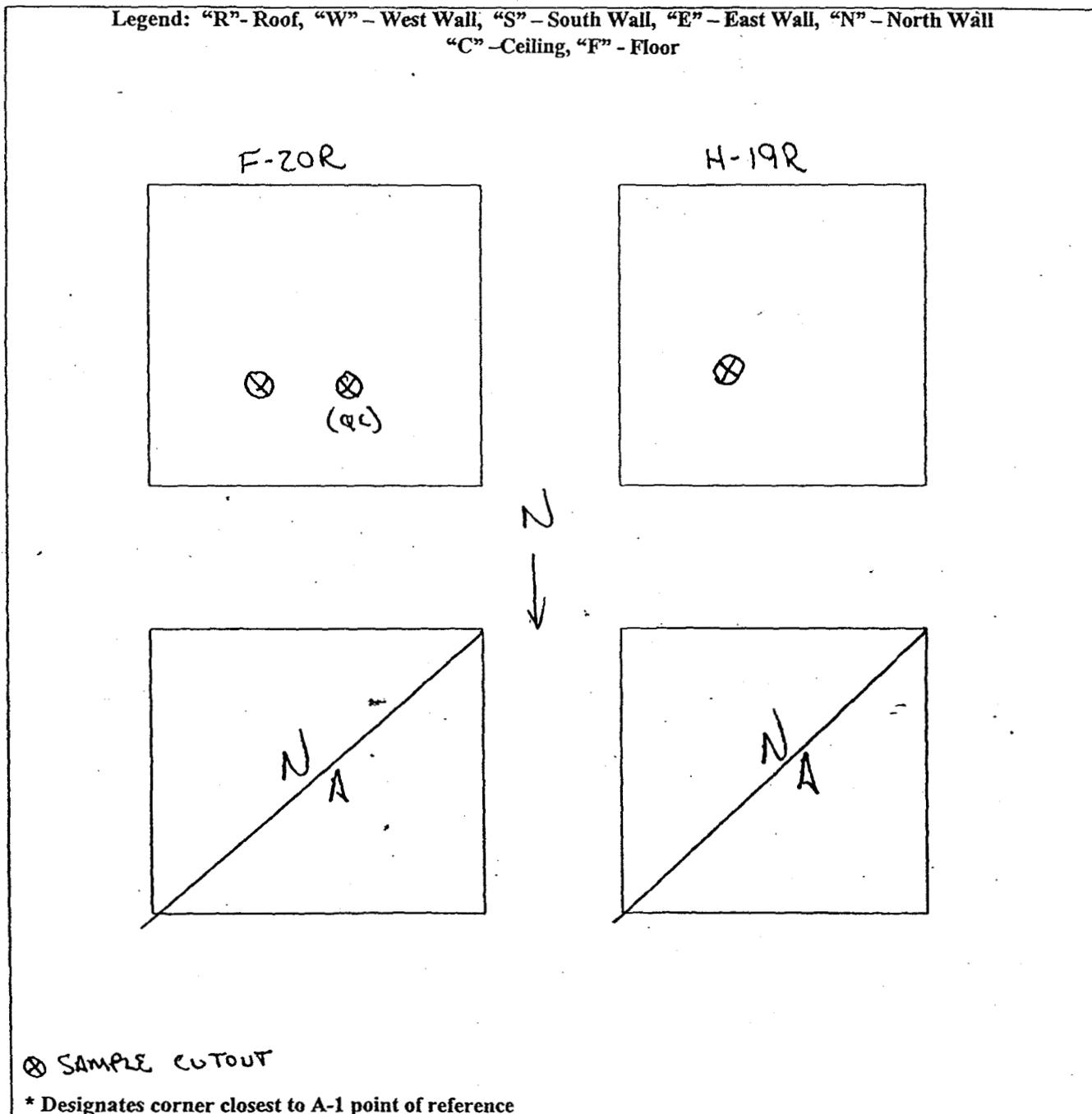
FWHM: 3.94

1604

## Final Survey NE Electra Scan & Investigation Survey Map

Survey Area: <b>NA</b>	Survey Unit: <b>EXTERIOR</b>	Building: <b>T883B</b>
Survey Unit Description: <b>Roof Sample Location</b>		
RCT Initials/Date: <b>na 3/28/00</b>	RCT Initials/Date: <b>NA</b>	RCT Initials/Date: <b>NA</b>

Refer to the Final Survey NE Electra Scan & Investigation Survey Form for instrumentation, surveyor & approval information.



**Results/Comments:**

Electra alpha scans were performed at the locations detailed on the survey map(s). All required accessible areas were scanned. All initial scan results were <225 dpm/100cm<sup>2</sup>, unless noted on the survey form.

Electra beta scans were performed in required accessible areas. Initial scan results indicated no detectable activity above background unless noted on the survey form.

1165



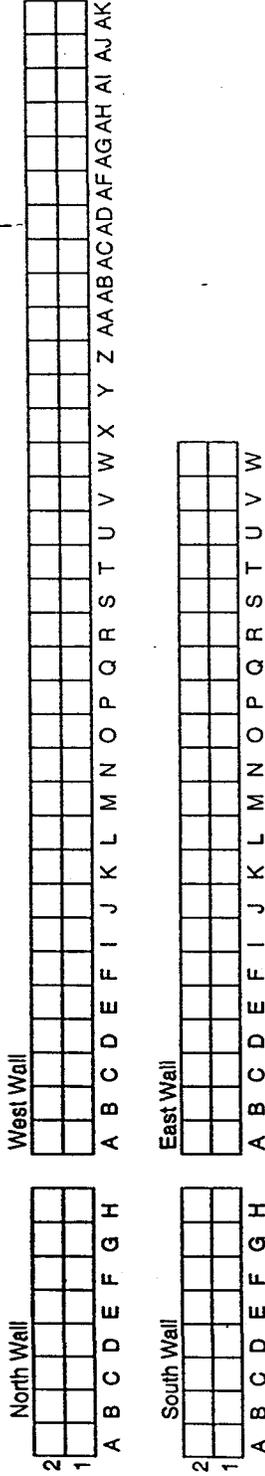


T883B – Radiological Survey Data for Interior Survey Unit

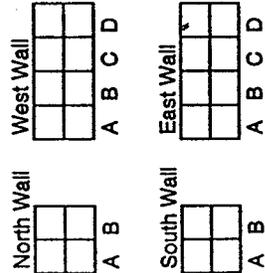
- Map of Locations
  - Scans
  - Surveys
- Removable and Total Survey Results - Detail

68

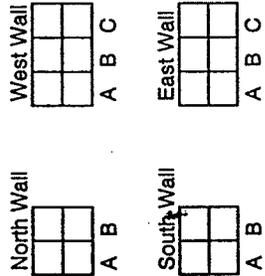
T883B Main Area



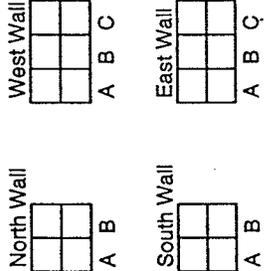
Southwest Office



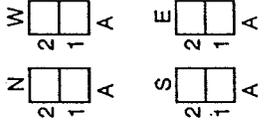
West Middle Office



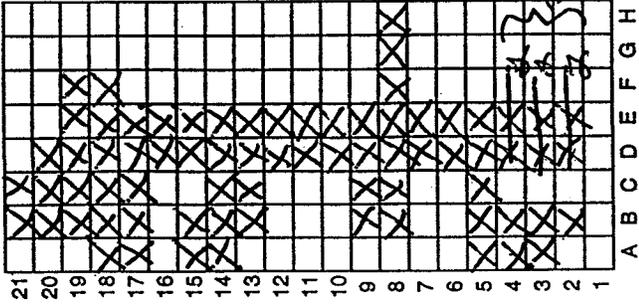
Northwest Office



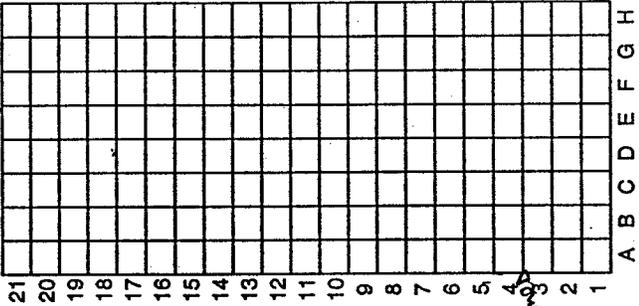
Bathroom



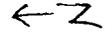
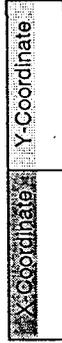
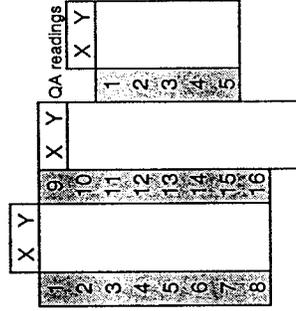
T883B Floor



T883B Ceiling



- = one square meter
- = 1.5"/sec scan
- = direct & smear
- = additional QA survey

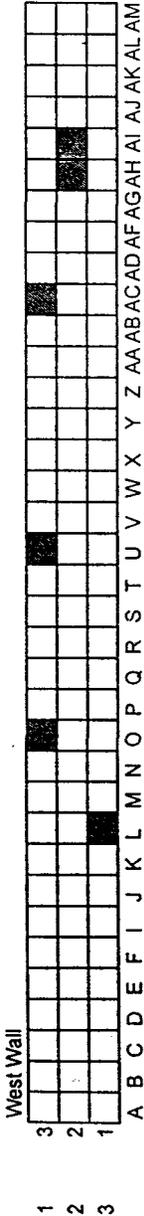


NOTE: SCAN AREA DETERMINED UPON HIGH TRAFFIC AREAS.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43

109 C

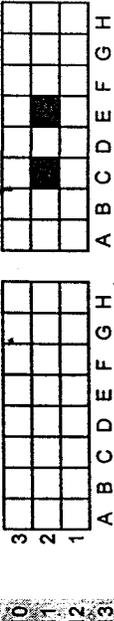
**T883B Main Area**



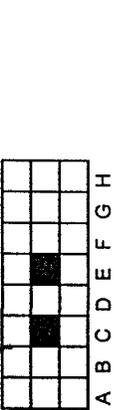
**East Wall**



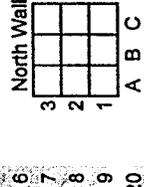
**South Wall**



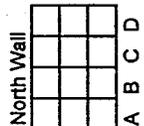
**North Wall**



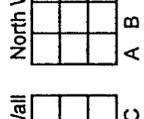
**Southwest Office**



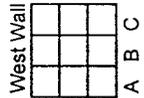
**West Wall**



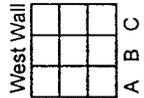
**North Wall**



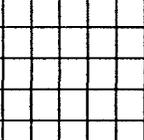
**East Wall**



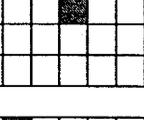
**Southwest Office**



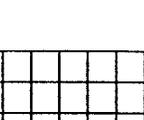
**West Middle Office**



**North Wall**



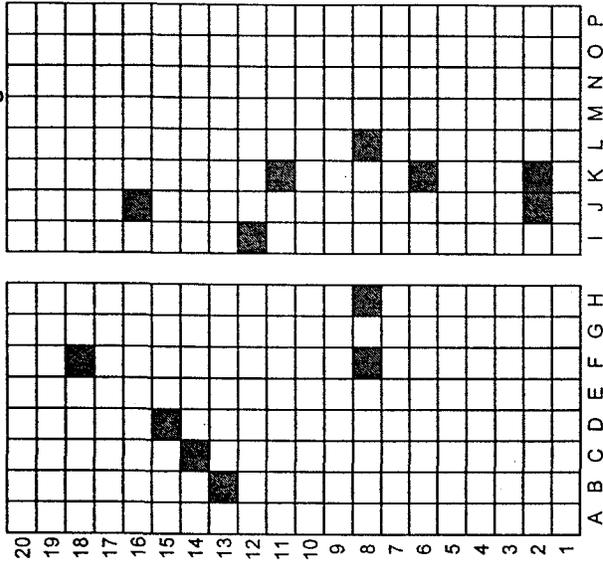
**South Wall**



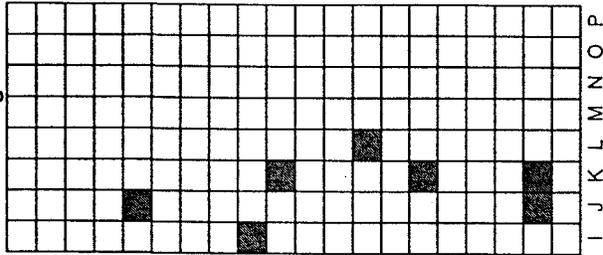
**Northwest Office**



**T883B Floor**



**T883B Ceiling**



Coordinate	Coordinate
40	22

□ = one square meter  
 ■ = direct & swipe



Total Surface Area = 662 m<sup>2</sup>

10% Scan Surface Area = 67 m<sup>2</sup>

X	Y	X	Y	X	Y
16	5	31	2	38	8
2	10	3	12	40	16
3	14	23	13	18	4
4	31	9	14	30	10
5	37	12	15	33	6
6	29	11	16	32	2
7	12	11	17	19	1
8	33	16	18	13	1
9	39	13	19	6	18
10	39	18	20	39	22

112/242 EDM

3-292

170



Survey Area: NA	Survey Unit: INTERIOR	Building: T883B
Survey Unit Description FLOOR, WALLS, CEILINGS		

### Total Surface Activity Data Sheet

Sample location	RCT ID #	Inst ID #		Survey count time (sec)		LAB (cpm)		Gross Count (gcpm)		Net counts (cpm)		Net Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β	α	β		
MAIN AREA				90	90								
D-15F	1	7	7	90	90	0.0	315	6.7	359	6.7	44	30.0	145
C-14F	1	7	7	90	90	0.7	352	2.7	371	2.0	19	8.9	63
B-13F	1	7	7	90	90	3.3	359	2.7	410	-0.6	51	-2.7	168
F-8F	1	7	7	90	90	2.0	329	1.3	349	-0.7	20	-3.1	66
F-18F	1	7	7	90	90	0.7	397	2.7	401	2.0	4	8.9	13
H-8F	1	7	7	90	90	1.3	353	5.3	345	4.0	-8	17.9	-26
L-1W	1	7	7	90	90	2.0	337	1.3	266	-0.7	-71	-3.1	-234
O-2W	1	7	7	90	90	1.3	357	4.0	261	2.7	-96	12.1	-316
U-2W	1	7	7	90	90	2.7	361	6.7	259	4.0	-102	17.9	-336
AC-2W	1	7	7	90	90	2.7	372	4.0	283	1.3	-89	5.8	-293
AH-2W	1	7	7	90	90	1.3	375	3.3	319	2.0	-56	8.9	-184
I-2W	1	7	7	90	90	2.0	391	2.0	391	0.0	0	0.0	0
C-2N	1	7	7	90	90	4.0	353	5.3	291	1.3	-62	5.8	-204
E-2N	1	7	7	90	90	2.0	393	5.3	292	3.3	-101	14.8	<del>553</del>
L-2E	1	7	7	90	90	1.3	346	7.3	288	6.0	-58	26.8	-191
O-1E	1	7	7	90	90	1.3	373	8.7	307	7.4	-66	33.1	-217
R-2F	1	7	7	90	90	1.3	329	6.7	289	5.4	-40	24.2	-132
T-2E	1	7	7	90	90	2.0	367	8.7	289	6.7	-78	30.0	-257
W-2E	1	7	7	90	90	0.7	379	3.3	271	2.6	-108	11.6	-356
I-12C	1	7	7	90	90	0.0	374	6.0	456	6.0	82	26.8	270
S-2C	1	7	7	90	90	1.3	382	6.7	462	5.4	80	24.2	264
S-16C	1	7	7	90	90	2.7	360	5.3	483	2.6	123	11.6	405
K-2C	1	7	7	90	90	2.0	365	5.3	399	3.3	34	14.8	112
K-6C	1	7	7	90	90	1.3	392	7.3	412	6.0	20	26.8	66
K-11C	1	7	7	90	90	0.7	366	6.0	436	5.3	70	23.7	231
L-8C	1	7	7	90	90	1.3	361	5.3	444	4.0	83	17.9	273
NA				90	90								
F8FQC	1	8	8	90	90	2.0	421	0.7	453	-1.3	32	-6.0	104
D15FQC	1	8	8	90	90	0.0	343	3.3	406	3.3	63	15.3	206
F8FQC	1	8	8	90	90	0.7	419	0.7	399	0.0	-20	0.0	-65
A8FQC	1	8	8	90	90	0.7	381	2.0	463	1.3	82	6.0	268
22EQC	1	8	8	90	90	2.7	304	0.7	363	-2.0	59	-9.3	192

Note: QC measurements are to be collected by a different technician than the original survey. Mark the QC location number in the "Sample Location" column. Material background is assumed to be zero unless otherwise noted. "LAB" - local area background.

TD



D-3

T883B – Asbestos Inspector's Report

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T883B

ASBESTOS INSPECTOR'S REPORT

I, the undersigned Certified Asbestos Inspector, certification # 1387  
in the state of Colorado, attest to the asbestos inspection and sampling results as  
described below, for the following facility (at RFETS): Trailer 883B.

General Facility Location: north-northeast of Building 881.

**INSPECTION RESULTS**

Trailer 883B contains friable ceiling tile. Fiberglass insulation was found throughout the walls. The following table summarizes the results of the samples collected and the percent and type of asbestos detected:

**SAMPLE RESULTS**

Sample Number	Material Sampled & Location	Analytical Results
T883B-03012000-05-003	Miscellaneous material: 2' x 4' white ceiling tile. Coordinate C2C	None Detected
T883B-03012000-05-004	Miscellaneous material: 2' x 4' white ceiling tile. Coordinate C6C	None Detected

Andre Gonzalez  
INSPECTOR'S NAME

[Signature]  
SIGNATURE

7/6/00  
DATE

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D-4

T883B - D&D Facility Characterization Interview Checklist

Type 1 Facility Checklist

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# D&D Facility Characterization Interview Checklist

ID No.: T-883B

Date: 06/07/99

Page 1 of 2

Groups B & C Series

Check List for - Title: D&D Facility Characterization - Interviews

- CRITERIA:     Λ *D&D Characterization Protocol*, RFETS MAN-077-DDCP, Rev. 0  
                Λ *Facility Disposition Program Manual*, RFETS MAN-076-FDPM  
                Λ RFETS Radiological Safety Practices, January 12, 1998

Facility Name & Type (1, 2, or 3)   T-883B Group B Type 1 Facility, Trailer Office Building

Personnel Interviewed (Name & Title/Function) Douglas C. Fisher, Senior Engineer, SSOC Residue Stabilization, P-212-4895, Building 750, Room 132C, SSOC Residue Stabilization

-- Y/N --

Does a current WSRIC exist for the facility? ..... N

If so, are there exceptions to the WSRIC as written?.....No WSRIC, No Exceptions

COMMENTS (incl. WSRIC contacts)

WSRIC Contact is James M. Schoen who is in charge of the WSRIC Reports, T130J, X3579, C-83.

Are rad surveys available that indicate current status of the facility? ..... N

Are historical rad surveys available that indicate historical status, or evolution, of the facility? ..... N\*

COMMENT N\* According to Mark R. Richards, X5148 of SSOC any

Historical data, which is probably at the Federal Center, would not be

Adequate for unrestricted release. New monitor surveys would have to be taken.

Is an HRR available for the facility?..... N

Do any other reports exist beyond the HRR (e.g., spill reports, reportable incidents, etc.) that further

Characterize the facility relative to chemical &/or radiological contamination? ..... Y\*\*

Are engineering drawings (esp. "as-builts") available?..... N

Are any nonconformances or issues with the facility status currently being tracked in PATS? ..... N

If so, what are the issues (note in Comments, below)?

COMMENTS N\* Radiological surveys may have been done, but the old data is not available.

This unit will have to be resurveyed to meet present standards for unrestricted release. Y\*\* The T-883B

Trailer is not sitting on IHSS or PAC area land, as per, Nick Demos, ER Characterization/HRR Manager, X4605.

Therefore, the T-883B Office Trailer does not have CERCLA concerns. Engineering drawings, as-builts, do not

exist for the T-883A Facility. There are no PATS items outstanding for this facility. The Plant quit using lead

based paints for office buildings in 1989, if this office facility was painted prior to 1989, lead based paints

may have been used.

Have any types of chemical characterization, incl. Asbestos, been performed recently?..... N\*

If so, what types of characterization were performed (note in Comments, below)?

COMMENTS N\* No asbestos characterization data exists, according to

Kevin Sheehan, X7250, T-452D, Room C-1. The asbestos data reports are located in

Cubicle C-13, of T-452D and the reports are under the control of Kevin Sheehan.

Interviewed by: J. R. Sheets |  | 06/03/99

Print Name

Signature

Interview Date



# D&D Facility Characterization Interview Checklist

ID No.: T-883B  
Date: 06/07/99  
Page 2 of 2  
Groups B & C Series

What timeframe did the interviewee work in the facility? From the Fall of 1995 until August 1997 (for approximately 2 years).

Has the building configuration changed since you worked in the building? If so, in what way? Yes, the facility had up to a maximum 15 people during the time that SSOC Residue Stabilization occupied the facility. Yes, all the office cubicles have been removed. T-883B has remained vacant since approximately August 1997.

What types of equipment were in the building during the interviewee's time there? Approximately 15 computers, approximately 12 printers, a fax machine, a photocopier machine, other office equipment such as desks, 15 chairs, 3 tables, bookcases, 8 file cabinets, etc. There was a conference room this in this facility.

Where was the equipment located? (specific rooms/areas) In the conference room, the hard wall offices, the office cubicles. The prior occupants (prior to March 1995) an Information Resource Management group that did software support for AutoCad and software support for CAD/CAM for Building 460 Machining Operations. The IR Management group had approximately 12 employees in T-883B from 1991 until March 1995. Computers, printers, fax machine, photocopier, and office equipment were in the hard wall offices and office cubicles during this 1991 to March 1995 time frame.

Were any radioactive materials or metals handled in the building? If so, what types? No, none

Which equipment handled radioactive material? N/A

Were any chemicals handled in the building? If so, what types? N/A

Did any spills or uncontrolled releases of radioactive materials or chemicals occur while you were working in the facility? No, none.

Were these spills/releases cleaned-up? How were they cleaned-up? N/A

Where did these spills/releases occur? N/A

Interviewed by: J. R. Sheets / JR Sheets / 06/03/99  
Print Name Signature Interview Date

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## Type 1 Facility Checklist

TYPE 1 FACILITY	BUILDING T-883B
CURRENT LANDLORD:	RFCSS
DATE OF COMPLETION:	02/29/00

ITEM	YES	NO
Does the facility contain radiological postings?		X
Does the facility contain chemical postings?		X
Are there any installed hazards?		X
Do the historical surveys (radiological and chemical) indicate the facility is clean?	X	
Are there RCRA units within the facility		X
Is there a history of the building available?	X	
Is there any equipment/furniture left in the facility?		X
Is there a future mission identified for the facility?		X
Will the facility be left unsecured after it is vacated?		X

If any answer to any of the above questions is "Yes", complete the following questions and complete the "graded" PEP in accordance with Chapter 2.

*Note: An answer of "Yes" to any question, specifically one dealing with hazards, may indicate the facility is not a Type 1 Facility. Check with the D&D Programs office.*

If the answer to all question is "No" complete the "graded" PEP in accordance with Chapter 2.

1. List the Radiological Hazards, location, and quantity:

Based on the historical data found and interviews taken there are no hazards in this trailer.

2. List the Chemical Hazards, location, and quantity:

None. Based on historical data and interviews taken no asbestos data exists and the paint may be lead based.

3. List the Physical Hazards:

NONE

T439A – Radiological Survey Data for Exterior Survey Unit

- Summary of Radiological Survey/Sample Results
- Map of Locations
  - Scans
  - Surveys
- Removable and Total Survey Results – Detail

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## Radiological Survey/Sample Results for T439A

### Total Surface Activity Measurements dpm/100 cm<sup>2</sup>

	Alpha	Beta
	# Required	# Obtained
<b>Interior</b>	28	28
MIN	-21	-406
MAX	21	849
MEAN	4.1	-89.1
STD DEV	9.9	264.1
<b>Exterior</b>	28	28
MIN	-24	-346
MAX	53	685
MEAN	17.1	122.5
STD DEV	18.4	286.7
DCGL <sub>w</sub>	100	5000

### Removable Activity Measurements dpm/100 cm<sup>2</sup>

	Alpha	Beta
	# Required	# Obtained
<b>Interior</b>	28	28
MIN	-1.5	-22
MAX	4.8	62
MEAN	-0.3	13.7
STD DEV	1.4	24.6
<b>Exterior</b>	28	28
MIN	-1.5	-55.6
MAX	3.3	30.0
MEAN	0.0	-0.6
STD DEV	1.2	22.7
DCGL <sub>w</sub>	20	1000

### Media Sample Activity

# Required	# Obtained
N/A	N/A

<u>Contaminant</u>	<u>Y/N</u>	<u>Det. Sens. dpm/100 cm<sup>2</sup></u>
U present	N/A	N/A
Pu present	N/A	N/A

### Total Po-210 Results dpm/100 cm<sup>2</sup>

MIN	N/A
MAX	N/A
MEAN	N/A
STD DEV	N/A

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*Scan Locations:*

*N/A*

T439A Exterior

Roof

3															
2															
1															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O

South Wall

2															
1															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O

North Wall

2															
1															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O

West Wall

2															
1															
	A	B	C												

East Wall

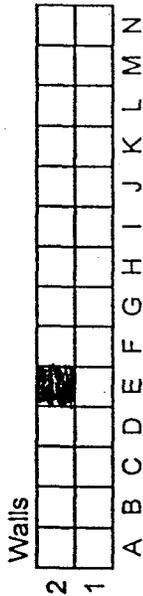
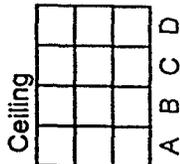
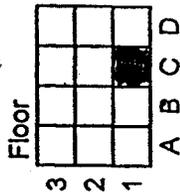
2															
1															
	A	B	C												



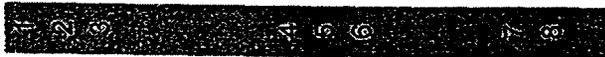
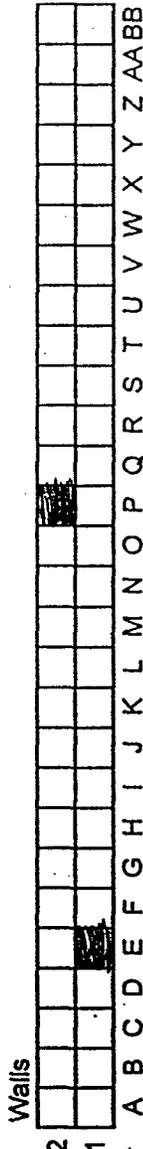
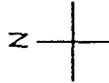
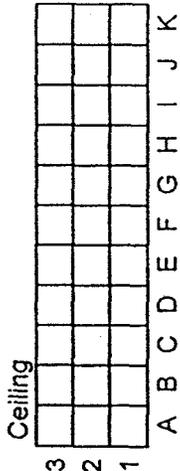
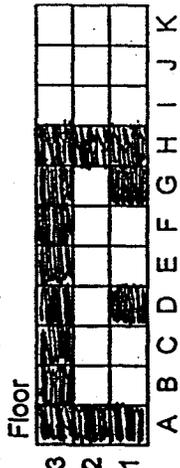
*182*

SCAN LOCATIONS:

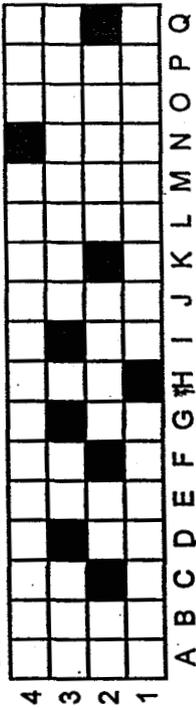
T439A Room 1



T439A Room 2



T439A Exterior Roof



= one square meter  
 = direct & swipe

X Coordinate	Coordinate
5	2

X	Y
11	3
7	2
8	4
14	1
9	2
4	2
6	3
3	3
17	3

Roof Surveys randomly chosen with original  
 number of survey points (9 survey points)

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*MAA* 2/24/00

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Survey Area: N/A	Survey Unit: EXTERIOR	Building: T439A
Survey Unit Description: Roof + Walls of Trance T439A		

### Total Surface Activity Data Sheet

Sample location	RCT ID #	Inst ID #		Survey count time (sec)		LAB (cpm)		Gross Count (gcpm)		Net counts (cpm)		Net Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β	α	β	α	β
B-2S	3	7	7	90	90	7.3	436	9.3	426	2	50	9	165
C-2S	3	7	7	90	90	8.7	422	7.3	489	-1.4	67	-6	221
D-1S	3	7	7	90	90	9.3	391	387 <sup>1.3</sup>	387	-4.6	-4	-21	-13
E-1S	1	9	9	90	90	6.0	550	7.3	383	1.3	33	7	111
I-2S	1	9	9	90	90	4.7	398	8.7	395	4.0	-3	20	-10
L-2S	1	9	9	90	90	9.3	353	12.0	389	2.7	36	180 <sup>14</sup>	121
M-1S	1	9	9	90	90	4.0	368	9.3	313	5.3	5	28 <sup>27</sup>	17
M-2S	1	9	9	90	90	9.3	380	12.0	416	2.7	36	14 <sup>14</sup> 180 <sup>14</sup>	121
B-2W	3	7	7	90	90	9.3	433	16.0	419	6.7	-14	30	-46
C-2W	3	7	7	90	90	0.7	379	4.0	423	3.3	44	15	145
B-1W	3	7	7	90	90	8.0	349	5.3	363	-2.7	14	-12	46
C-1W	3	7	7	90	90	4.7	378	8.0	353	3.3	-25	15	-82
I-2W	2	8	8	90	90	2.0	401	6.0	352	+4.0	-49	+19	-164
G-1W	3	7	7	90	90	10.0	322	4.7	420	-5.3	98	-24	323
G-2W	2	8	8	90	90	1.3	349	4.0	303	3.3	-96	15	3.22
A-2W	2	8	8	90	90	1.3	409	5.3	346	4.0	-63	19	-211
K-2W	2	8	8	90	90	2.0	414	6.7	316	4.7	-98	+22	-329
L-2W	2	8	8	90	90	1.3	401	4.7	352	3.4	-49	16	-164
M-1W	3	7	7	90	90	5.3	421	4.7	316	-0.6	-105	-3	-346
C-2R	4	11	11	90	90	2.0	526	9.3	583	7.3	57	34	190
D-3R	4	11	11	90	90	2.0	368	11.3	556	9.3	188	43	628
F-2R	4	11	11	90	90	2.7	399	11.3	579	8.6	180	40	601
G-3R	4	11	11	90	90	2.0	392	8.7	495	6.7	103	31	344
A-1R	4	11	11	90	90	2.7	352	14.0	557	11.3	205	53	685
I-3R	4	11	11	90	90	3.3	445	8.7	579	5.4	74	25	247
K-2R	4	11	11	90	90	5.3	427	12.0	552	6.7	125	51	418
N-4R	4	11	11	90	90	4.0	491	10.0	545	6.0	54	28	180
Q-2R	4	11	11	90	90	0.7	392	8.7	558	8.0	166	27	554
M-15QC	8	10	10	90	90	0.7	341	6.0	317	5.3	-24	25	-78
B-1WQC	8	10	10	90	90	3.3	290	8.7	317	5.4	27	25	88
B-2WQC	8	10	10	90	90	2.0	375	1.3	340	-0.7	-35	-3	-114
A-1RQC	9	11	11	90	90	2.0	372	2.0	380	0	8	0	27
H-1QC	9	11	11	90	90	4.7	504	4.0	485	-0.7	-9	-3	-30

Note: QC measurements are to be collected by a different technician than the original survey. Mark the QC location number in the "Sample Location" column. Material background is assumed to be zero unless otherwise noted. "LAB" -- local area background.

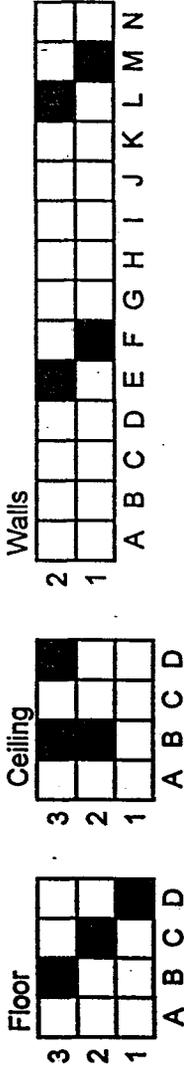
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T439A -- Radiological Survey Data for Interior Survey Unit

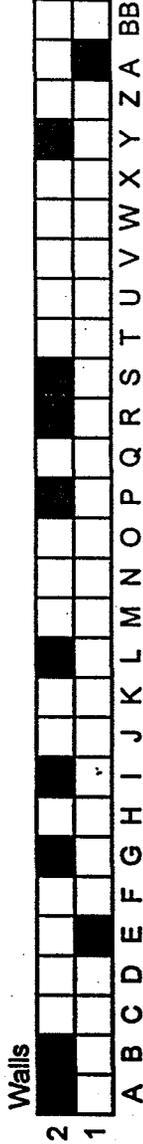
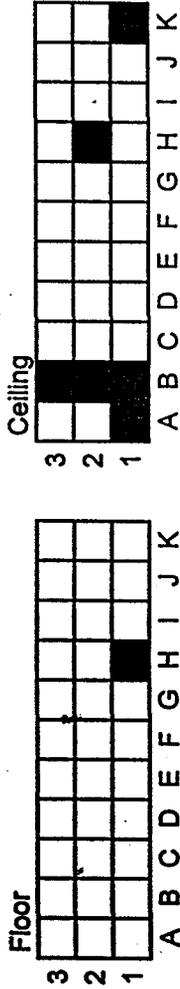
- Map of Locations
  - Scans
  - Surveys
- Removable and Total Survey Results - Detail

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**T439A Room 1**



**T439A Room 2**



15	Coordinate
	5

☐ = one square meter

■ = direct & swipe

Total Surface Area = 174 m<sup>2</sup>

10% Scan Surface Area = 18 m<sup>2</sup>

5	8	21	5	7	7
17	1	9	7	25	2
2	1	8	1	8	2
18	7	8	6	2	7
14	6	15	6	3	2
15	5	4	3	26	1
12	7	25	7	27	1
19	7	24	6	28	10
15	4	18	2		
27	8	16	7		

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RO

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Survey Area: N/A Survey Unit: INTERIOR Building: T439A  
 Survey Unit Description: FLOORS, WALLS, + CEILINGS OF TRAILER T439A

### Total Surface Activity Data Sheet

Sample location	RCT ID #	Inst ID #		Survey count time (sec)		LAB (cpm)		Gross Count (gcpm)		Net counts (cpm)		Net Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β	α	β		
<u>ROOM 1</u>				90	90								
<u>B-3F</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>2.0</u>	<u>402</u>	<u>2.0</u>	<u>463</u>	<u>0</u>	<u>61</u>	<u>0</u>	<u>205</u>
<u>C-2F</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>5.3</u>	<u>429</u>	<u>1.3</u>	<u>509</u>	<u>-4.0</u>	<u>80</u>	<u>-19</u>	<u>268</u>
<u>D-1F</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>0.7</u>	<u>443</u>	<u>5.3</u>	<u>576</u>	<u>4.6</u>	<u>133</u>	<u>21</u>	<u>446</u>
<u>B-2C</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>2.7</u>	<u>424</u>	<u>1.3</u>	<u>383</u>	<u>-1.4</u>	<u>-41</u>	<u>-6</u>	<u>-138</u>
<u>B-3C</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>2.7</u>	<u>411</u>	<u>2.0</u>	<u>409</u>	<u>-0.7</u>	<u>-2</u>	<u>-3</u>	<u>-7</u>
<u>D-3C</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>5.3</u>	<u>421</u>	<u>0.7</u>	<u>408</u>	<u>-4.6</u>	<u>-13</u>	<u>-21</u>	<u>-44</u>
<u>E-2W</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>3.3</u>	<u>411</u>	<u>5.3</u>	<u>325</u>	<u>2.0</u>	<u>-86</u>	<u>9</u>	<u>-288</u>
<u>F-1W</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>2.7</u>	<u>395</u>	<u>2.0</u>	<u>375</u>	<u>-0.7</u>	<u>-20</u>	<u>-3</u>	<u>-67</u>
<u>L-2W</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>2.0</u>	<u>433</u>	<u>2.7</u>	<u>312</u>	<u>0.7</u>	<u>-121</u>	<u>3</u>	<u>-406</u>
<u>M-1W</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>1.3</u>	<u>400</u>	<u>2.0</u>	<u>344</u>	<u>0.7</u>	<u>-56</u>	<u>3</u>	<u>-188</u>
<u>ROOM 2</u>				90	90								
<u>H-1F</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>2.7</u>	<u>407</u>	<u>2.0</u>	<u>660</u>	<u>-0.7</u>	<u>253</u>	<u>-3</u>	<u>849</u>
<u>L-1C</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>2.7</u>	<u>409</u>	<u>4.0</u>	<u>379</u>	<u>1.3</u>	<u>-30</u>	<u>6</u>	<u>-101</u>
<u>B-1C</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>2.0</u>	<u>411</u>	<u>2.7</u>	<u>397</u>	<u>0.7</u>	<u>-14</u>	<u>3</u>	<u>-47</u>
<u>B-2C</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>0.0</u>	<u>411</u>	<u>2.0</u>	<u>411</u>	<u>2.0</u>	<u>0</u>	<u>9</u>	<u>0</u>
<u>B-3C</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>0.7</u>	<u>407</u>	<u>1.3</u>	<u>390</u>	<u>0.6</u>	<u>-17</u>	<u>3</u>	<u>-57</u>
<u>H-2C</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>1.3</u>	<u>421</u>	<u>2.7</u>	<u>413</u>	<u>1.4</u>	<u>-8</u>	<u>6</u>	<u>-27</u>
<u>K-1C</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>1.3</u>	<u>422</u>	<u>2.7</u>	<u>376</u>	<u>1.4</u>	<u>-46</u>	<u>6</u>	<u>-154</u>
<u>A-2W</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>1.3</u>	<u>398</u>	<u>3.3</u>	<u>335</u>	<u>2.0</u>	<u>-63</u>	<u>9</u>	<u>-211</u>
<u>B-2W</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>0.7</u>	<u>404</u>	<u>2.0</u>	<u>343</u>	<u>1.3</u>	<u>-61</u>	<u>6</u>	<u>-205</u>
<u>E-1W</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	<u>90</u>	<u>1.3</u>	<u>429</u>	<u>2.0</u>	<u>352</u>	<u>0.7</u>	<u>-77</u>	<u>3</u>	<u>-258</u>
<u>G-2W</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>2.7</u>	<u>436</u>	<u>6.7</u>	<u>346</u>	<u>4.0</u>	<u>-90</u>	<u>19</u>	<u>-302</u>
<u>I-2W</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>1.3</u>	<u>429</u>	<u>2.0</u>	<u>315</u>	<u>0.7</u>	<u>-114</u>	<u>3</u>	<u>-382</u>
<u>L-2W</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>0.7</u>	<u>381</u>	<u>4.0</u>	<u>293</u>	<u>3.3</u>	<u>-88</u>	<u>15</u>	<u>-295</u>
<u>P-2W</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>1.3</u>	<u>410</u>	<u>2.0</u>	<u>329</u>	<u>0.7</u>	<u>-81</u>	<u>3</u>	<u>-272</u>
<u>R-2W</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>2.7</u>	<u>409</u>	<u>2.0</u>	<u>330</u>	<u>-0.7</u>	<u>-79</u>	<u>-3</u>	<u>-265</u>
<u>S-2W</u>	<u>1</u>	<u>7</u>	<u>7</u>	90	90	<u>0.7</u>	<u>400</u>	<u>5.3</u>	<u>348</u>	<u>4.6</u>	<u>-52</u>	<u>21</u>	<u>-174</u>
<u>QC</u>				90	90								
<u>QC</u>				90	90								
<u>QC</u>				90	90								
<u>QC</u>				90	90								
<u>QC</u>				90	90								

Note: QC measurements are to be collected by a different technician than the original survey. Mark the QC location number in the "Sample Location" column. Material background is assumed to be zero unless otherwise noted. "LAB" - local area background.

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E-3

T439A – Asbestos Inspector's Report

U

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T439A

ASBESTOS INSPECTOR'S REPORT

I, the undersigned Certified Asbestos Inspector, certification # 1387  
in the state of Colorado, attest to the asbestos inspection and sampling results as  
described below, for the following facility (at RFETS): Trailer 439A.

General Facility Location: south of Buildings 450 and 444.

**INSPECTION RESULTS**

Trailer 439A contains non-friable fiberboard wall panels and drywall (no tape joint compound associated with the drywall). Fiberglass insulation was found throughout the walls. Suspect friable asbestos containing materials were not observed and no samples were collected.

**SAMPLE RESULTS**

None required; none taken.

Andre Gonzalez  
INSPECTOR'S NAME

[Signature]  
SIGNATURE

7/6/00  
DATE

T439A – D&D Facility Characterization Interview Checklist

Type 1 Facility Checklist

1981



# D&D Facility Characterization Interview Checklist

IDNo.: T439A  
Date: 6/14/99  
Page 1 of 2  
Groups B & C Series

Check List for - Title: D&D Facility Characterization - Interviews

- CRITERIA:     Λ *D&D Characterization Protocol*, RFETS MAN-077-DDCP, Rev. 0  
               Λ *Facility Disposition Program Manual*, RFETS MAN-076-FDPM  
               Λ *RFETS Radiological Safety Practices*, January 12, 1998

Facility Name & Type (1, 2, or 3) T439A, Group B Type 1 Facility

Personnel Interviewed (Name & Title/Function) Wes Dycus /RMRS Maintenance, X7511, John Bert/SSOC/X4948, Dan Coyne/RMRS/X2820

Does a current WSRIC exist for the facility?.....   N    
If so, are there exceptions to the WSRIC as written?.....   N  

COMMENTS (incl. WSRIC contacts) \_\_\_\_\_  
Contacted Jim Schoen regarding WSRIC, X3579

Are rad surveys available that indicate current status of the facility?.....   N    
Are historical rad surveys available that indicate historical status, or evolution, of the facility?.....   N  

COMMENTS \_\_\_\_\_  
\_\_\_\_\_

Is an HRR available for the facility?.....   N    
Do any other reports exist beyond the HRR (e.g., spill reports, reportable incidents, etc.) that further characterize the facility relative to chemical &/or radiological contamination?.....   Y\*  

Are engineering drawings (esp. "as-builts") available?.....   N    
Are any nonconformances or issues with the facility status currently being tracked in PATS? .....   N  

If so, what are the issues (note in Comments, below)?  
COMMENTS Y\* This unit is located inside of IHSS #157.2, per Nick Demos, ER Characterization/HRR Mgr., X4605. He indicated there are RADs and non-Rads, toxic metals, Be, and volatile organics in shallow soil.

Have any types of chemical characterization, incl. asbestos, been performed recently?.....   N    
If so, what types of characterization were performed (note in Comments, below)?

COMMENTS No asbestos characterization data exists, according to Kevin Sheehan, X7250

Interviewed by: R. G. Alexander/ *R. G. Alexander* 16/14/99

Print Name

Signature

Interview Date

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# D&D Facility Characterization Interview Checklist

ID No.: T439A  
Date: 6/14/99  
Page 2 of 2  
Groups B & C Series

What time frame did the interviewee work in the facility? Jerry Blair, late 70's with the Mod Center, John Bert about 82 - 86, Darroll Crabb(retired) 88 - 89, Wes Dycus 95 - 97.

Has the building configuration changed since you worked in the building? If so, in what way?  
Wes Dycus- the two entry door openings were widen for bigger doors.

What types of equipment were in the building during the interviewee's time there? None. Offices (HVAC equip)

Where was the equipment located? (specific rooms/areas) Furnace located in alcove on south side of trailer, and 3 wall A/C units.

Were any radioactive materials or metals handled in the building? If so, what types? N/A

Which equipment handled radioactive material? N/A

Were any chemicals handled in the building? If so, what types? N/A

Did any spills or uncontrolled releases of radioactive materials or chemicals occur while you were working in the facility? No

Were these spills/releases cleaned-up? How were they cleaned-up? N/A

Where did these spills/releases occur? N/A

Interviewed by: Roy G. Alexander / FOR Roy G. Alexander 6/14/99

Print Name

Signature

Interview Date

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## Type 1 Facility Checklist

TYPE 1 FACILITY	BUILDING T-439A
CURRENT LANDLORD:	RFCSS
DATE OF COMPLETION:	02/29/00

ITEM	YES	NO
Does the facility contain radiological postings?		X
Does the facility contain chemical postings?		X
Are there any installed hazards?		X
Do the historical surveys (radiological and chemical) indicate the facility is clean?	X	
Are there RCRA units within the facility		X
Is there a history of the building available?	X	
Is there any equipment/furniture left in the facility?		X
Is there a future mission identified for the facility?		X
Will the facility be left unsecured after it is vacated?		X

If any answer to any of the above questions is "Yes", complete the following questions and complete the "graded" PEP in accordance with Chapter 2.

*Note: An answer of "Yes" to any question, specifically one dealing with hazards, may indicate the facility is not a Type 1 Facility. Check with the D&D Programs office.*

If the answer to all question is "No" complete the "graded" PEP in accordance with Chapter 2.

1. List the Radiological Hazards, location, and quantity:

Based on the historical data found and interviews taken there are no hazards in this trailer.

2. List the Chemical Hazards, location, and quantity:

None. Based on historical data and interviews taken there are no chemical hazards in this trailer. There may be asbestos in the floor tile under the carpet and lead in the paint.

3. List the Physical Hazards:

NONE

T439D – Radiological Survey Data for Exterior Survey Unit

- Summary of Radiological Survey/Sample Results
- Map of Locations
  - Scans
  - Surveys
- Removable and Total Survey Results – Detail
- Laboratory Alpha Spec (Sample) Results – Detail

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# CHAIN OF CUSTODY, SAMPLE ANALYSIS REQUEST

C.O.C. # **148#003**

Page **2** of **4**

RMRS

IRIN 00A1148

Contact/Requestor: **SZYDLOWSKI, TOM**

Telephone No. **8165** MSIN **FAX**

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative; Packing
00A1148-011.001	F-20R	SOLID	3/29/00	0905	T883B	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None None
00A1148-013.001	H-11R	SOLID	3/29/00	0942	T883C	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None None
00A1148-014.001	A-7R	SOLID	3/29/00	0930	T883C	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None None
00A1148-016.001	F-7R	SOLID	3/27/00	1423	T439D	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None None
00A1148-017.001	S-1R	SOLID	3/27/00	1400	T439D	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None None
00A1148-019.001	O-1R	SOLID	3/29/00	1248	T771D	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None None
00A1148-020.001	A-2R	SOLID	3/29/00	1240	T771D	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None None
00A1148-022.001	H-1R	SOLID	3/29/00	1430	T331	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None None
00A1148-023.001	C-1R	SOLID	3/29/00	1420	T331	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None None
00A1148-025.001	H-2R	SOLID	3/29/00	1415	T750E	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None None
00A1148-026.001	E-3R	SOLID	3/29/00	1405	T750E	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None None

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	4.13.00 170	<i>[Signature]</i>	4/13/00 15:10	<i>[Signature]</i>	5.11.00 150	<i>[Signature]</i>	5.11.00 150
<i>[Signature]</i>	5.11.00 150	<i>[Signature]</i>	5.11.00 150	<i>[Signature]</i>	5.11.00 150	<i>[Signature]</i>	5.11.00 150
<i>[Signature]</i>	5.11.00 150	<i>[Signature]</i>	5.11.00 150	<i>[Signature]</i>	5.11.00 150	<i>[Signature]</i>	5.11.00 150

Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process)

Disposed By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

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## Radiological Survey/Sample Results for T439D

### Total Surface Activity Measurements dpm/100 cm<sup>2</sup>

	Alpha	Beta
<b>Interior</b>	# Required	# Obtained
	28	28
MIN	-16	-451
MAX	36	221
MEAN	4.3	-51.4
STD DEV	10.4	228.7
<b>Exterior</b>	# Required	# Obtained
	28	28
MIN	3	-557
MAX	149	122
MEAN	56.8	-236.6
STD DEV	42.6	173
DCGL <sub>w</sub>	100	5000

### Removable Activity Measurements dpm/100 cm<sup>2</sup>

	Alpha	Beta
<b>Interior</b>	# Required	# Obtained
	28	28
MIN	-0.9	-46.4
MAX	3.9	45.6
MEAN	0.7	1.2
STD DEV	1.6	21.9
<b>Exterior</b>	# Required	# Obtained
	28	28
MIN	-0.9	-54.4
MAX	5.2	29.6
MEAN	1.3	-8.7
STD DEV	1.9	20
DCGL <sub>w</sub>	20	1000

### Media Sample Activity

# Required	# Obtained
2	2

<u>Contaminant</u>	<u>Y/N</u>	<u>Det. Sens. dpm/100 cm<sup>2</sup></u>
U present	N	79
Pu present	N	79

### Total Po-210 Results dpm/100 cm<sup>2</sup>

MIN	106.2
MAX	149.4
MEAN	127.8
STD DEV	7.8

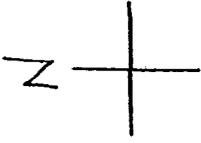
200

Package ID: 2000-01  
 Building: T439D  
 Survey Unit: Exterior

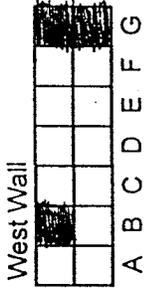
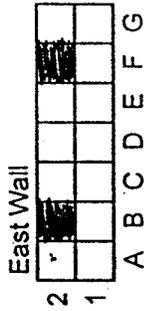
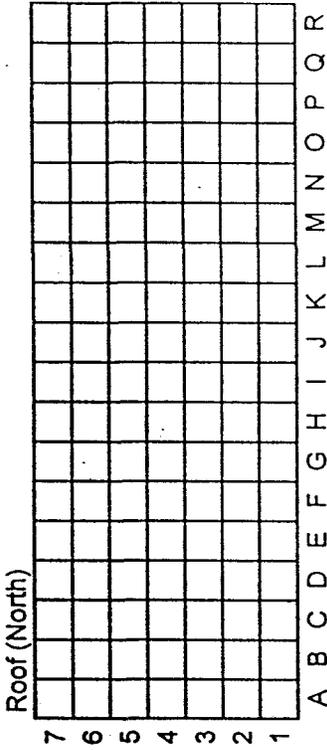
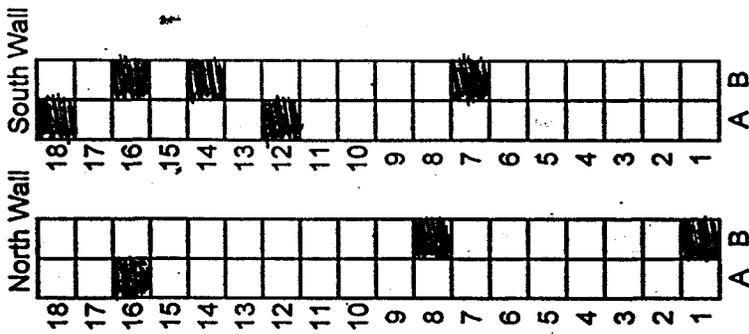
SURVEY PACKAGE SURVEY MAP

Attachment to RSFOR 16.01-10  
 Page 14 of 15

SCAN LOCATIONS:



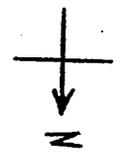
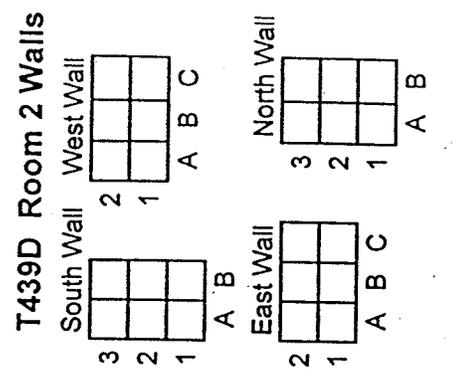
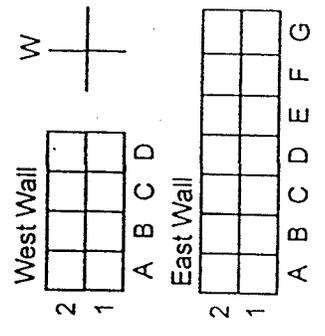
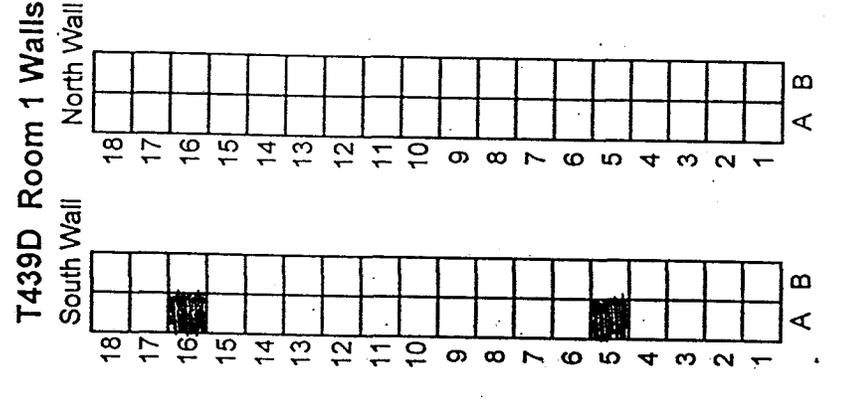
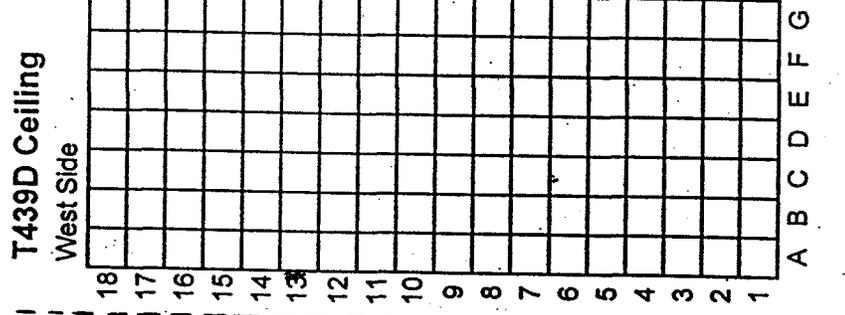
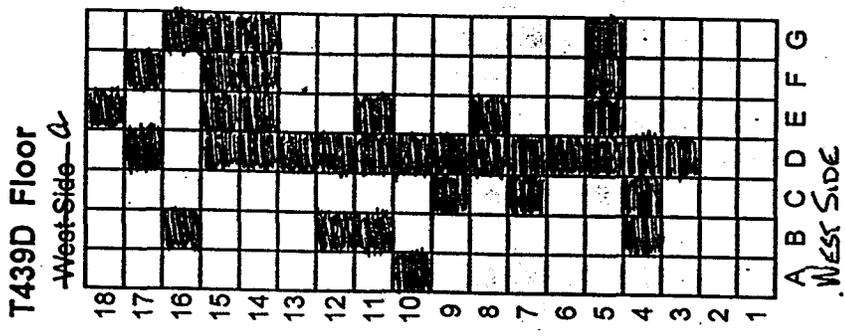
T439D Exterior



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

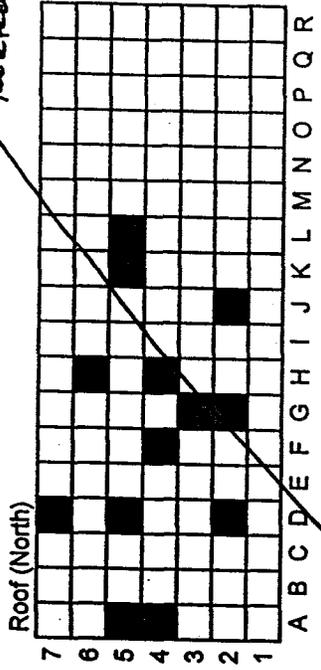
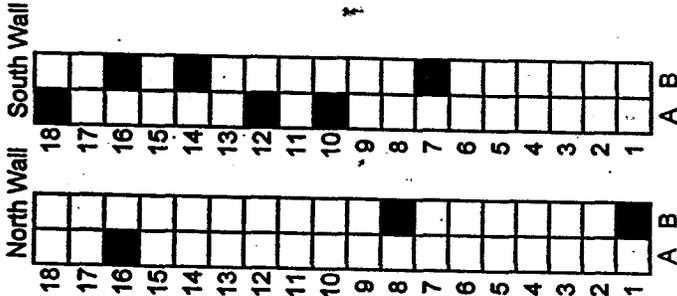
19 20 21 22

*SEN LOCATIONS:*

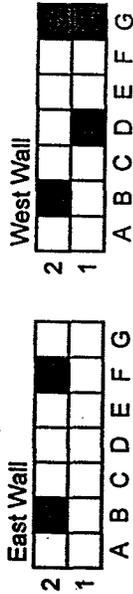


*2002*

T439D Exterior



*Revised - Replaced with Roof - Rev. 1  
 2/24/00*



7	14
---	----

□ = one square meter  
 ■ = direct & swipe

X	Y	X	Y	X	Y
1	11	2	11	3	11
2	15	4	12	4	12
3	14	6	11	6	11
4	2	18	1	3	7
5	10	4	16	3	7
6	20	12	16	3	1
7	16	3	17	15	3
8	10	11	18	12	2
9	4	3	19	5	3
10	8	6	20	17	12
11	5	8	1	8	1
12	15	11	2	5	4
13	14	6	3	20	11
14	2	18	4	12	4
15	10	4	16	4	5
16	20	12	16	6	11
17	16	3	17	27	3
18	10	11	18	28	8
19	4	3	19	8	3
20	8	6	20	3	9

Total Surface Area = 226 m<sup>2</sup>  
 10% Scan Surface Area 23 m<sup>2</sup>

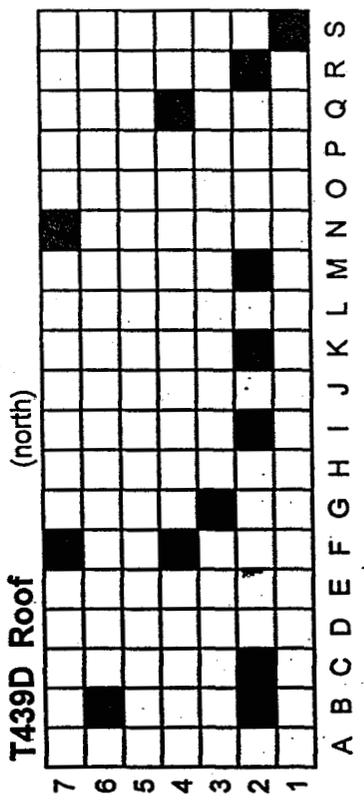
217/242

RO

203

SURVEY PACI SURVEY UNIT  
Roof - Revision 1

Pa ID: 2000-01  
Building: T439D  
Survey Unit: Exterior



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

□ = one square meter  
■ = direct & swipe

X Coordinate	Y Coordinate
11	3

Roof Surveys randomly chosen with original number of survey points (13 survey points)

X	Y
1	6
2	6
3	6
4	6
5	6
6	6
7	6
8	6
9	6
10	6
2	4
6	4
13	6
14	1
2	2
3	6
9	6
6	1
17	4
11	6
7	5
18	6
19	7

217a/242 ~~111~~ 2/24/00

2004



Survey Area: N/A	Survey Unit: EXTERIOR	Building: T439D
Survey Unit Description: ROOF + WALLS OF TRAILER T439D		

## Total Surface Activity Data Sheet

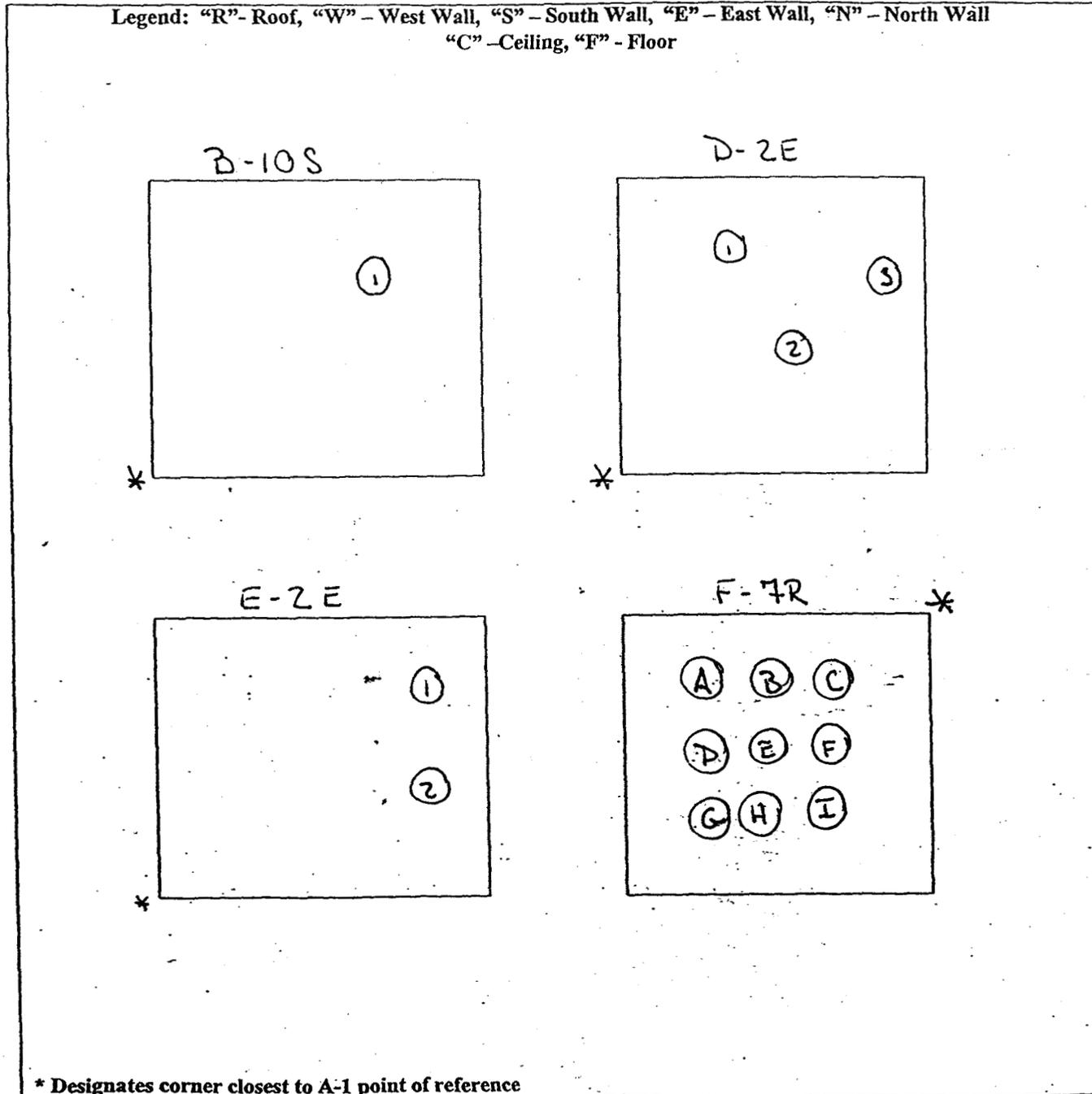
Sample location	RCT ID #	Inst ID #		Survey count time (sec)		LAB (cpm)		Gross Count (gcpm)		Net counts (cpm)		Net Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β	α	β	α	β
B-1N	4	9	9	90	90	2.0	486	7.3	450	5.3	-36	24	-122
B-8N	4	9	9	90	90	0.7	509	16.7	461	16.0	-48	73	-163
A-16N	4	9	9	90	90	2.0	467	4.7	452	2.7	-15	12	-51
B-7S	4	9	9	90	90	4.0	517	16	440	12.0	-77	55	-261
A-10S	4	9	9	90	90	1.3	438	4.7	418	3.4	-20	16	-68
A-12S	4	9	9	90	90	2.0	496	5.3	431	3.3	-65	15	-221
B-14S	4	9	9	90	90	2.7	509	3.3	405	0.6	-104	3	-353
B-16S	4	9	9	90	90	1.3	467	4.7	458	3.4	-9	16	-31
A-18S	4	9	9	90	90	0.7	485	4.7	382	4.0	-103	18	-350
B-2E	4	9	9	90	90	0.0	509	6.0	423	6.0	-86	27	-292
F-2E	4	9	9	90	90	3.3	511	6.7	458	3.4	-53	16	-180
B-2W	4	9	9	90	90	2.0	511	12.0	423	10.0	-88	46	-299
D-1W	4	9	9	90	90	2.0	476	6.7	401	4.7	-75	21	-254
-1W	4	9	9	90	90	1.3	496	6.0	482	4.7	-14	21	-48
-2W	4	9	9	90	90	2.0	481	6.0	509	4.0	28	18	95
B-2R	5	11	11	90	90	1.3	615	34.7	513	33.4	-102	149	-336
B-6R	5	11	11	90	90	2.7	622	20.0	453	17.3	-169	77	-557
C-2R	5	11	11	90	90	1.3	635	34.7	487	33.4	-148	149	-487
F-4R	5	11	11	90	90	2.7	587	9.3	423	6.6	-164	30	-540
F-7R	5	11	11	90	90	2.0	567	24.0	491	22.0	-76	98	-250
G-3R	5	11	11	90	90	2.7	519	21.3	504	18.6	-15	83	-49
I-2R	5	11	11	90	90	6.0	458	26.0	495	20.0	37	89	122
K-2R	5	11	11	90	90	1.3	635	22.0	511	20.7	-124	93	-408
M-2R	5	11	11	90	90	3.3	583	22.0	489	18.7	-94	84	-310
N-7R	5	11	11	90	90	1.3	597	14.7	489	13.4	-108	60	-356
Q-4R	5	11	11	90	90	0.7	526	23.3	467	22.6	-59	101	-194
R-2R	5	11	11	90	90	1.3	577	19.3	484	18.0	-93	81	-306
S-1R	5	11	11	90	90	1.3	583	26.7	475	25.4	-108	114	-356
A-1WQC	8	10	10	90	90	0.7	456	8.0	396	7.3	-60	34	-196
A-18QC	8	10	10	90	90	2.0	419	8.7	449	6.7	30	31	98
B-1WQC	8	10	10	90	90	3.3	417	10.7	443	7.4	26	34	85
G-3RQC	9	11	11	90	90	2.0	461	20.00	487	18.0	26	81	86
M-2RQC	9	11	11	90	90	1.3	453	16.7	437	15.4	-16	-69	-53

Note: QC measurements are to be collected by a different technician than the original survey. Mark the QC location number in the "Sample Location" column. Material background is assumed to be zero unless otherwise noted. "LAB" - local area background.

## Final Survey NE Electra Scan & Investigation Survey Map

Survey Area: <b>NA</b>	Survey Unit: <b>EXTERIOR</b>	Building: <b>439D</b>
Survey Unit Description: <b>WALLS, ROOF</b>		
RCT Initials/Date: <b>ME 3/3/00</b>	RCT Initials/Date: <b>N/A</b>	RCT Initials/Date: <b>N/A</b>

Refer to the Final Survey NE Electra Scan & Investigation Survey Form for instrumentation, surveyor & approval information.



**Results/Comments:**

Electra alpha scans were performed at the locations detailed on the survey map(s). All required accessible areas were scanned. All initial scan results were <math>< 225 \text{ dpm}/100\text{cm}^2</math>, unless noted on the survey form.

Electra beta scans were performed in required accessible areas. Initial scan results indicated no detectable activity above background unless noted on the survey form.

## Final Survey NE Electra Scan & Investigation Survey Form

Survey Area: <b>NA</b>				Survey Unit: <b>EXTERIOR</b>			Building: <b>1439D</b>		
Survey Unit Description: <b>WALLS, Roof</b>									
Loc. ID #	Electra DP-6 Beta				Electra DP-6 Alpha				
	RCT ID #	Inst. ID #	Elevated Audible observed? "Y" or "N"	60-sec PAT (dpm/100cm <sup>2</sup> )	RCT ID #	Inst. ID #	4-sec Audible observed? "Y" or "N"	30-sec Static (gcpm)	90-sec PAT (dpm/100cm <sup>2</sup> )
B-10S	1	7	N	NA	1	7	Y	12	NA
B-12S	1	7	N	NA	1	7	N <del>Y</del> <sup>2-3-3</sup>	NA	NA
B-18S	1	7	N	NA	1	7	N <del>Y</del> <sup>3-3-3</sup>	NA	NA
C-2E	1	7	N	NA	1	7	N <del>Y</del> <sup>3-3-3</sup>	NA	NA
D-2E1	1	7	N	NA	1	7	Y	8	NA
D-2E2	1	7	N	NA	1	7	Y	6	NA
D-2E3	1	7	N	NA	1	7	Y	10	NA
E-2E1	1	7	N	NA	1	7	Y	8	NA
E-2E2	1	7	N	NA	1	7	Y	4	NA
F-7RA	1	7	N	NA	1	7	NA	NA	92.6
F-7RB	1	7	N	NA	1	7	NA	NA	116.3
F-7RC	1	7	N	NA	1	7	NA	NA	116.3
F-7RD	1	7	N	NA	1	7	NA	NA	149.0
F-7RE	1	7	N	NA	1	7	NA	NA	119.5
F-7RF	1	7	N	NA	1	7	NA	NA	166.9
F-7RG	1	7	N	NA	1	7	NA	NA	140.0
F-7RH	1	7	N	NA	1	7	NA	NA	116.3
F-7RI	1	7	N	NA	1	7	NA	NA	119.5
B.16N1	2	8	N	N/A	2	8	Y	24	N/A
B.16N2	2	8	N	N/A	2	8	Y	12	N/A
B.9N1	2	8	N	N/A	2	8	Y	10	N/A
B.9N.2	2	8	N	N/A	2	8	Y	12	N/A
B.9N.3	2	8	N	N/A	2	8	Y	18	N/A
B.7N1	2	8	N	N/A	2	8	Y	24	N/A
B.7N.2	2	8	N	N/A	2	8	Y	12	N/A
B.7N.3	2	8	N	N/A	2	8	Y	16	N/A

1m<sup>2</sup> AVG  
126.3

*208*

Sample ID: 00A1148-016.001

Type: Unknown

Batch ID: unknowns
Acquisition Start: April 25, 2000 14:34:47
Analysis Date: April 25, 2000 18:32:19
Procedure: Po210 count
Device: Oasis:01:01
Analysis Method: ROI Analysis
Spectrum File: 00000490.OXS LiveTime: 10,800.00

Calibrations:

-Energy = 3.865E+01 +2.790E+00 \* Chn Coeff. of Correlation: -0.998
Calibration Date: April 03, 2000 17:45:10 Std: 1:1 energy cal
Shape not Calibrated.
Efficiency = 3.041E-01 ± 4.004E-03
Calibration Date: April 07, 2000 09:49:29 Std: TS4189

External Recovery No Ext.Recovery

Original Sample Amount:

1.000 ± 0.000 samp

Aliquot Amount:

1.000 ± 0.000 samp

ROI DATA

Table with 6 columns: ROI ID #, ASSOCIATED NUCLIDE, EXTENTS START, EXTENTS END, PK EN (keV), FWHM (keV). Rows include Po218, Po214, Po212, and Po210.

ROI ANALYSIS RESULTS

Table with 5 columns: ROI ID, NET COUNTS, BKG/INTERF, CPM, ROI TYPE. Rows include Po218, Po214, Po212, and Po210.

NUCLIDE ANALYSIS RESULTS

Table with 5 columns: ROI ID, ASSOC NUC, EMM. PROB, ACTIVITY (dpm/samp), MDA (dpm). Rows include Po218, Po214, Po212, and Po210.

Activity reported as of April 25, 2000 14:34:47

ANALYSIS REVIEWED BY:

APPROVED BY:

Handwritten signatures and dates: [Signature], [Signature] 5/9/00



Sample ID: 00A1148-017.001 Type: Unknown

Batch ID: unknowns  
Acquisition Start: April 25, 2000 11:09:58  
Analysis Date: April 25, 2000 14:11:29  
Procedure: Po210 count  
Device: Oasis:01:01  
Analysis Method: ROI Analysis  
Spectrum File: 00000486.OXS LiveTime: 10,800.00

Calibrations:

-Energy = 3.865E+01 +2.790E+00 \* Chn Coeff. of Correlation: -0.998  
Calibration Date: April 03, 2000 17:45:10 Std: 1:1 energy cal  
Shape not Calibrated.  
Efficiency = 3.041E-01 ± 4.004E-03  
Calibration Date: April 07, 2000 09:49:29 Std: TS4189

External Recovery No Ext.Recovery

Original Sample Amount:

1.000 ± 0.000 samp

Aliquot Amount:

1.000 ± 0.000 samp

ROI DATA

ROI ID #	ASSOCIATED NUCLIDE	EXTENTS START	EXTENTS END	PK EN (keV)	FWHM (keV)
1	Po218	5550.0	6104.5	5826.0	2.8
2	Po214	6588.5	7874.7	7229.6	2.8
3	Po212	8393.8	8808.6	8599.7	1.4
4	Po210	2180.3	5343.3	5178.7	6.5

ROI ANALYSIS RESULTS

ROI ID	NET COUNTS	BKG/INTERF	CPM	ROI TYPE
Po218	0.5 ± 1.0	0.47	2.95E-03 ± 5.62E-03	Unknown
Po214	1.7 ± 1.4	0.28	9.55E-03 ± 7.88E-03	Unknown
Po212	-0.1 ± 0.1	0.09	-5.21E-04 ± 3.68E-04	Unknown
Po210	280.4 ± 17.0	6.56	1.558 ± 0.094	Unknown

NUCLIDE ANALYSIS RESULTS

ROI ID	ASSOC NUC	EMM. PROB	ACTIVITY (dpm/samp)	MDA (dpm)
Po218	Po218	1.000	9.71E-03 ± 0.018	9.16E-02
Po214	Po214	1.000	0.031 ± 0.026	8.21E-02
Po212	Po212	1.000	-1.71E-03 ± 1.21E-03	6.83E-02
Po210	Po210	1.000	5.124 ± 0.317	2.07E-01

Activity reported as of April 25, 2000 11:09:58

ANALYSIS REVIEWED BY:

*Shawn Kelly*

APPROVED BY:

*CJ Bianconi 5/9/00*

211



ample ID: 00A1148-018.001 Type: Unknown

Batch ID: unknowns  
Acquisition Start: May 04, 2000 13:14:27  
Analysis Date: May 04, 2000 16:17:04  
Procedure: Po210 count  
Device: Oasis:01:03  
Analysis Method: ROI Analysis  
Spectrum File: 00000541.OXS LiveTime: 10,800.00

Calibrations:

-Energy = 6.596E+01 +2.779E+00 \* Chn Coeff. of Correlation: -0.998  
Calibration Date: April 24, 2000 13:03:27 Std: 1:3 Energy Cal  
Shape not Calibrated.  
Efficiency = 3.120E-01 ± 4.098E-03  
Calibration Date: April 24, 2000 10:05:48 Std: TS4189

External Recovery No Ext.Recovery

Air Filter Analysis Parameters:

Sample Type: Unknown  
Air Filter Time on: May 04, 2000 13:12:09  
Air Filter Time off: May 04, 2000 13:12:09  
Total Collect Time: 0.000 hours  
Air Volume: 1.000 ± 0.000 samp

ROI DATA

ROI ID	ASSOCIATED	EXTENTS		PK EN	FWHM
#	NUCLIDE	START	END	(keV)	(keV)
1	Po218	5550.0	6104.5	5827.5	2.8
2	Po214	6588.5	7874.7	7231.0	2.8
3	Po212	8393.8	8808.6	8601.2	2.8
4	Po210	2180.3	5343.3	5174.3	3.7

ROI ANALYSIS RESULTS

ROI ID	NET COUNTS	BKG/INTERF	CPM	ROI TYPE
Po218	5.5 ± 2.5	0.50	0.031 ± 0.014	Unknown
Po214	0.0 ± 1.1	1.00	0.00E+00 ± 6.21E-03	Unknown
Po212	4.0 ± 2.0	0.00	0.022 ± 0.011	Unknown
Po210	189.3 ± 14.1	6.75	1.051 ± 0.078	Unknown

NUCLIDE ANALYSIS RESULTS

ROI ID	ASSOC NUC	EMM. PROB	ACTIVITY (dpm/samp)	MDA (dpm/samp)
Po218	Po218	1.000	0.098 ± 0.044	9.45E-02
Po214	Po214	1.000	0.00E+00 ± 0.020	1.14E-01
Po212	Po212	1.000	0.071 ± 0.036	4.82E-02
Po210	Po210	1.000	3.370 ± 0.254	2.18E-01

Activity reported as of May 04, 2000 13:14:27

ANALYSIS REVIEWED BY:

*[Signature]*

PROVED BY:

*[Signature]* 5/9/00

213

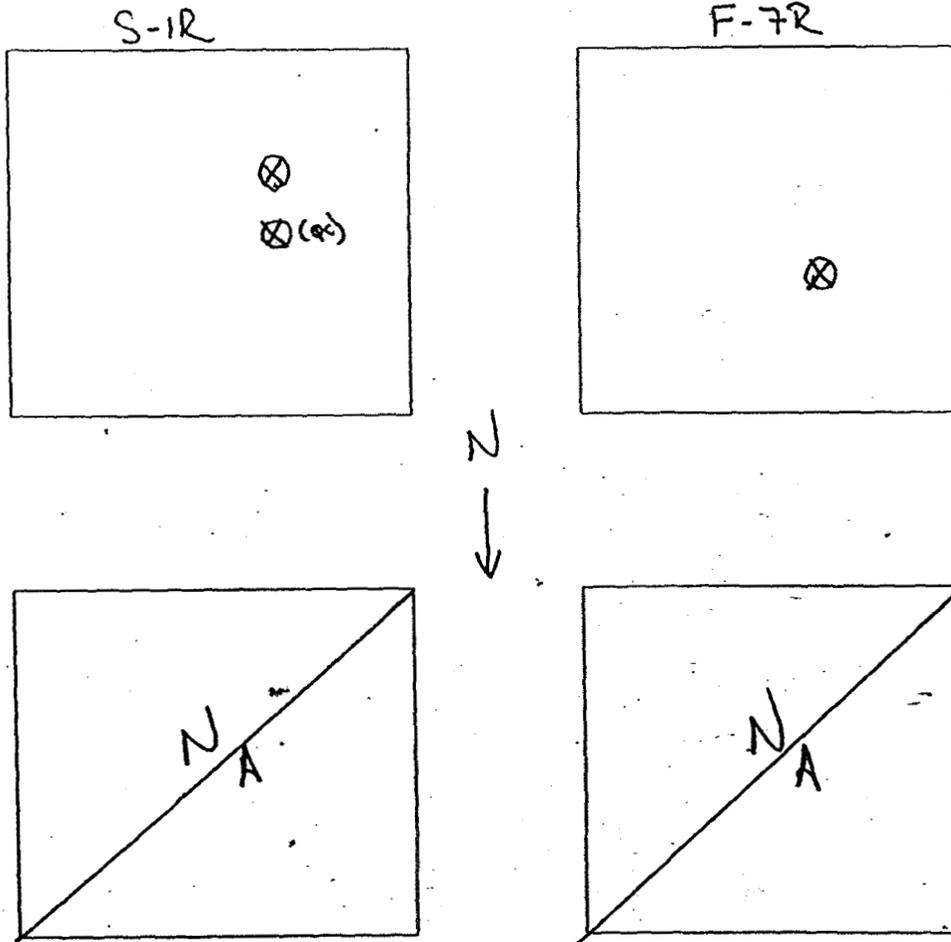


## Final Survey NE Electra Scan & Investigation Survey Map

Survey Area: <b>NA</b>	Survey Unit: <b>EXTERIOR</b>	Building: <b>T439D</b>
Survey Unit Description: <b>Roof Sample Locations</b>		
RCT Initials/Date: <b>NA 3/29/00</b>	RCT Initials/Date: <b>NA</b>	RCT Initials/Date: <b>NA</b>

Refer to the Final Survey NE Electra Scan & Investigation Survey Form for instrumentation, surveyor & approval information.

Legend: "R"- Roof, "W" - West Wall, "S" - South Wall, "E" - East Wall, "N" - North Wall  
"C" - Ceiling, "F" - Floor



⊗ Sample Cut Out

\* Designates corner closest to A-1 point of reference

**Results/Comments:**

Electra alpha scans were performed at the locations detailed on the survey map(s). All required accessible areas were scanned. All initial scan results were <225 dpm/100cm<sup>2</sup>, unless noted on the survey form.

Electra beta scans were performed in required accessible areas. Initial scan results indicated no detectable activity above background unless noted on the survey form.

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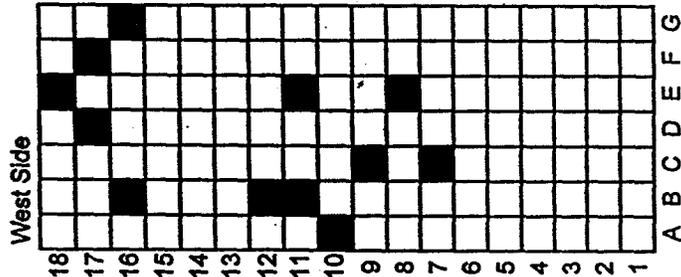


T439D – Radiological Survey Data for Interior Survey Unit

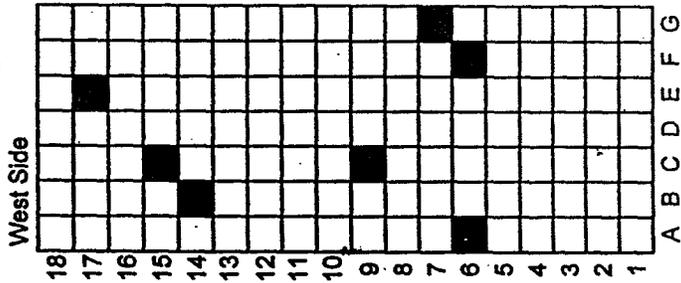
- Map of Locations
  - Scans
  - Surveys
- Removable and Total Survey Results - Detail

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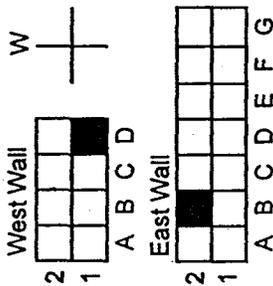
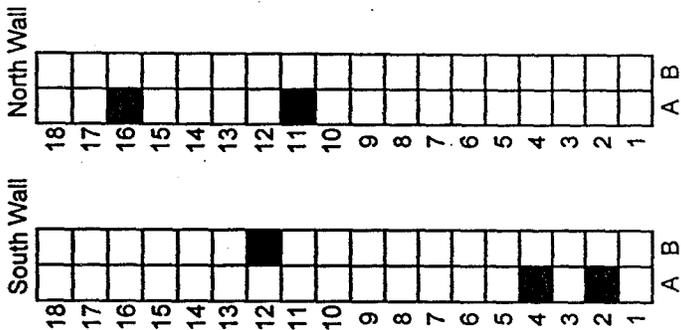
T439D Floor



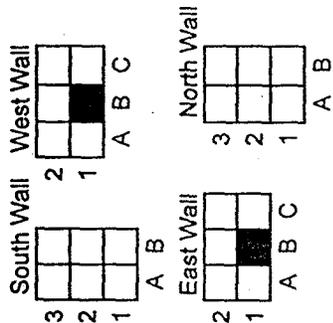
T439D Ceiling



T439D Room 1 Walls



T439D Room 2 Walls



11 12 13 14 15 16 17 18  
 19 20 21 22 23 24 25  
 26 27 28 29 30 31 32  
 33 34 35 36 37 38

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Coordinate X	Coordinate Y
7	9

□ = one square meter  
 ■ = direct & swipe

X	Y	X	Y	X	Y
10	4	12	2	2	7
16	7	2	3	14	7
5	8	7	3	22	2
15	15	17	3	4	2
5	1	20	5	5	14
13	13	2	8	17	8
1	9	10	10	20	17
9	5	8	13	15	17
6	2	19	3	10	
24	12	20	3	12	

Total Surface Area = 370 m<sup>2</sup>  
 10% Scan Surface Area 37 m<sup>2</sup>

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Survey Area: N/A

Survey Unit: INTERIOR

Building: T439D

Survey Unit Description

FLOORS, WALLS, & CEILINGS OF TRAILER T439D

### Removable Contamination Data Sheet

Sample Location	RCT ID #	Inst ID #		Gross Counts (gcpm)		Net Counts (cpm)		Removable Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β
ROOM 1									
C-7F	1	1	3	0	43	-0.3	-0.6	-0.9	-2.4
E-8F	1	2	3	1.0	36	0.8	-7.6	2.4	-30.4
C-9F	1	1	3	1.0	40	0.7	-3.6	2.1	-14.4
A-10F	1	2	3	1.5	41	1.3	-2.6	3.9	-10.4
B-11F	1	1	3	1.0	52	0.7	8.4	2.1	33.6
E-11F	1	2	3	0	44	-0.2	0.4	-0.6	1.6
B-12F	1	1	3	0	46	-0.3	2.4	-0.9	9.6
B-16F	1	2	3	1.0	39	0.8	-4.6	2.4	-18.4
G-16F	1	1	3	0.5	50	0.2	6.4	0.6	25.6
D-17F	1	2	3	0.5	54	0.3	10.4	0.9	41.6
F-17F	1	1	3	0.5	42	0.2	-1.6	0.6	-6.4
E-18F	1	2	3	0.5	42	0.3	-1.6	0.9	-6.4
A-6E	1	1	3	0	48	-0.3	4.4	-0.9	17.6
F-6C	1	2	3	0	44	-0.2	0.4	-0.6	1.6
G-7C	1	1	3	0	44	-0.3	0.4	-0.9	1.6
C-9C	1	2	3	0	43	-0.2	-0.6	-0.6	-2.4
B-14C	1	1	3	0	36	-0.3	-7.6	-0.9	-30.4
C-15C	1	2	3	0.5	32	0.3	-11.6	0.9	-46.4
E-17C	1	1	3	0.5	50	-0.3	6.4	-0.9	25.6
A-25	1	2	3	0	45	-0.2	1.4	-0.6	5.6
A-45	1	1	3	0.5	43	0.2	-0.6	0.6	-2.4
B-12S	1	2	3	0.5	41	0.3	-2.6	0.9	-10.4
A-11N	1	1	3	1.5	41	1.2	-2.6	3.6	-10.4
D-1W	1	2	3	0	43	-0.2	-0.6	-0.6	-2.4
B-2E	1	1	3	1.0	40	0.7	-3.6	2.1	-14.4
ROOM 2									
B-1W	1	2	3	0.5	43	0.3	-0.6	0.9	-2.4
B-1E	1	1	3	0	52	-0.3	8.4	-0.9	33.6
A-1N	1	2	3	1.5	55	1.3	11.4	3.9	45.6
N/A									

220

Survey Area: N/A	Survey Unit: INTERIOR	Building: T439D
Survey Unit Description: FLOORS, WALLS, & CEILINGS OF TRAILER T439D		

## Total Surface Activity Data Sheet

Sample location	RCT ID #	Inst ID #		Survey count time (sec)		LAB (cpm)		Gross Count (gcpm)		Net counts (cpm)		Net Activity (dpm/100cm <sup>2</sup> )	
		α	β	α	β	α	β	α	β	α	β	α	β
ROOM 1				90	90								
C-7F	3	9	9	90	90	1.3	499	6.0	541	4.7	42	23	136
E-8F	3	9	9	90	90	2.7	534	2.0	533	-0.7	-1	-3	-3
C-9F	3	9	9	90	90	3.3	509	10.7	565	7.4	56	36	182
A-10F	3	9	9	90	90	1.3	508	2.7	579	1.4	11	7	36
B-11F	3	9	9	90	90	2.7	519	2.0	582	-0.7	63	-3	204
E-11F	3	9	9	90	90	2.7	539	0.7	548	-2.0	9	-10	29
B-12F	3	9	9	90	90	0.7	522	1.3	578	0.6	56	3	182
B-16F	3	9	9	90	90	2.7	532	3.3	594	0.6	62	3	201
G-16F	3	9	9	90	90	2.7	532	1.3	580	-1.4	48	-7	156
D-17F	3	9	9	90	90	1.3	509	2.0	540	0.7	31	3	101
F-17F	3	9	9	90	90	1.3	511	2.0	579	0.7	68	3	221
E-18F	3	9	9	90	90	5.3	487	2.0	533	-3.3	46	-16	149
A-6C	3	9	9	90	90	2.7	523	4.0	507	1.3	-16	6	-52
C	3	9	9	90	90	2.7	507	4.7	507	2.0	0	10	0
E-7C	3	9	9	90	90	2.7	503	2.7	391	0	-112	0	-363
C-9C	3	9	9	90	90	1.3	497	1.3	367	0	-130	0	-422 <sup>422</sup>
B-14C	3	9	9	90	90	0.0	515	4.0	582	4.0	67	19	217
C-15C	3	9	9	90	90	2.0	497	2.0	540	0	43	0	140
E-17C	3	9	9	90	90	5.3	498	5.3	519	0	21	0	68
A-2S	3	9	9	90	90	2.0	481	1.3	421	-0.7	-60	-3	-195
A-4S	3	9	9	90	90	2.7	479	2.0	367	-0.7	-112	-3	-363
B-12S	3	9	9	90	90	1.3	494	4.7	397	3.4	-97	17	-315
A-11N	3	9	9	90	90	2.0	467	1.3	399	-0.7	-68	-3	-221
D-1W	3	9	9	90	90	2.0	509	4.0	370	2.0	-139	10	-451
B-2E	3	9	9	90	90	2.7	508	4.0	407	1.3	-101	6	-328
				90	90								
				90	90								
__QC				90	90								
__QC				90	90								
__QC				90	90								
__QC				90	90								
__QC				90	90								

Note: QC measurements are to be collected by a different technician than the original survey. Mark the QC location number in the "Sample Location" column. Material background is assumed to be zero unless otherwise noted. "LAB" - local area background.

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F-3

T439D – Asbestos Inspector's Report

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T439D

ASBESTOS INSPECTOR'S REPORT

I, the undersigned Certified Asbestos Inspector, certification # 1387  
in the state of Colorado, attest to the asbestos inspection and sampling results as  
described below, for the following facility (at RFETS): Trailer 439D.

General Facility Location: south of Buildings 450 and 444.

**INSPECTION RESULTS**

Trailer 439D contains 2' x 4' drywall ceiling panels. The ceiling panels are considered non-friable and were not sampled. Fiberglass insulation was found throughout the walls. No other suspect friable asbestos containing materials were observed and no samples were collected.

**SAMPLE RESULTS**

None required; none taken.

Andre Gonzalez

INSPECTOR'S NAME

Andre Gonzalez

SIGNATURE

2/6/00

DATE

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T439D – D&D Facility Characterization Interview Checklist

Type 1 Facility Checklist

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# D&D Facility Characterization Interview Checklist

ID No.: T439D  
Date: 6/16/99  
Page 2 of 2  
Groups B & C Series

What time frame did the interviewee work in the facility? Ron Nokes 89-93, Sue Anderson/Vicki Scott 94-95, Dan Coyne 95-97.

Has the building configuration changed since you worked in the building? If so, in what way? No

What types of equipment were in the building during the interviewee's time there? Copier/Fax machine.

Where was the equipment located? (specific rooms/areas) in cubicle opposite of office east wall

Were any radioactive materials or metals handled in the building? If so, what types? N/A

Which equipment handled radioactive material? N/A

Were any chemicals handled in the building? If so, what types? N/A

Did any spills or uncontrolled releases of radioactive materials or chemicals occur while you were working in the facility? No

Were these spills/releases cleaned-up? How were they cleaned-up? N/A

Where did these spills/releases occur? N/A

Interviewed by: Roy G. Alexander / *DR Sheets for Roy G. Alexander* / 6/16/99

Print Name

Signature

Interview Date

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## Type 1 Facility Checklist

TYPE 1 FACILITY	BUILDING T-439D
CURRENT LANDLORD:	RFCSS
DATE OF COMPLETION:	02/29/00

ITEM	YES	NO
Does the facility contain radiological postings?		X
Does the facility contain chemical postings?		X
Are there any installed hazards?		X
Do the historical surveys (radiological and chemical) indicate the facility is clean?	X	
Are there RCRA units within the facility		X
Is there a history of the building available?	X	
Is there any equipment/furniture left in the facility?		X
Is there a future mission identified for the facility?		X
Will the facility be left unsecured after it is vacated?		X

If any answer to any of the above questions is "Yes", complete the following questions and complete the "graded" PEP in accordance with Chapter 2.

*Note: An answer of "Yes" to any question, specifically one dealing with hazards, may indicate the facility is not a Type 1 Facility. Check with the D&D Programs office.*

If the answer to all question is "No" complete the "graded" PEP in accordance with Chapter 2.

1. List the Radiological Hazards, location, and quantity:

Based on the historical data found and interviews taken there are no hazards in this trailer.

2. List the Chemical Hazards, location, and quantity:

None. Based on historical data and interviews taken no asbestos data exists and the paint may be lead based.

3. List the Physical Hazards:

NONE

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## Appendix G, General Group B Survey and Sampling Documentation

- Chain-of-Custody (for Groups B & C samples)
- MARSSIM Pre-Survey Calculations for Survey Frequency
- MARSSIM Post-Survey Calculation for Survey Frequency (typical)
- OASIS QC Data
- Verification of OASIS Results – Offsite (GEL) Alpha Spectroscopy Results

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CHAIN OF CUSTODY APPLE ANALYSIS REQUEST

**RFETS**

Telephone No. 8165 / 4605 MSIN  
 Purchase Order/Charge Code NG2200C1  
 Ice Chest No. NA Temp. NA  
 Bill of Lading/Air Bill No. NA  
 PRE

Contact/Requester SZYDLOWSKI, TOM / NICK DEMOS  
 Sampling Origin B&C Facilities  
 Logbook No. NA  
 Method of Shipment Hand Carry  
 Related COC (if any) NA

**SPECIAL INSTRUCTIONS** Hold Time Total Activity Exemption: Yes  No   
 SCREENING REQUIRED   
 (TRAILERS AROUND THE PLANT SITE)  
 (METAL DISKS)

Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative; Packing
00A1148-003.001	SOLID	3/29/00	0820	T881A	1-SAMPLE / P/G/1	PA04A017 (Alpha Spec Qualitative) [Routine]	None
00A1148-006.001	SOLID	3/27/00	1447	T881B	1-SAMPLE / P/G/1	PA04A017 (Alpha Spec Qualitative) [Routine]	None
00A1148-009.001	SOLID	3/28/00	0850	T883A	1-SAMPLE / P/G/1	PA04A017 (Alpha Spec Qualitative) [Routine]	None
00A1148-012.001	SOLID	3/28/00	0909	T883B	1-SAMPLE / P/G/1	PA04A017 (Alpha Spec Qualitative) [Routine]	None
00A1148-015.001	SOLID	3/28/00	0932	T883C	1-SAMPLE / P/G/1	PA04A017 (Alpha Spec Qualitative) [Routine]	None
00A1148-018.001	SOLID	3/27/00	1415	T439D	1-SAMPLE / P/G/1	PA04A017 (Alpha Spec Qualitative) [Routine]	None
00A1148-021.001	SOLID	3/28/00	1243	T771D	1-SAMPLE / P/G/1	PA04A017 (Alpha Spec Qualitative) [Routine]	None

Relinquished By:	Date/Time	Received By:	Date/Time
[Signature]	4/4/00 1445	[Signature]	4/25/00 0815
[Signature]	4/25/00 1324	[Signature]	4/27/00 0815

Relinquished By: [Signature] Date/Time: 4/4/00 1445  
 Received By: [Signature] Date/Time: 4/25/00 0815

Relinquished By: [Signature] Date/Time: 4/25/00 1324  
 Received By: [Signature] Date/Time: 4/27/00 0815

Relinquished By: [Signature] Date/Time: [ ]  
 Received By: [Signature] Date/Time: [ ]

Relinquished By: [Signature] Date/Time: [ ]  
 Received By: [Signature] Date/Time: [ ]

Relinquished By: [Signature] Date/Time: [ ]  
 Received By: [Signature] Date/Time: [ ]

Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process):  
 Disposed By: [Signature] Date/Time: APR 4 2000

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RFETS

Sampler(s) **00A1148** Contact/Requester **SZYDLOWSKI, TOM** Telephone No. **8165** MSIN **FAX**

Project Title **771 OM 4-12-00** Sampling Origin **NG2200C1** Purchase Order/Charge Code **NG2200C1**

To (Lab) **Building 559 Laboratory** Logbook No. **PRE** Ice Chest No. **Temp.**

Method of Shipment **PRE** Bill of Lading/Air Bill No. **PRE**

Related COC (if any) **PRE**

**POSSIBLE SAMPLE HAZARDS/REMARKS**  
 Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO  **Yes**  **No**  
 Are other known hazardous substances present? YES or NO  **Yes**  **No**

Sample No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative; Packing
00A1148-001.001	I-4R	SOLID	3/28/00	0835	T881A	1-SAMPLE / P/G/1	PA04A017 (Alpha Spec Qualitative) [Routine]	None
00A1148-002.001	T-4R	SOLID	3/28/00	0824	T881A	1-SAMPLE / P/G/1	PA04A017 (Alpha Spec Qualitative) [Routine]	None
00A1148-004.001	G-3R	SOLID	3/27/00	1455	T881B	1-SAMPLE / P/G/1	PA04A017 (Alpha Spec Qualitative) [Routine]	None
00A1148-005.001	M-1R	SOLID	3/27/00	1445	T881B	1-SAMPLE / P/G/1	PA04A017 (Alpha Spec Qualitative) [Routine]	None
00A1148-007.001	H-5R	SOLID	3/29/00	0856	T883A	1-SAMPLE / P/G/1	PA04A017 (Alpha Spec Qualitative) [Routine]	None
00A1148-008.001	F-20R	SOLID	3/28/00	0847	T883A	1-SAMPLE / P/G/1	PA04A017 (Alpha Spec Qualitative) [Routine]	None
00A1148-010.001	H-19R	SOLID	3/29/00	0915	T883B	1-SAMPLE / P/G/1	PA04A017 (Alpha Spec Qualitative) [Routine]	None

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	4/13/00 1510	<i>[Signature]</i>	4/13/00 1510
<i>[Signature]</i>	5/11/00 1510	<i>[Signature]</i>	5/11/00 1510
<i>[Signature]</i>		<i>[Signature]</i>	
<i>[Signature]</i>		<i>[Signature]</i>	

**FINAL SAMPLE DISPOSITION** Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process) **Disposed By** *[Signature]* **Date/Time**

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# CHAIN OF CUSTODY. SAMPLE ANALYSIS REQUEST

RMRS

RIN		Contact/Requestor		Telephone No.		MSIN		FAX	
00A1148		SZYDLOWSKI, TOM		8165					
Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative; Packing		
E-3R/QC	SOLID	3/28/00	1410	T750E	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None		
L-1N	SOLID	3/29/00	1315	T903A	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None		
N-2N	SOLID	3/28/00	1310	T903A	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None		
N-2N/QC	SOLID	3/28/00	1311	T903A	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None		
O-1R	SOLID	3/28/00	1325	T903A	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None		
G-3R	SOLID	3/28/00	1319	T903A	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None		
G-3R/QC	SOLID	3/28/00	1321	T903A	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None		
A-16R	SOLID	3/28/00	1510	T331A	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None		
C-13R	SOLID	3/28/00	1500	T331A	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None		
C-13R/QC	SOLID	3/28/00	1503	T331A	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None		
H-3R	SOLID	4/5/00	1205	TB595	1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None		
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time		
<i>[Signature]</i>	4/13/00 1510	<i>[Signature]</i>	4/13/00 1510						
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time		
<i>[Signature]</i>	5/4/00 1510	<i>[Signature]</i>	5-11-00 1510						
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time		
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time		
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process)		Disposed By		Date/Time			

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at present 00A1148-077001



CHAIN OF CUSTODY TIPLE ANALYSIS REQUEST

RMP  
RFETS

Telephone No. 8165 MSIN / 4605  
 Purchase Order/Charge Code NG2200C1  
 Ice Chart No. N/A  
 Temp. N/A  
 Bill of Lading/Air Bill No.  
 PRE 000515-00881-001

Special Instructions Hold Time Total Activity Exemption: Yes  No   
 The matrix investigation does not need to be performed on these samples They are the same matrix as RIN#00A1057.

Botle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative / Packing
00A1148-015.002	A-7RQC	SOLID	5/28/00	09:32	T883C	1-SAMPLE / P	TR01A187 (Po-210, Pu, Am, U) [21dS]	None
00A1148-018.002	O-1R	SOLID	3/28/00	12:48	T771D	1-SAMPLE / P	TR01A187 (Po-210, Pu, Am, U) [21dS]	None
00A1148-031.002	O-1R	SOLID	3/28/00	13:25	T803A	1-SAMPLE / P	TR01A187 (Po-210, Pu, Am, U) [21dS]	None
00A1148-034.002	A-18R	SOLID	3/28/00	15:10	T331A	1-SAMPLE / P	TR01A187 (Po-210, Pu, Am, U) [21dS]	None

Relinquished By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	5/15/00 13:20	<i>[Signature]</i>	5-15-00 13:20		

Final Sample Disposition  
 Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process)  
 Disposed By  
 Date/Time

**CHAIN OF CUSTODY / SAMPLE ANALYSIS REQUEST**

**RMRS**  
**RFETS**

Telephone No. **8165** MSIN **FAX**  
 Purchase Order/Charge Code **NG2200C1**  
 Ice Chest No. **CAS 122199** Temp.  
 Bill of Lading/Air Bill No.  
 Protocol **PRE**

**SCREENING REQUIRED**   
**SPECIAL INSTRUCTIONS** Hold Time Total Activity Exemption: Yes  No

Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None
1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None
1-SAMPLE / P/G / 1	PA04A017 (Alpha Spec Qualitative) [Routine]	None

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	6/1/00 1245	<i>[Signature]</i>	6/1/00 1245
<i>[Signature]</i>	6/5/00 1356	<i>[Signature]</i>	6/5/00 1358
<i>[Signature]</i>	6/5/00 1411	<i>[Signature]</i>	6/5/00 1411

**POSSIBLE SAMPLE HAZARDS/REMARKS**  
 Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO  
 Are other known hazardous substances present? YES or NO  
 \*\* \*\* \*

**FINAL SAMPLE DISPOSITION**  
 Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process) Disposed By Date/Time

SURVEY PACKAGE CALCULATION WORKSHEET

Package ID: 2000-01		Building: T881A		
Survey Area: Not Applicable		Survey Unit: Interior		
<b>Survey Unit Description:</b> This trailer was acquired and installed at this site, northeast of Building 881, in June of 1983. The size of this trailer is approximately 14' X 70'.				
<input checked="" type="checkbox"/> Total Surface Activity		<input type="checkbox"/> Media Surface Activity		
<input checked="" type="checkbox"/> Removable Surface Activity		<input type="checkbox"/> Volumetric Surface Activity		
<p>Step 1: Calculate the relative shift <math>\Delta/\sigma_s</math>.</p> $\Delta/\sigma_s = (DCGL-LBGR)/\sigma_s$ $\Delta/\sigma_s = 1.0$ <p>where: A value of 1.0 was chosen since no survey data is available and <math>\Delta/\sigma_s</math> may vary between 1.0 and 3.0. The use of 1.0 maximizes the number of surveys required.</p> <p>Step 2: Determine Sign p using the calculated relative shift and Table 7-1. Sign p is the estimated probability that a random measurement from the survey unit will be less than the <math>DCGL_w</math> when the survey unit median is actually at the LBGR. Sign p = 0.841345</p> <p>Step 3: Determine Decision Error Percentiles for <math>Z_{1-\alpha}</math> and <math>Z_{1-\beta}</math> and the selected decision error levels <math>\alpha</math> and <math>\beta</math>. Typical (<math>\alpha</math>) and (<math>\beta</math>) values used at RFETS are 0.05 and 0.05 respectively. This yields a <math>Z_{1-\alpha}</math> and <math>Z_{1-\beta}</math> value of 1.645 and 1.645 respectively.</p> <p>Step 4: Calculate Number of Data Points (N) for Sign Test using the following equation:</p> $N = \frac{(Z_{1-\alpha} + Z_{1-\beta})^2}{4(\text{Sign } p - 0.5)^2} = 23.22$ <p>Step 5: Increase the number of data points by 20% to ensure sufficient power of the tests and to allow for possible data losses. <math>23.22 * 1.2 = 27.86</math></p> <p>Conclusion:</p> <p>A total of 28 data points will be needed to satisfy MARSSIM statistical requirements.</p>				
RICK ROBERTS		[Redacted]	[Signature]	1/28/00
Project RE Printed Name			Project RE Signature	Date
H.B. ESTABROOKS		[Redacted]	[Signature]	1/31/00
RESS RE Printed Name			RESS RE Signature	Date

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20/242 RO

**Removable Activity  
(dpm/100 cm<sup>2</sup>) Alpha**

0.6  
0.0  
3.3  
0.6  
4.5  
1.8  
-0.9  
3.0  
0.3  
2.1  
1.5  
1.8  
2.1  
-1.5  
0.3  
-0.9  
3.0  
1.8  
0.6  
-1.5  
1.8  
2.1  
3.0  
1.8  
2.1  
-1.5  
3.3  
-0.9

Survey Area - N/A  
Survey Unit - Exterior  
Building - T331A  
Survey Unit Description - Roof and walls of Trailer T331A  
Removable Contamination Data Sheet  
DCGL<sub>w</sub> 20 dpm/100 cm<sup>2</sup>  
n 28  
Mean 1.2 dpm/100 cm<sup>2</sup>  
Std Dev 1.7 dpm/100 cm<sup>2</sup>

No measurement exceeds the DCGL<sub>w</sub>

Removable Activity  
(dpm/100 cm<sup>2</sup>) Beta

0.8  
10.8  
29.2  
14.8  
12.8  
-24.8  
-23.2  
46.8  
-2.8  
16.8  
2.8  
-2.8  
-7.2  
30.8  
15.2  
-5.2  
12.8  
11.2  
4.8  
-1.2  
-12.8  
-1.2  
4.8  
-14.8  
8.8  
12.8  
5.2  
-17.2

Survey Area - N/A  
Survey Unit - Exterior  
Building - T331A  
Survey Unit Description - Roof and walls of Trailer T331A  
Removable Contamination Data Sheet  
DCGL<sub>w</sub> 1000 dpm/100 cm<sup>2</sup>  
n 28  
Mean 4.6 dpm/100 cm<sup>2</sup>  
Std Dev 16.1 dpm/100 cm<sup>2</sup>  
No measurement exceeds the DCGL<sub>w</sub>

**Total Surface Activity  
(dpm/100 cm<sup>2</sup>) Alpha**

172.5  
143.2  
149.6  
117.3  
91.4  
97.8  
110.5  
143.7  
127.1  
146.6  
127.1  
41.6  
17.9  
35.8  
3.1  
-2.9  
22.3  
31.9  
-22.3  
-6.2  
0  
9.3  
-12.1  
12.6  
43.3  
18.6  
27.9  
24.7

Survey Area - N/A  
Survey Unit - Exterior  
Building - T331A  
Survey Unit Description - Roof and walls of Trailer T331A  
Total Surface Activity Data Sheet

DCGL<sub>w</sub> 100 dpm/100 cm<sup>2</sup>

n 28

Mean 59.7 dpm/100 cm<sup>2</sup>

Std Dev 61.0 dpm/100 cm<sup>2</sup>

Nine measurement exceeds the DCGL<sub>w</sub>  
Eleven measurement exceeds 75% of the DCGL<sub>w</sub>

**Precision**

Location	C <sub>1</sub>	C <sub>2</sub>	C <sub>1</sub> -C <sub>2</sub>	(C <sub>1</sub> +C <sub>2</sub> )/2	RPD
A-1N	41.6	32.3	9.3	36.95	25.16915
O-1E	-6.2	32.7	-38.9	13.25	-293.5849
C-2W	-12.1	38.6	-50.7	13.25	-382.6415
A-1W	0.0	29.3	-29.3	14.65	-200
C-1W	9.3	52.3	-43	30.8	-139.6104

Precision (RPD) is out of specification due to low value survey measurements

**Recalculated N**

$\Delta/\sigma_s = (DCGL-LBGR)/\sigma_s$   
 $\Delta/\sigma_s = (100-50)/61.0$   
 $\Delta/\sigma_s = 0.8$   
 Sign p = 0.788145  
 N = 32.59  
 $32.59 * 1.2 = 13.06$   
 N = 39

Note: All measurements that exceed 75% of the DCGL<sub>w</sub> are from the roof. The roof is suspected to have deposition from naturally occurring radioactivity. Samples have been collected to verify this. As a result, the number of measurements collected is acceptable.

**Total Surface Activity  
(dpm/100 cm<sup>2</sup>) Beta**

Survey Area - N/A  
 Survey Unit - Exterior  
 Building - T331A  
 Survey Unit Description - Roof and walls of Trailer T331A  
 Total Surface Activity Data Sheet  
 DCGL<sub>w</sub> 5000 dpm/100 cm<sup>2</sup>  
 n 28  
 Mean -21.8 dpm/100 cm<sup>2</sup>  
 Std Dev 194.4 dpm/100 cm<sup>2</sup>

No measurement exceeds the DCGL<sub>w</sub>  
 No measurement exceeds 75% of the DCGL<sub>w</sub>

Precision

Location	C <sub>1</sub>	C <sub>2</sub>	C <sub>1</sub> -C <sub>2</sub>	(C <sub>1</sub> +C <sub>2</sub> )/2	RPD
A-1N	-158	77	-235	-40.5	580.2469
O-1E	13	3	10	8	125
C-2W	-63	158	-221	47.5	0
A-1W	-428	111	-539	-158.5	340.0631
C-1W	47	-266	313	-109.5	-285.8447

Precision (RPD) is out of specification due to low value survey measurements

**Recalculated N**

$\Delta/\sigma_s = (DCGL-LBGR)/\sigma_s$   
 $\Delta/\sigma_s = (5000-2500)/194.4$   
 $\Delta/\sigma_s = 12.86$  (default to 3)  
 Sign p = 0.998650  
 N = 10.88  
 $10.88*1.2 = 13.05$   
 N = 14

- 30
- 74
- 17
- 51
- 249
- 189
- 138
- 0
- 37
- 20
- 303
- 158
- 53
- 372
- 481
- 171
- 184
- 60
- 37
- 13
- 428
- 47
- 63
- 80
- 301
- 170
- 177
- 40

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### OASIS Direct Analysis Measurement Result Information

The samples listed below were analyzed using the Oxford Alpha Spectroscopy Integrated System (OASIS) at the Rocky Flats Environmental Technology Site. These samples were counted directly in the alpha spectrometer chambers, without chemical preparation. The technical basis for this type of analysis has been established in TBD-00143, Direct Analysis of Alpha Emitters Using the Oxford Alpha Spectroscopy Integrated System (OASIS), and TBD-00153, Use of the OASIS for Direct Differentiation between Po-210 and DOE-enhanced Materials.

In order to maintain the quality of OASIS measurements, the instrument is performance tested in accordance with Operations Order OO-771-228, Direct Analysis of Alpha Emitters Using the Oxford Alpha Spectroscopy Integrated System (OASIS). This Operations Order establishes the periodicity of performance test and background measurements, and the criteria against which these measurements are judged. All samples are counted by RCTs or REs qualified per JPM 036-119-53, Direct Analysis of Alpha Emitters Using the Oxford Alpha Spectroscopy Integrated System (OASIS) and approved by qualified REs.

A sample of the calibration and performance test data is attached for your review. All such data are maintained by the OASIS analysts and are available for your perusal.

The samples were 1-in coupons with an area of 4.82 cm<sup>2</sup>. Calculation of the activity per 100 cm<sup>2</sup> was performed assuming that samples were representative. Errors are quoted at one standard deviation, accounting for all associated analytical uncertainties. Uranium results refer to the presence of U-238, U-234, or U-235.

Sample Number	OASIS dpm ± 1s		dpm/100cm <sup>2</sup> ±1s	
00A1148-001.001	2.53	0.22	52.5	4.5
00A1148-002.001	1.83	0.12	37.8	2.6
00A1148-003.001	1.11	0.10	23.0	2.0
00A1148-004.001	2.90	0.24	60.0	4.9
00A1148-005.001	5.87	0.33	121.6	6.8
00A1148-006.001	3.54	0.16	73.3	3.4
00A1148-007.001	3.44	0.25	71.4	5.2
00A1148-008.001	5.93	0.22	122.6	4.5
00A1148-009.001	2.73	0.17	56.4	3.5
00A1148-010.001	4.18	0.27	85.7	5.7
00A1148-011.001	4.33	0.28	89.8	5.8
00A1148-012.001	5.58	0.21	115.7	4.4
00A1148-013.001	0.04	0.05	0.8	1.1
00A1148-014.001	7.91	0.39	163.5	8.1
00A1148-015.001	6.94	0.25	143.6	5.2
00A1148-016.001	7.21	0.38	148.4	7.8
00A1148-017.001	5.12	0.32	106.2	6.6
00A1148-018.001	3.37	0.25	69.8	5.3
00A1148-019.001	11.76	0.46	243.5	9.6
00A1148-020.001	8.92	0.40	184.6	8.4
00A1148-021.001	9.89	0.24	204.9	4.9
00A1148-022.001	0.13	0.08	2.7	1.6
00A1148-023.001	0.96	0.14	19.8	2.9

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00A1148-024.001	3.27	0.16	67.7	3.3
00A1148-025.001	7.58	0.37	157.1	7.7
00A1148-026.001	10.11	0.45	209.6	9.3
00A1148-027.001	10.40	0.46	215.6	9.5
00A1148-028.001	0.62	0.12	12.8	2.4
00A1148-029.001	2.87	0.15	59.5	3.1
00A1148-030.001	3.08	0.16	63.8	3.2
00A1148-031.001	10.33	0.46	214.1	9.4
00A1148-032.001	3.31	0.25	68.6	5.2
00A1148-033.001	6.06	0.22	125.6	4.5
00A1148-034.001	10.72	0.31	222.2	6.3
00A1148-035.001	9.53	0.42	197.5	8.8
00A1148-036.001	7.51	0.38	155.6	7.9
00A1148-037.001	2.37	0.14	49.1	2.8
00A1148-038.001	1.88	0.08	38.9	1.7
00A1148-039.001	2.21	0.09	45.7	1.8

Sample ID	Identified Peaks				Detection Sensitivity (dpm/100 cm <sup>2</sup> )			
	Pu+Am	Pu-239	Am-241	U	Pu+Am	Pu-239	Am-241	U
00A1148-001.001	No	No	No	No	79	70	10	79
00A1148-002.001	No	No	No	No	32	28	4	32
00A1148-003.001	No	No	No	No	30	26	4	30
00A1148-004.001	No	No	No	No	79	70	10	79
00A1148-005.001	No	No	No	No	79	70	10	79
00A1148-006.001	No	No	No	No	30	26	4	30
00A1148-007.001	No	No	No	No	79	70	10	79
00A1148-008.001	No	No	No	No	30	26	4	30
00A1148-009.001	No	No	No	No	30	26	4	30
00A1148-010.001	No	No	No	No	79	70	10	79
00A1148-011.001	No	No	No	No	79	70	10	79
00A1148-012.001	No	No	No	No	30	26	4	30
00A1148-013.001	No	No	No	No	79	70	10	79
00A1148-014.001	No	No	No	No	79	70	10	79
00A1148-015.001	No	No	No	No	34	30	4	34
00A1148-016.001	No	No	No	No	79	70	10	79
00A1148-017.001	No	No	No	No	79	70	10	79
00A1148-018.001	No	No	No	No	79	70	10	79
00A1148-019.001	No	No	No	No	70	61	8	70
00A1148-020.001	No	No	No	No	79	70	10	79
00A1148-021.001	No	No	No	No	17	15	2	17
00A1148-022.001	No	No	No	No	79	70	10	79
00A1148-023.001	No	No	No	No	79	70	10	79
00A1148-024.001	No	No	No	No	30	26	4	30
00A1148-025.001	No	No	No	No	79	70	10	79
00A1148-026.001	No	No	No	No	79	70	10	79
00A1148-027.001	No	No	No	No	79	70	10	79
00A1148-028.001	No	No	No	No	79	70	10	79

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00A1148-029.001	No	No	No	No	30	26	4	30
00A1148-030.001	No	No	No	No	30	26	4	30
00A1148-031.001	No	No	No	No	79	70	10	79
00A1148-032.001	No	No	No	No	79	70	10	79
00A1148-033.001	No	No	No	No	30	26	4	30
00A1148-034.001	No	No	No	No	30	26	4	30
00A1148-035.001	No	No	No	No	75	66	9	75
00A1148-036.001	No	No	No	No	79	70	10	79
00A1148-037.001	No	No	No	No	30	26	4	30
00A1148-038.001	No	No	No	No	12	10	1	12
00A1148-039.001	No	No	No	No	12	10	1	12

Approved by:

C. J. Bianconi 5/10/00  
C. J. Bianconi, CHP  
B771 Radiological Engineering  
303.966.7262  
303.212.5706 dp

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## OASIS Direct Analysis Measurement Result Information

Two samples were received on 6/1/2000. The samples were 1-in coupons with an area of 4.82 cm<sup>2</sup>.

The samples were analyzed using the Oxford Alpha Spectroscopy Integrated System (OASIS) at the Rocky Flats Environmental Technology Site. These samples were counted directly in the alpha spectrometer chamber, without chemical preparation. The basis for this type of analysis has been established in TBD-00143, Direct Analysis of Alpha Emitters Using the Oxford Alpha Spectroscopy Integrated System (OASIS), and TBD-00153, Use of the OASIS for Direct Differentiation between Po-210 and DOE-added Materials.

In order to maintain the quality of OASIS measurements, the instrument is performance tested in accordance with Operations Order OO-771-228, Direct Analysis of Alpha Emitters Using the Oxford Alpha Spectroscopy Integrated System (OASIS). This Operations Order establishes the periodicity of performance test and background measurements, and the criteria against which these measurements are judged. All samples are counted by RCTs or REs qualified per JPM 036-119-53, Direct Analysis of Alpha Emitters Using the Oxford Alpha Spectroscopy Integrated System (OASIS), and approved by qualified REs.

Calculation of the activity per 100 cm<sup>2</sup> was performed assuming that the activity was homogeneously distributed. Errors are quoted at two standard deviations in the final results, accounting for all associated analytical uncertainties. Uranium results refer to the presence of U-238, U-234, or U-235.

Sample ID	OASIS dpm ± 1s		dpm/100cm <sup>2</sup> ± 2s	
00A1148-040.001 D2R1	24.3	0.5	504	19
00A1148-041.001 D2RQC	30.7	0.9	637	35

Sample ID	Count time (seconds)	Detection Sensitivity dpm/100cm <sup>2</sup>			
		Pu+Am	Pu-239	Am-241	U
00A1148-040.001 D2R1	43200	20	17	2	20
00A1148-041.001 D2RQC	10800	79	70	10	79

Peaks for Pu-239, Am-241, and uranium were not identified in the spectra.

Approved by:



C. J. Bianconi, CHP  
 B771 Radiological Engineering  
 303.966.7262  
 303.212.5706 dp

245

00A1148  
Data Package Narrative

Four waste samples, under the Subcontract Number KH700331EP6, were received on May 15, 2000. Four samples were analyzed by Alpha Spectroscopy for Polonium-210, Plutonium 239/240, Uranium-233/234,235,238, and Americium 241.

- Analytical Method: EPI A-011 (Alpha Spec)
- Matrix Interferences: There are no matrix interferences to report.
- QC Deficiencies: There were no deficiencies.
- Hold Times: All samples were analyzed within the required holding time.
- RDLs: There were no failed detection limits.
- Reanalysis Information: There were no reanalysis of the samples.
- Deviations from SOP: See following page.

Comments:

1. RC01CAL\_EPI\_3-JUN-2000, RC01CAL\_EPI\_4-JUN-2000 correspond to RC01CAL\_EPI\_01JUN2000.
2. The following samples did not meet the FWHM requirement of < 80 keV.

1000060362_PU	94 keV
1000060364_PU	92 keV
1000061142_UU	85 keV

3. Sample 00A1148-031.002, 00A1148-034.002 and QC 1000061142 were recounted due to failed yield.

017

Sample QC Results Summary  
6/20/00

ch #: 27172  
RIN 00A1148  
Line Item Code: TR01A187  
Matrix: Micro. solid

KHCO ID #	GEL ID #	Analysis	Result pCi/g	2sigma Error pCi/g	MDA pCi/g	RDL pCi/g	Tracer Yield %
00A1148-015.002	25798001	Polonium-210	2.76E+00	8.17E-01	1.70E-01	1.00	68.72
00A1148-019.002	25798002	Polonium-210	2.74E+00	5.74E-01	1.56E-01	1.00	46.74
00A1148-031.002	25798003	Polonium-210	3.80E+00	8.39E-01	2.84E-01	1.00	54.27
00A1148-034.002	25798004	Polonium-210	5.07E+00	1.26E+00	2.22E-01	1.00	57.88
1000060356	Blank	Polonium-210	5.39E-02	8.61E-02	1.53E-01	1.00	49.73
1000061844	Duplicate 00A1057-002.001	Polonium-210	2.47E+00	5.60E-01	1.65E-01	1.00	70.11
1000060358	LCS	Polonium-210	1.37E+01	1.12E+00	1.73E-01	1.00	59.83

LCS recovery:

U-210	Nom. Conc. 15.4	Recovery: 89%
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Equivalency:

Po-210 F/E = 1.319

247 P.04

Sample QC Results Summary  
6/13/00

Job #: 27173

RIN 00A1148

Line Item Code: TR01A187

Matrix: Mine, solid

KHCO ID #	GEL ID #	Analysis	Result pCi/g	2sigma Error pCi/g	MDA pCi/g	RDL pCi/g	Tracer Yield %
00A1148-015.002	25798001	Americium-241	1.09E-01	9.57E-02	5.92E-02	0.30	81.49
00A1148-019.002	25798002	Americium-241	4.20E-02	3.72E-02	4.51E-02	0.30	89.13
00A1148-031.002	25798003	Americium-241	0.00E+00	0.00E+00	3.44E-02	0.30	85.19
00A1148-034.002	25798004	Americium-241	1.45E-02	6.08E-02	1.66E-01	0.30	64.68
1000060359	Blank	Americium-241	3.54E-02	4.01E-02	6.37E-02	0.30	86.16
1000061133	Duplicate 00A1148-031.002	Americium-241	0.00E+00	0.00E+00	4.27E-02	0.30	90.73
1000060361	LCS	Americium-241	4.39E+00	3.71E-01	2.21E-02	0.30	95.55

LCS recovery:

Am-241

Nom. Conc.  
4.5Recovery:  
98%

Equivalency:

Am-241

F/E = 0

248

Sample QC Results Summary  
6/13/00

Run #: 27174  
RIN 00A1148  
Line Item Code: TR01A187  
Matrix: Misc. solid

KHCO ID #	GEL ID #	Analysis	Result pCi/g	2sigma Error pCi/g	MDA pCi/g	RDL pCi/g	Tracer Yield %
00A1148-015.002	25798001	Plutonium-239/240	3.74E-01	1.68E-01	5.33E-02	0.30	95.36
00A1148-019.002	25798002	Plutonium-239/240	-9.15E-03	1.79E-02	1.13E-01	0.30	39.51
00A1148-031.002	25798003	Plutonium-239/240	-2.74E-02	3.10E-02	1.58E-01	0.30	62.53
00A1148-034.002	25798004	Plutonium-239/240	1.62E-02	6.79E-02	1.85E-01	0.30	59.66
1000060362	Blank	Plutonium-239/240	0.00E+00	0.00E+00	2.62E-02	0.30	81.37
1000061141	Duplicate 00A1148-031.002	Plutonium-239/240	0.00E+00	0.00E+00	6.05E-02	0.30	66.68
1000060364	LCS	Plutonium-239/240	5.04E+00	3.93E-01	2.16E-02	0.30	97.91

LCS recovery:

-239/240

Nom. Conc.  
5.7

Recovery:  
88%

Equivalency:  
Pu-239/240

F/E = 0.883

249

Batch #: 27175

RIN 00A1148

Line Item Code: TR01A187

Matrix: Misc. solid

KHCO ID #	GEL ID #	Analysis	Result pCi/g	2sigma Error pCi/g	MDA pCi/g	RDL pCi/g	Tracer Yield %
00A1148-015.002	25798001	Uranium-233/234	3.48E-02	6.21E-02	1.24E-01	1.00	104.52
		Uranium-235	-7.52E-03	4.34E-02	1.41E-01	1.00	104.52
		Uranium-238	6.80E-04	4.04E-02	1.24E-01	1.00	104.52
00A1148-019.002	25798002	Uranium-233/234	1.72E-02	2.85E-02	5.57E-02	1.00	99.31
		Uranium-235	-2.69E-03	2.33E-02	6.66E-02	1.00	99.31
		Uranium-238	-9.39E-03	1.93E-02	6.66E-02	1.00	99.31
00A1148-031.002	25798003	Uranium-233/234	1.54E-02	3.96E-02	8.79E-02	1.00	107.82
		Uranium-235	-1.06E-02	1.46E-02	7.70E-02	1.00	107.82
		Uranium-238	1.04E-02	2.04E-02	2.82E-02	1.00	107.82
00A1148-034.002	25798004	Uranium-233/234	1.18E-01	8.36E-02	9.73E-02	1.00	105.49
		Uranium-235	-6.60E-03	1.30E-02	7.90E-02	1.00	105.49
		Uranium-238	6.56E-02	6.58E-02	9.73E-02	1.00	105.49
0060365	Blank	Uranium-233/234	7.74E-04	2.65E-02	6.85E-02	1.00	104.63
		Uranium-235	-1.24E-02	1.21E-02	5.91E-02	1.00	104.63
		Uranium-238	2.58E-04	1.53E-02	4.69E-02	1.00	104.63
1000061142	Duplicate 00A1148-031-002	Uranium-233/234	2.02E-02	2.87E-02	4.87E-02	1.00	97.21
		Uranium-235	-8.22E-03	1.14E-02	6.00E-02	1.00	97.21
		Uranium-238	8.04E-03	2.52E-02	6.00E-02	1.00	97.21
1000060367	LCS	Uranium-233/234	3.89E+00	3.20E-01	6.78E-02	1.00	99.19
		Uranium-235	2.12E-01	7.62E-02	4.97E-02	1.00	99.19
		Uranium-238	4.19E+00	3.32E-01	5.67E-02	1.00	99.19

LCS recovery:

U-238	Nom. Conc. 4.336	Recovery: 97%
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Equivalency:

U-233/234	F/E = 0.098
U-235	F/E = 0.128
U-238	F/E = 0.073

250

**Luker, Steve**

**From:** Salmans, Michael  
**Sent:** Tuesday, June 13, 2000 3:04 PM  
**To:** Luker, Steve  
**Subject:** FW: 00A1148

**Mike Salmans**

*Analytical Services*  
Phone # 303-966-5057  
Pager # 303-212-3149  
Fax # 303-966-3578

-----Original Message-----

**From:** Lee Heath [SMTP:lmh@mail.gel.com]  
**Sent:** Tuesday, June 13, 2000 2:26 PM  
**To:** Michael Salmans  
**Subject:** 00A1148

The 100% size of these circular disks of metal and rubber were:

(1-4 in order)  
0.7182 g  
1.8692 g  
2.1784 g  
0.7303 g (rubber)

251

00A1148  
Data Package Narrative

Four waste samples, under the Subcontract Number KH700331EP6, were received on May 15, 2000. Four samples were analyzed by Alpha Spectroscopy for Polonium-210, Plutonium 239/240, Uranium-233/234,235,238, and Americium 241.

- Analytical Method: EPI A-011 (Alpha Spec)
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- Hold Times: All samples were analyzed within the required holding time.
- RDLs: There were no failed detection limits.
- Reanalysis Information: There were no reanalysis of the samples.
- Deviations from SOP: See following page.

Comments:

1. RC01CAL\_EPI\_3-JUN-2000, RC01CAL\_EPI\_4-JUN-2000 correspond to RC01CAL\_EPI\_01JUN2000.
2. The following samples did not meet the FWHM requirement of < 80 keV.

1000060362_PU	94 keV
1000060364_PU	92 keV
1000061142_UU	85 keV

3. Sample 00A1148-031.002, 00A1148-034.002 and QC 1000061142 were recounted due to failed yield.

017

Batch #: 27172  
RIN 00A1148  
Line Item Code: TR01A187  
Matrix: Misc. solid

KHCO ID #	GEL ID #	Analysis	Result pCi/g	2sigma Error pCi/g	MDA pCi/g	RDL pCi/g	Tracer Yield %
00A1148-015.002	25798001	Polonium-210	2.76E+00	8.17E-01	1.70E-01	1.00	68.72
00A1148-019.002	25798002	Polonium-210	2.74E+00	5.74E-01	1.56E-01	1.00	46.74
00A1148-031.002	25798003	Polonium-210	3.80E+00	8.39E-01	2.84E-01	1.00	54.27
00A1148-034.002	25798004	Polonium-210	5.07E+00	1.26E+00	2.22E-01	1.00	57.88
1000060356	Blank	Polonium-210	5.39E-02	8.61E-02	1.53E-01	1.00	49.73
1000061844	Duplicate 00A1057-002.001	Polonium-210	2.47E+00	5.60E-01	1.65E-01	1.00	70.11
1000060358	LCS	Polonium-210	1.37E+01	1.12E+00	1.73E-01	1.00	59.83

LCS recovery:

Po-210

Nom. Conc.  
15.4

Recovery:  
89%

Equivalency:  
Po-210

F/E = 1.319

253

Rocky Flats

Sample QC Results Summary  
6/13/00

Batch #: 27173  
RIN 00A1148  
Line Item Code: TR01A187  
Matrix: Misc. solid

KHCO ID #	GEL ID #	Analysis	Result pCi/g	2sigma Error pCi/g	MDA pCi/g	RDL pCi/g	Tracer Yield %
00A1148-015.002	25798001	Americium-241	1.09E-01	9.57E-02	5.92E-02	0.30	81.49
00A1148-019.002	25798002	Americium-241	4.20E-02	3.72E-02	4.51E-02	0.30	89.13
00A1148-031.002	25798003	Americium-241	0.00E+00	0.00E+00	3.44E-02	0.30	85.19
00A1148-034.002	25798004	Americium-241	1.45E-02	6.08E-02	1.66E-01	0.30	64.68
1000060359	Blank	Americium-241	3.54E-02	4.01E-02	6.37E-02	0.30	86.16
1000061138	Duplicate 00A1148-031.002	Americium-241	0.00E+00	0.00E+00	4.27E-02	0.30	90.73
1000060361	LCS	Americium-241	4.39E+00	3.71E-01	2.21E-02	0.30	95.55

LCS recovery:

Am-241	Nom. Conc. 4.5	Recovery: 98%
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Equivalency:

Am-241 F/E = 0

General Engineering Labs, Inc.

020

254

P.05

FAX NO. 303 866 5278

SUPPORT SERVICES

JUN-22-00 THU 16:28

6/13/00

Batch #: 27174

RIN 00A1148

Line Item Code: TR01A187

Matrix: Misc. solid

KHCO ID #	GEL ID #	Analysis	Result pCi/g	2sigma Error pCi/g	MDA pCi/g	RDL pCi/g	Tracer Yield %
00A1148-015.002	25798001	Plutonium-239/240	3.74E-01	1.68E-01	5.33E-02	0.30	95.36
00A1148-019.002	25798002	Plutonium-239/240	-9.15E-03	1.79E-02	1.13E-01	0.30	39.51
00A1148-031.002	25798003	Plutonium-239/240	-2.74E-02	3.10E-02	1.58E-01	0.30	62.53
00A1148-034.002	25798004	Plutonium-239/240	1.62E-02	6.79E-02	1.85E-01	0.30	59.66
1000060362	Blank	Plutonium-239/240	0.00E+00	0.00E+00	2.62E-02	0.30	81.37
1000061141	Duplicate 00A1148-031.002	Plutonium-239/240	0.00E+00	0.00E+00	6.05E-02	0.30	66.68
1000060364	LCS	Plutonium-239/240	5.04E+00	3.93E-01	2.16E-02	0.30	97.91

LCS recovery:

J-239/240

Nom. Conc.  
5.7

Recovery:  
88%

Equivalency:

Pu-239/240

F/E = 0.883

255

Batch #: 27175  
RIN 00A1148  
Line Item Code: TR01A107  
Matrix: Misc. solid

KHCO ID #	GEL ID #	Analysis	Result pCi/g	2sigma Error pCi/g	MDA pCi/g	RDL pCi/g	Tracer Yield %
00A1148-015.002	25798001	Uranium-233/234	3.48E-02	6.21E-02	1.24E-01	1.00	104.52
		Uranium-235	-7.52E-03	4.34E-02	1.41E-01	1.00	104.52
		Uranium-238	6.80E-04	4.04E-02	1.24E-01	1.00	104.52
00A1148-019.002	25798002	Uranium-233/234	1.72E-02	2.85E-02	5.57E-02	1.00	99.31
		Uranium-235	-2.69E-03	2.33E-02	6.66E-02	1.00	99.31
		Uranium-238	-9.39E-03	1.93E-02	6.66E-02	1.00	99.31
00A1148-031.002	25798003	Uranium-233/234	1.54E-02	3.96E-02	8.79E-02	1.00	107.82
		Uranium-235	-1.06E-02	1.46E-02	7.70E-02	1.00	107.82
		Uranium-238	1.04E-02	2.04E-02	2.82E-02	1.00	107.82
00A1148-034.002	25798004	Uranium-233/234	1.18E-01	8.36E-02	9.73E-02	1.00	105.49
		Uranium-235	-6.60E-03	1.30E-02	7.90E-02	1.00	105.49
		Uranium-238	6.56E-02	6.58E-02	9.73E-02	1.00	105.49
1060365	Blank	Uranium-233/234	7.74E-04	2.65E-02	6.85E-02	1.00	104.63
		Uranium-235	-1.24E-02	1.21E-02	5.91E-02	1.00	104.63
		Uranium-238	2.58E-04	1.53E-02	4.69E-02	1.00	104.63
1000061142	Duplicate 00A1148-031-002	Uranium-233/234	2.02E-02	2.87E-02	4.87E-02	1.00	97.21
		Uranium-235	-8.22E-03	1.14E-02	6.00E-02	1.00	97.21
		Uranium-238	8.04E-03	2.52E-02	6.00E-02	1.00	97.21
1000060367	LCS	Uranium-233/234	3.89E+00	3.20E-01	6.78E-02	1.00	99.19
		Uranium-235	2.12E-01	7.62E-02	4.97E-02	1.00	99.19
		Uranium-238	4.19E+00	3.32E-01	5.67E-02	1.00	99.19

LCS recovery:

U-238	Nom. Conc. 4.336	Recovery: 97%
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Equivalency:

U-233/234	F/E = 0.098
U-235	F/E = 0.128
U-238	F/E = 0.073

*256*

**Luker, Steve**

**From:** Salmans, Michael  
**Sent:** Tuesday, June 13, 2000 3:04 PM  
**To:** Luker, Steve  
**Subject:** FW: 00A1148

**Mike Salmans**

*Analytical Services*  
Phone # 303-966-5057  
Pager # 303-212-3149  
Fax # 303-966-3578

-----Original Message-----

**From:** Lee Heath [SMTP:lmh@mail.gel.com]  
**Sent:** Tuesday, June 13, 2000 2:26 PM  
**To:** Michael Salmans  
**Subject:** 00A1148

The 100% size of these circular disks of metal and rubber were:

(1-4 in order)  
0.7182 g  
1.8692 g  
2.1784 g  
0.7303 g (rubber)

257 / 257

# Group B RLCRs

■ Group B RLCR

