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Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

Building 886

886 CLOSURE PROJECT – Phase 2, Part 1 PDSR

REVISION 0

April 1, 2002

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April 1, 2002

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ABBREVIATIONS/ACRONYMS

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

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EXECUTIVE SUMMARY

The 886 Cluster was divided into two separate phases for pre-demolition survey (PDS) characterization purposes. Phase 1 and Phase 2 areas were broken down as follows:

Phase 1: 886 exterior, 875 exterior, T886 interior and exterior, 888 interior and exterior, 888A (transformer slab and block wall) exterior, and 886 Office Room interiors (i.e., Rooms 106, 111, 116-123, 125, and 127-131)

Phase 2: 886 interior rooms (i.e., Rooms 101-104, 107-110, 112-115, 126, 126A, 126B, 140 and 141), 875 interior, 875 Tunnel, 828 Pit and 880 interior and exterior

Phase 2 areas were broken down further into "parts." Phase 2, Part 1 consists of B886 rooms 101–104, 107–110, 112-115, 126, 126A, 126B, 140, 141, and the above ground portion of the 875 tunnel. Phase 2, Part 2 consists of B875, the below ground portion of the 875 tunnel, 828 Pit and B880.

This report only consists of the Phase 2, Part 1 areas (i.e., B886 rooms 101–104, 107–110, 112-115, 126, 126A, 126B, 140, 141, and the above ground portions of the 875 tunnel). A Phase 1 PDS Report (PDSR) has already been submitted to RFFO and CDPHE. The Phase 2, Part 2 PDSR will be submitted at a future date.

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Phase 2, Part 1 areas. Because these areas will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). All Phase 2, Part 1 area surfaces were characterized in this PDS, including floors (slabs), walls, and ceilings. Environmental media beneath and surrounding the facilities were not within the scope of this PDSR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

This Phase 2, Part 1 PDS encompassed both radiological and chemical characterization to enable compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP). The characterization built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report, Reconnaissance Level Characterization, and In-Process Characterization.

Results indicate that no radiological or chemical contamination exists in excess of the PDSP unrestricted release limits, with the exception of a portion of the floor in Room 101 and the under-slab and wall-embedded process drain lines, HEUN lines, and one ventilation line. The Room 101 contaminated slab concrete, Room 101 and 103 under-slab and wall-embedded process drain lines and HEUN lines, and Room 101/875 tunnel wall-embedded ventilation line will be removed and disposed of as low level radioactive waste during building demolition. Potentially containing PCBs fluorescent light ballasts, asbestos containing materials, and all other hazardous materials were previously removed from the building.

Based upon this Phase 2, Part 1 PDSR and subject to concurrence by the CDPHE, these areas can be demolished and the waste managed as PCB Bulk Product waste or as sanitary waste, with exception of the contaminated portions of the Room 101 slab and equipment as identified above. The uncontaminated concrete can be used for backfill on-Site per the RFCA RSOP for Recycling Concrete. To ensure that the facilities remain free of contamination and that PDS data remain valid, isolation controls have been established, and the areas have been posted accordingly.

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1 INTRODUCTION

The 886 Cluster was divided into two separate phases for pre-demolition survey (PDS) characterization purposes. Phase 1 and Phase 2 areas were broken down as follows:

Phase 1: 886 exterior, 875 exterior, T886 interior and exterior, 888 interior and exterior, 888A (transformer slab and block wall) exterior, and 886 Office Room interiors (i.e., Rooms 106, 111, 116–123, 125, and 127-131)

Phase 2: 886 interior rooms (i.e., Rooms 101-104, 107-110, 112-115, 126, 126A, 126B, 140 and 141), 875 interior, 875 Tunnel, 828 Pit and 880 interior and exterior

Phase 2 areas were broken down further into "parts." Phase 2, Part 1 consists of B886 rooms 101–104, 107–110, 112-115, 126, 126A, 126B, 140, 141, and the above ground portions of the 875 tunnel. Phase 2, Part 2 consists of B875, the below ground portions of the 875 tunnel, B880, and the 828 Pit.

This report only consists of the Phase 2, Part 1 areas (i.e., B886 rooms 101–104, 107–110, 112-115, 126, 126A, 126B, 140, 141, and the above ground portions of the 875 tunnel). A Phase 1 PDS Report (PDSR) has already been submitted to RFFO and CDPHE. The Phase 2, Part 2 PDSR will be submitted at a future date.

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Phase 2, Part 1 areas. Because these areas will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). All Phase 2, Part 1 areas surfaces were characterized in this PDS including floors (slabs), walls, and ceilings.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these are the 886 Cluster facilities. The locations of these facilities are shown in Attachment A, Facility Location Map. These facilities no longer support the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before the facilities can be removed, a Pre-Demolition Survey (PDS) must be conducted; this document presents the PDS results for Phase 2, Part 1 areas. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS is built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Reports, Reconnaissance Level Characterization, and In-Process Characterization.

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1.1 Purpose

The purpose of this report is to communicate and document the results of the Phase 2., Part 1 PDS effort. PDSs are performed before building demolition to define the final radiological and chemical conditions of a facility. Final conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

1.2 Scope

This report presents the final radiological and chemical conditions of the 886 Cluster Phase 2, Part 1 areas. Environmental media beneath and surrounding the facilities are not within the scope of this PDSR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this PDS were the same DQOs identified in the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to section 2.0 of MAN-127-PDSP for these DQOs.

2 HISTORICAL SITE ASSESSMENT

A facility-specific Historical Site Assessment (HSA) and a Reconnaissance Level Characterization (RLC) were conducted to understand facility histories and related hazards. The HSA consisted of facility walkdowns, interviews, and document review, including review of the Historical Release Report. The 886 Cluster RLC was performed in FY 1997 and identified both radiological and chemical hazards. HSA and RLC results were used to identify data gaps and needs, and to develop radiological and chemical PDS characterization packages. Results of the 886 Cluster HSA and RLC were documented in the *Reconnaissance Level Characterization Report for the 886 Cluster Decommissioning Project* (RF/RMRS-97-124.UN). Refer to Attachment B for a copy of the 886 Cluster RLCR text. For a complete copy of the 886 Cluster RLCR, including Appendices A, B and C, refer to the 886 Cluster Characterization Project Files. In summary, the 886 Cluster RLCR identified radiological contaminates, asbestos, PCBs in paint, and RCRA metals in the paint used in previous High Contamination Areas as the only hazards in the Phase 2, Part 1 areas.

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3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Phase 2, Part 1 areas were characterized for radiological hazards per the PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern. Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to the RISS Characterization Project files for the 886 Cluster Radiological Characterization Plan). Radiological survey unit packages were developed for each survey unit. Phase 2, Part 1 survey unit identification numbers are as follows: 886-A-001 thru 886-A-004, 886-B-005, 886-B-006, 886-B-008, and 886-C-009. Each survey unit included the interior floor, walls and ceiling surfaces of the affected areas. Individual radiological survey unit packages are maintained in the RISS Characterization Project files.

Phase 2, Part 1 survey unit packages were developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), and scan measurements were collected in accordance with RSP 16.02 *Radiological Surveys of Surfaces and Structures*. Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis*. Quality control measures were implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control*. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps are presented in Attachment C, Radiological Data Summary and Survey Maps.

B886 Rooms 107, 109, 110, 113, 115, 126, 126A, 126B and 140 (Survey Unit 886-C-009)

Prior to the PDS of Rooms 109, 110, 113, 115, 126, 126A, 126B and 140, the rooms were stripped of equipment, and some interior walls were removed during asbestos abatement. These rooms were classified as MARSSIM Class 3 Survey Units. A total of 28 TSA and 28 RSA measurements were taken, and a 5% minimum scan survey was performed in these rooms. None of the measurements or scans indicated elevated activity above the appropriate $DCGL_W$ values. Refer to Attachment C-1 for survey data, statistical analysis results, survey locations, and radiological scan maps of these Survey Units.

B886 Room 101 (Survey Unit 886-A-001)

Prior to the PDS of Room 101, the room was stripped of all equipment (except the overhead crane); wall and ceiling surfaces were decontaminated. Portions of the contaminated floor slab were removed. However some portions of contaminated slab could not be removed prior to demolition, therefore, these portions were sprayed with fixative, covered with cardboard and metal plating, and will be removed during demolition and disposed of as LLW (refer to remaining slab portion locations in Figure C-2 in Attachment C-2). One contaminated piece of eight inch ventilation ducting was left embedded in the Room 101 foundation wall (refer to location in Figure C-2 in Attachment C-2), and will be removed during building demolition and disposed of as

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LLW. Additionally, two HEUN process piping lines and one Contaminated Drain Piping line were left embedded in the Room 101 west foundation wall (the lines run over to the 828 Pit; refer to location in Figure C-2 in Attachment C-2), and will be removed during building demolition and disposed of as LLW. The embedded ducting, HEUN piping lines, and Contaminated Drain Piping line have been foamed and/or grouted, and capped to contain contamination.

The overhead crane cabling and hook were removed prior to PDS, and the crane was released without restrictions using the Property Release Evaluation (PRE) process (refer to Attachment C-2 for the PRE, survey data, survey map, and AP-2 data for the overhead crane).

Room 101 historical operational use of radioactive material consisted of mainly HEUN solutions. Transuranic product was infrequently brought into Room 101 and was always in bulk form, sealed inside air-tight storage cans. Three 12-hour gamma spectroscopy *in-situ* shots at elevated wall locations in Room 101 indicated only uranium contamination and no transuranic contamination (refer to gamma spectroscopy *in-situ* data in Attachment C-2). Therefore, uranium DCGLs were used for the Room 101 PDS.

B886 Room 101 was classified as a MARSSIM Class 1 Survey Unit. A total of 19 TSA and 19 RSA measurements were taken, and a 100% scan survey was performed in this room. A total of 37 paint samples on the remaining painted floor and wall surfaces, and 37 pre- and post-sampling TSA and RSA paint measurements were performed. None of the measurements or scans indicated elevated activity above the appropriate $DCGL_w$ values. In addition, due to floor removal efforts, confirmatory RSA measurements were taken after work was completed to ensure contamination was not introduced to Room 101 surfaces after PDS surveys, 80 confirmatory RSA measurements were collected and no contamination was found. Refer to Attachment C-2 for survey data, statistical analysis results, survey locations, confirmatory RSA surveys, and radiological scan maps of this Survey Unit.

B886 Room 104 & 108 (Survey Unit 886-A-002)

Prior to the PDS of Rooms 104 and 108, the rooms were stripped of all equipment, and floor, wall and ceiling surfaces were decontaminated. One Contaminated Drain Piping line was left under the Room 108 floor slab (the line runs under Room 103 floor slab and over to the 828 Pit; refer to location in Figure C-3 in Attachment C-3), and will be removed during building demolition and disposed of as LLW. The Contaminated Drain Piping line has been grouted and capped to contain contamination.

B886 Room 104 and 108 were classified as MARSSIM Class 1 Survey Unit. A total of 15 TSA and 15 RSA measurements were taken, and a 100% scan survey was performed in these rooms. A total of 30 paint samples on the remaining painted floor and wall surfaces, and 30 pre- and post-sampling TSA and RSA paint measurements were performed. None of the measurements or scans indicated elevated activity above the appropriate $DCGL_w$ values. Refer to Attachment C-3 for survey data, statistical analysis results, survey locations, and radiological scan maps of this Survey Unit.

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B886 Room 102 (Survey Unit 886-A-003)
Prior to the PDS of Room 102, the room was stripped of all equipment; and floor, wall and ceiling surfaces were decontaminated. Room 102 was classified as a MARSSIM Class 1 Survey Unit. A total of 16 TSA and 16 RSA measurements were taken, and a 100% scan survey was performed in this room. A total of 22 paint samples on the remaining painted wall and ceiling surfaces, and 22 pre- and post-sampling TSA and RSA paint measurements were performed. None of the measurements or scans indicated elevated activity above the appropriate $DCGL_w$ values. Refer to Attachment C-4 for survey data, statistical analysis results, survey locations, and radiological scan maps of this Survey Unit.

Rooms 103 (Survey Unit 886-A-004)
Prior to the PDS of Room 103, the room was stripped of all equipment; floor and wall surfaces were decontaminated. The corrugated metal and joists of the room 103 ceiling were removed and disposed of as LLW. Two HEUN process piping lines were left embedded in the Room 103 west foundation Pit wall (the lines run over to the 828 Pit; refer to location in Figure C-5 in Attachment C-5), and will be removed during building demolition and disposed of as LLW. Additionally, Contaminated Drain Piping lines were left under the Room 103 main floor slab (the lines runs over to the 828 Pit; refer to location in Figure C-5 in Attachment C-5), and will be removed during building demolition and disposed of as LLW. There is also a Contaminated Drain Piping vent line embedded in the north wall of Room 103 (refer to location in Figure C-5 in Attachment C-5), which will be removed during building demolition and disposed of as LLW. The embedded HEUN piping lines and Contaminated Drain Piping lines have been grouted and capped to contain contamination.

Room 103 Pit historical operational use of radioactive material consisted of mainly HEUN solutions. Transuranic contamination would have only migrated into the Room 103 Pit from releases during transuranic glovebox operations or during glovebox removal. After all wall and floor concrete surfaces in the Pit were hydrolazed down to a depth of approximately 3/8 inch deep, surveys still indicated several elevated areas in the Pit. One 16-hour *in-situ* gamma spectroscopy shot was taken at the highest elevated Pit wall location and five concrete samples were collected and isotopically analyzed in the onsite gamma spectroscopy laboratory. The hour *in-situ* gamma spectroscopy shot and the 5 concrete samples all indicated only uranium contamination and no transuranic contamination (refer to gamma spectroscopy *in-situ* data and sample data in Attachment C-5). Therefore, uranium DCGLs were used for the Room 103 Pit PDS. Transuranic DCGLs were used for the remaining Room 103 wall and floor surfaces.

The concrete surfaces between the Room 103 Pit floor and the Pit walls were suspect of containing contamination even after the hydrolayzing effort was completed. Therefore, two high suspect areas of the Pit floor were removed and surveys were performed of the newly exposed wall surfaces. Although the newly exposed wall surfaces did not indicate elevated activity above the appropriate $DCGL_w$ values, additional Pit wall/floor surfaces should be surveyed as these surfaces are exposed during building demolition.

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B886 Room 103 was classified as a MARSSIM Class 1 Survey Unit. A total of 19 TSA and 19 RSA measurements were taken, and a 100% scan survey was performed in this room. A total of 18 paint samples on the remaining painted floor and wall surfaces, and 18 pre- and post-sampling TSA and RSA paint measurements were performed. None of the measurements or scans indicated elevated activity above the appropriate $DCGL_w$ values. In addition, due to roof removal efforts, confirmatory RSA measurements were taken after work was completed to ensure contamination was not introduced to Room 103 surfaces after PDS surveys, 40 confirmatory RSA measurements were collected and no contamination was found. Refer to Attachment C-5 for survey data, statistical analysis results, survey locations, confirmatory RSA surveys, and radiological scan maps of this Survey Unit.

Room 112 (Survey Unit 886-B-005)
Prior to the PDS of Room 112, the room stripped of equipment, and some interior walls were removed during asbestos abatement. This room was classified as MARSSIM Class 2 Survey Units. A total of 16 TSA and 16 RSA measurements were taken, and a 100% floor scan and a 50% wall and ceiling scan survey was performed. None of the measurements or scans indicated elevated activity above the appropriate $DCGL_w$ values. Refer to Attachment C-6 for survey data, statistical analysis results, survey locations, and radiological scan maps of this Survey Unit.

Room 114 (Survey Unit 886-B-006)
Prior to the PDS of Room 114, the room stripped of equipment, and some interior walls were removed during asbestos abatement. This room was classified as MARSSIM Class 2 Survey Units. A total of 18 TSA and 18 RSA measurements were taken, and a 100% floor scan and a 50% wall and ceiling scan survey was performed. None of the measurements or scans indicated elevated activity above the appropriate $DCGL_w$ values. Refer to Attachment C-7 for survey data, statistical analysis results, survey locations, and radiological scan maps of this Survey Unit.

Room 141 and the above ground portion of the 875 tunnel (Survey Unit 886-B-008)
Prior to the PDS of Room 141 and the above ground portion of the 875 tunnel, the rooms were stripped of equipment. One contaminated piece of eight inch ventilation ducting was left embedded in floor of the slab of the above-ground portion of the 875 tunnel, the duct runs under-ground over to the Room 101 west foundation wall (refer to location in Figure C-8 in Attachment C-8). This contaminated ventilation ducting will be removed during building demolition and disposed of as LLW. The contaminated ventilation ducting has been foamed and capped to contain contamination.

These rooms were classified as MARSSIM Class 2 Survey Units. A total of 15 TSA and 15 RSA measurements were taken, and a 100% floor scan and a 50% wall and ceiling scan survey was performed. None of the measurements or scans indicated elevated activity above the appropriate $DCGL_w$ values. Refer to Attachment C-8 for survey data, statistical analysis results, survey locations, and radiological scan maps of this Survey Unit.

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886 Exterior (Survey Unit 886-B-009, Phase 1)
A PDS of the exterior of Building 886 was conducted during Phase I of the 886 Cluster PDS. Results indicated no activity above the appropriate $DCGL_W$ values (refer to the 886 Cluster Phase 1 PDSR). During this Phase II PDS, additional measurements were taken to confirm that the exteriors were not contaminated since the Phase I PDS. 40 confirmatory RSA measurements were collected, none of the measurements indicated elevated activity above the appropriate DCGL values. Refer to Attachment C-9 for survey data, survey locations, and radiological scan maps of the confirmatory RSA measurements.

886 Interior Phase 1 Rooms and T886A (Survey Unit 886-A-001, Phase 1)
A PDS of B886 Rooms 106, 111, 116 –123, 125, and 127-131, and T886A was conducted during Phase I of the 886 Cluster PDS. Results indicated no activity above the appropriate $DCGL_W$ values (refer to the 886 Cluster Phase 1 PDSR). During this Phase II, Part 1 PDS, additional measurements were taken to confirm that these rooms were not contaminated since the Phase I PDS. 30 confirmatory RSA measurements were collected, none of the measurements indicated elevated activity above the appropriate DCGL values. Refer to Attachment C-10 for survey data, survey locations, and radiological scan maps of the confirmatory RSA measurements.

Radiological Summary
The 886 Phase 2, Part 1 PDS confirmed the above rooms do not contain radiological contamination above the surface contamination guidelines provided in the RFETS PDSP for D&D Facilities, except as noted above. The 886 Phase 1 PDSR confirmed that rooms 106, 111, 116-123, 125, 127-131, and the building exterior do not contain radiological contamination above the surface contamination guidelines provided in the RFETS PDSP for D&D Facilities. Therefore, Phase 1 and Phase 2, Part 1 PDSRs confirm that contamination guidelines were met for the demolition of the 886 building. Confirmatory surveys of the 886 and T886A exteriors and Phase 1 areas were performed per RSP 07.02 and are included in Attachment C-9 and C-10. These confirmatory surveys showed no radiological contamination above the PDSP surface contamination guidelines. Isolation control postings are displayed in affected areas to ensure no radioactive materials are introduced.

All remaining contaminated slab concrete and concrete immediately around contaminated HEUN piping, Contaminated Drain System piping (including room 103 north wall area), and contaminated ventilation ducting will be painted with a brightly colored spray paint in order to facilitate identification and removal during demolition. All electrical conduit that is under-slab and penetrates into Rooms 101, 102, 103, 104 and 108 will be considered potentially contaminated and disposed of as LLW during demolition.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Phase 2, Part 1 areas were characterized for chemical hazards per the PDSP. Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on or in these facilities. Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined. A Chemical Characterization Plan (refer to RISS Characterization Project files for the 886 Cluster Chemical Characterization Plan) was developed during the planning phases that describes sampling requirements and the justification for the sample locations and estimated sample numbers. Contaminants of concern included asbestos, beryllium, and RCRA/CERCLA constituents. Refer to Attachment D, Chemical Summary Data and Sample Maps, for details on sample results and sample locations. Isolation control postings are displayed on affected structures to ensure no hazardous materials are introduced.

4.1 Asbestos

RLC sampling of building materials suspected of containing asbestos was conducted in the B886. A CDPHE-certified asbestos inspector conducted the inspection and sampling in accordance with the *Asbestos Characterization Protocol, PRO-563-ACPR, Revision 0.* Building materials suspected of containing asbestos were sampled and analyzed by Polarized Light Microscopy. Numerous building materials contained greater than 1% asbestos. The friable and non-friable asbestos containing building materials identified during this inspection were abated, and final air clearance monitoring was performed during in-process D&D work. All air clearance samples passed the clearance standards established by CDPHE, Regulation 8.

4.2 Beryllium (Be)

Based on the 886 Cluster RLCR, additional documentation reviews of past facility operations, and personal interviews performed with past building occupants, there was no record of beryllium operations in the facilities. Examples of documents that were reviewed by facility management and subject matter experts for possible references to beryllium use included:

- Daily operating logs and records;
- Experimental summaries and reports;
- Reports of accidents, spills and incidents;
- Letters from laboratory staff to others at RFETS;
- Summary report of the HEUN Removal Project;
- Routine and non-routine radiological survey results; and
- Historical and current facility drawings.

There is no mention of beryllium ever made in any of the 886 project-specific materials. Facility management interviewed numerous personnel who were assigned to B886 over the years, and none of the personnel have any memory of beryllium ever being introduced into the facility. A security fence and guardhouse surrounded the 886 Cluster, therefore, the chance of any inadvertent introduction was miniscule. During the research and development of the 886 Cluster RLCR, there was no indication or mention of beryllium being discovered or reported.

A formally documented interview with Dr. Rothe was also performed on May 21, 2001, to determine the potential for beryllium use in the 886 Cluster. Dr. Rothe occupied the facility from the time of construction (1964) to the time R&D operations shutdown (1994). He was the lead scientist in B886, and he has extensive process knowledge of the 886 Cluster operations. Based on Dr. Rothe's interview, there is no indication that beryllium was ever brought into or used in the 886 Cluster facilities during his tenure. Dr. Rothe stated that beryllium was never used or stored in the 886 Cluster, and that no transfer or exchanges of equipment and/or materials between 886 Cluster and 865/883 Clusters ever took place.

Recently (since the 886 Cluster RLC was performed), beryllium smears from Building 865 have been brought over to B886, Room 104, to be analyzed for loose radioactive contamination prior to being sent to an offsite laboratory. The beryllium smears were always transported in a sealed container, and the exterior surfaces of the transport container were always verified to be radiologically clean prior to transfer from B865 to B886. Therefore, the only room that might have had a new potential for beryllium contamination since the 886 Cluster RLC was performed would have been Room 104. Hence, biased beryllium PDS samples were collected in Room 104 in accordance with PRO-536-BCPR, *Beryllium Characterization Procedure*, Revision 0. All five Room 104 beryllium sample results were less than 0.1 $\mu g/100cm^2$, and are presented in Attachment D.

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

Based on the 886 Cluster RLCR, interviews and facility walkdowns, there is no record of RCRA/CERCLA constituent operations, storage or spills, and therefore, RCRA/CERCLA constituent sampling was not performed in these facilities. No RCRA/CERCLA constituent hazards are present in these facilities.

During the RLC, sampling of the paint from the floors of Rooms 101 and 103 was conducted and indicated high levels of RCRA metals. However, all paint from the floors of Rooms 101 and 103 was hydrolayzed off and therefore, elevated RCRA metal sample results is no longer an issue.

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 (HCAs) shall be managed as non-hazardous (solid) wastes, and additional analysis for characteristics of hazardous waste derived from LBP debris is not a requirement for disposal. All remaining painted surfaces in 886 Cluster will be managed as non-hazardous (solid) waste.

4.4 Polychlorinated Biphenyls (PCBs)

Based on the 886 Cluster RLCR, interviews and facility walkdowns, no PCB-containing equipment were ever present in B886 and the 875 tunnel, and therefore, there is no potential for PCB contamination resulting from spills and releases. Therefore, PCB sampling was not performed in these facilities. Facilities may have contained PCB fluorescent light ballasts; all PCB ballasts have been removed from the facility.

Based on the age of the facilities (constructed prior to 1980), paints used on the facilities may contain PCBs; however, painted concrete surfaces can be used as backfill on site in accordance with approval received from EPA in November 2001, provided the concrete meets the unrestricted-release criteria outlined in the Concrete Recycling RSOP.

5 PHYSICAL HAZARDS

Physical hazards associated with Buildings 886 and 828, and the 875 Tunnel consist of those common to standard industrial environments. The facilities have been relatively well maintained and are in good physical condition, and therefore, do not present hazards associated with building deterioration. Room 101 has five-foot thick concrete walls that are approximately 35 feet high and a two-foot thick concrete roof. Demolition of Room 101 will be performed using harmonic delamination and excavators. Room 103 has a four-foot deep pit in the south end of the room. The 828 Pit which is located on the west side of 886 is not with in the scope of this PDSR, however, the pit opening is approximately 12 feet by 12 feet wide and 20 feet deep and will pose a physical hazard to the equipment operators during demolition. The above-ground portion of the 875 Tunnel is within the scope of this PDSR, the below-ground portion of the 875 Tunnel is not within the scope of this PDSR. A bulkhead wall has been built to separate the above-ground and below-ground portions of the 875 Tunnel during demolition. Care should be taken during demolition to prevent debris being knocked into the below-ground portion of the 875 Tunnel. Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of the 886 Cluster facilities, and consequent waste management, are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments C and D) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original DQOs of the project.

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

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

Details of the DQA are provided in Attachment E.

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The demolition and disposal of B886 will generate a variety of wastes. Estimated waste types and waste volumes are presented below. All wastes can be disposed of as sanitary waste, except low-level waste and low-level PCB Bulk Product Waste. There are no hazardous wastes in Phase 2, Part 1 areas. PCB ballasts have been managed pursuant to site PCB abatement and waste management procedures.

WASTE TYPES AND VOLUME ESTIMATES								
Facility	**Low Level (cu ft)**	**Concrete (cu ft)**	**Wood (cu ft)**	**Metal (cu ft)**	**Corrugated Sheet Metal (cu ft)**	**Wall Board (cu ft)**	**ACM (cu ft)**	**Other Waste (cu ft)**
886 (including above-ground 875 tunnel)	100 – concrete 20 – metal piping	58,000	90	300	500	70	0	Glass – 30 Insulation – 4,000 Acoustical Tile – 500 Floor Tile – 100 Built-up Roof - 2,200

8 CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, 886 Cluster Phase 2, Part 1 areas (i.e., B886 Rooms 101–104, 107–110, 112-115, 126, 126A, 126B, 140 and 141; and the above ground portions of the 875 tunnel), no radiological or chemical contamination exists in excess of the PDSP unrestricted release limits, except for portions of the Room 101 floor, Rooms 101, 103 and 108 embedded and under-slab Contaminated Drain Piping lines and HEUN lines, and Room 101 and 875 Above-Ground Tunnel under-slab ventilation ducting.

PCB ballasts have been managed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. All concrete associated with the Phase 2, Part 1 areas (except as noted above) meet the criteria for unrestricted release per the RFCA RSOP for Recycling Concrete. All remaining contaminated slab concrete and concrete immediately around contaminated HEUN piping and Contaminated Drain System piping (including room 103 north wall area) and contaminated ventilation ducting will be painted with a brightly colored spray paint in order to facilitate identification and removal during demolition. All electrical conduit that is under-slab and penetrates into Rooms 101, 102, 103, 104 and 108 will be considered potentially contaminated and disposed of as LLW during demolition.

The Phase 2, Part 1 area PDS was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. These areas do not contain radiological or hazardous wastes. Environmental media beneath and surrounding the facilities will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA. To ensure that the Phase 2, Part 1 areas remain free of contamination and that PDS data remain valid, isolation controls have been established, and the facilities are posted accordingly.

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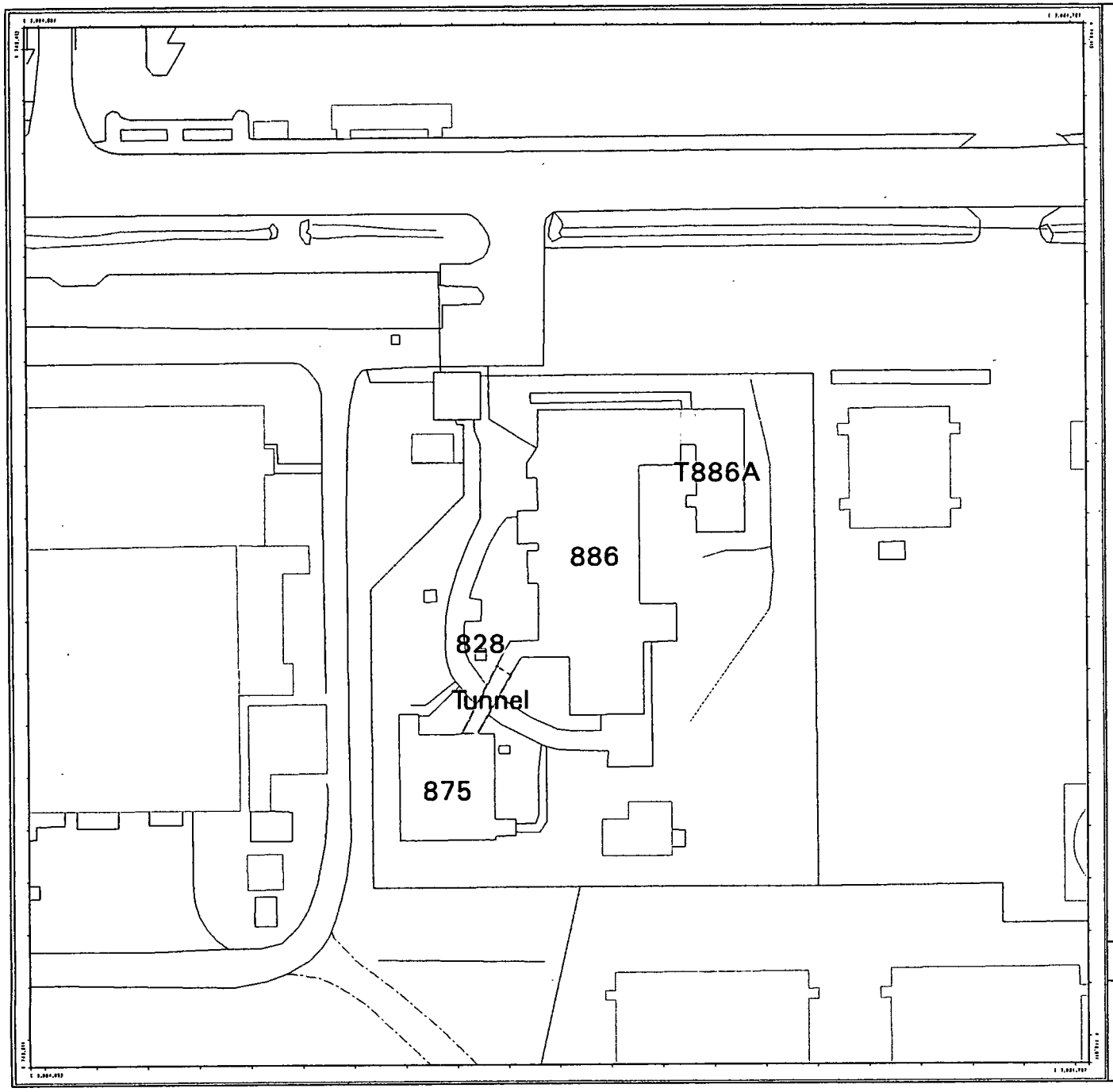
ATTACHMENT A

Facility Location Map



Cluster Area

EXPLANATION

Building 886 cluster

Standard Map Features

Buildings and other structures

Solar Evaporation Ponds (SEP)

Lakes and ponds

Streams, ditches, or other drainage features

Fences and other barriers

Paved roads

Dirt roads

Scale = 1 : 1060
1 inch represents approximately 88 feet

25 0 50 100 ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

GIS Dept. 303-966-7707

Prepared by:
DynCorp
THE ART OF TECHNOLOGY

Prepared for:
KAISER-HILL COMPANY

MAP ID: 01-0091

February 01, 2001

NT_Svr w:/projects/fy2001/01-0091/b886-area.aml

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ATTACHMENT B

Historical Site Assessment Report
(Insert from 886 Cluster RLCR text)

Rocky Mountain Remediation Services, L.L.C.
protecting the environment

RF/RMRS-97-124.UN

RECONNAISSANCE LEVEL CHARACTERIZATION REPORT FOR THE 886 CLUSTER DECOMMISSIONING PROJECT

December 24, 1997
Revision 1

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RECONNAISSANCE LEVEL CHARACTERIZATION REPORT FOR THE 886 CLUSTER DECOMMISSIONING PROJECT

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ACRONYMS

ACM	Asbestos Containing Materials
AHERA	Asbestos Hazard Emergency Response Act
ALARA	As Low As Reasonably Achievable
BIO	Basis for Interim Operation
CA	Contamination Area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CML	Critical Mass Laboratory
COCs	Contaminants of Concern
DOE	Department of Energy
EDDs	Electronic Data Deliverables
dpm	Disintegrations Per Minute
DQO	Data Quality Objectives
HCA	High Contamination Area
HEPA	High Efficiency Particulate Air filter
HEUN	Highly Enriched Uranyl Nitrate
HVAC	Heating Ventilation and Air Conditioning
IM/IRA	Interim Measure/Interim Remedial Action
LLMW	Low Level Mixed Waste
LLW	Low Level Waste
MAA	Material Access Area
MSDs	Matrix Spike Duplicates
PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparability
PCBs	Polychlorinated biphenyls
PLM	Polarized Light Microscopy
ppm	Parts Per Million
RCA	Radiation Control Area
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RLCP	Reconnaissance Level Characterization Plan
RLCR	Reconnaissance Level Characterization Report
RPD	Relative Percent Difference
SNM	Special Nuclear Material
SOE	Stationary Operating Engineer
TCLP	Toxic Characteristic Leachate Procedure
TRU	Transuranic
TSI	Thermal System Insulation
UCL	Upper Confidence Level

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RECONNAISSANCE LEVEL CHARACTERIZATION REPORT FOR THE 886 CLUSTER DECOMMISSIONING PROJECT

1.0 EXECUTIVE SUMMARY

Building 886 housed the Critical Mass Laboratory and was operated from 1965 until 1987. Since then, operations within the building have been limited to maintaining the safety envelope and compliance with the Basis of Interim Operation. Since Building 886 and its associated facilities have no mission, the cluster is being decommissioned to reduce operating costs and to eliminate hazards within the cluster's buildings. Deactivation activities are not yet complete, but had progressed to the point where a meaningful characterization could be conducted. The purpose of this Reconnaissance Level Characterization Report is to present the historical data and process information pertaining to the 886 Cluster to provide a baseline of information for hazards within the building cluster. The reconnaissance level characterization of the Building 886 Cluster included a review of historical records and the collection of process knowledge and samples to determine the extent of contamination within the cluster.

The characterization of the 886 Cluster has revealed that the cluster has been maintained within the safety envelope required by the Basis for Interim Operation. The hazards which will need to be considered in developing plans for and executing decommission activities can be summarized in the following list.

- Physical Hazards (i.e., trip and fall hazards, noise hazards, sharp edges, etc.) - Hazards are found in Buildings 886, 875, 888A, 828, and 880.
- Radiological Hazards - Contamination areas are found in Buildings 886, 875, and 880. High contamination areas are found in Buildings 886 and 875.
- Chemical Hazards - Primarily lead and other metals in building paints, and some polychlorinated biphenyls (PCB) sources. No beryllium has been identified associated with the cluster either through process knowledge or analytical results.
- Asbestos Hazards - Asbestos containing materials are found throughout the cluster with the exception of T886A. An asbestos abatement plan will be required as part of the decommissioning activities.
- Pressurized Gas Cylinders Hazards - Only one nitrogen gas container remains in the 886 Cluster.
- Electrical Hazards - Electrical systems are currently in a safe and compliant condition. However, when decommissioning activities begin, significant electrical hazards in Buildings 886, 875, and 888A will need to be addresses.

2.0 INTRODUCTION

The Building 886 Cluster (Figure 1-1) is comprised of Buildings 886, 888A, 880, 875, 828, T886A, and an underground tunnel with ventilation ducts that connects Building 886 to Building 875 (Figure 1-2). Because Building 886 and its associated facilities have no mission, the cluster is being decommissioned to reduce operating costs and to eliminate hazards within the cluster's buildings. Consistent with the Rocky Flats Cleanup Agreement (RFCA), the 886 Cluster Decommissioning Project is being conducted as a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) removal action. The 886 Cluster Decommissioning Project is one of the decommissioning activities at the Rocky Flats Environmental Technology Site (RFETS) selected to meet the site's goals.

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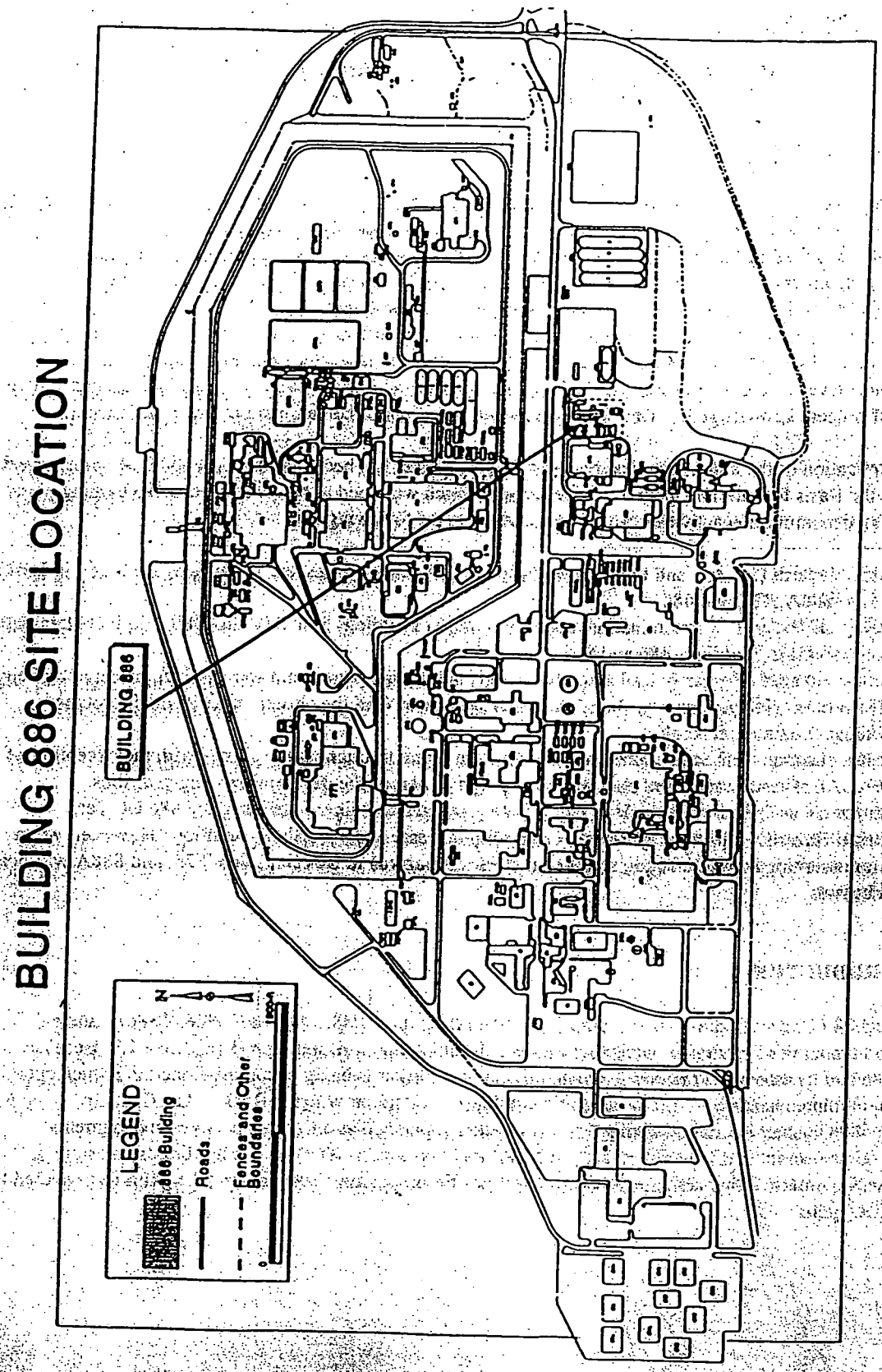

Figure 1-1. 886 Cluster Location at RFETS

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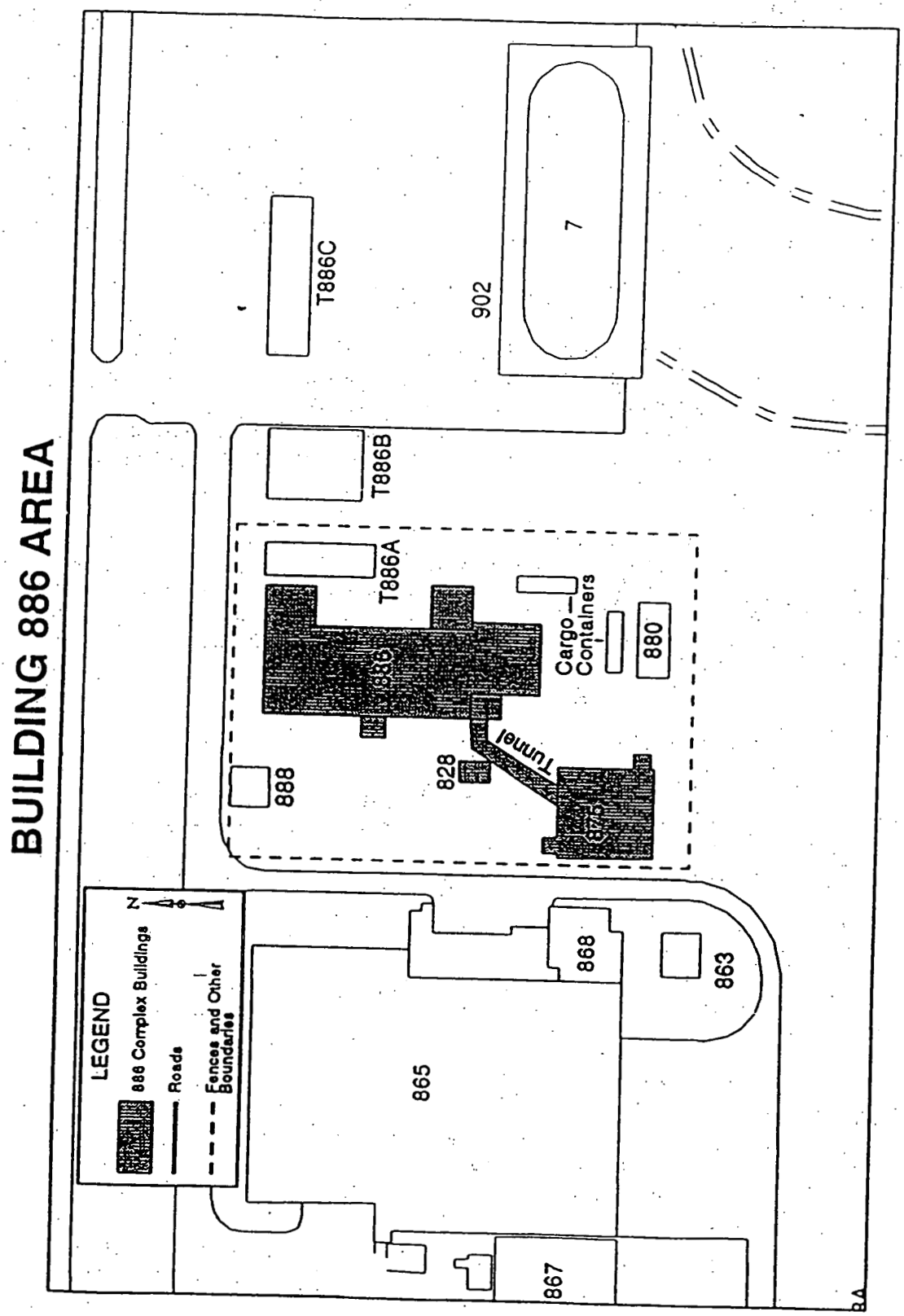

Figure 1-2. 886 Cluster

2.1 Report Purpose

The purpose of this Reconnaissance Level Characterization Report (RLCR) is to present the historical data and process information pertaining to the 886 Cluster to provide a baseline of information for hazards within the building cluster. Characterization includes identification of the type, quantity, condition, and location of radioactive and hazardous materials which are, or which may be present as residual contamination in the subject facilities. Information from the report will be incorporated into an Interim Measure/Interim Remedial Action (IM/IRA) plan for the 886 Cluster Decommissioning Project.

2.2 Characterization Scope

The reconnaissance level characterization of the Building 886 Cluster included a review of historical records and the collection of process knowledge information covering the operational time period for the facility from original construction to present. This information was evaluated to identify data needs for the characterization effort. Samples were then collected from throughout the cluster and analyzed to complete the information needed to represent the current condition of the buildings and associated contamination.

2.3 Report Content

Information and data presented in this report specifically pertain to the Building 886 Cluster. The report includes a summary of the characterization activities, a brief physical description of the facilities, identifies the hazards within the cluster, estimates the types and volumes of wastes which will be generated during decommissioning activities, presents a data quality assessment, and lists the information source and references used in compiling the characterization of the Building 886 Cluster.

3.0 SUMMARY OF CHARACTERIZATION ACTIVITIES

The characterization effort for the 886 cluster included a review of historical records pertaining to the cluster and collecting process knowledge regarding conditions within the buildings. As part of this investigation, comprehensive physical inspections of all accessible areas of the 886 Cluster were conducted during November and December, 1997. The primary purpose of these inspections were:

- confirm the accuracy of file documentation of as-built or modified facility construction, equipment installations, and general facility conditions;
- obtain volume estimates for wastes that will be generated during removal activities;
- identify equipment, structures, process lines, and associated items that will require hazardous and/or radioactive surveys and analytical sampling to further characterize the cluster;
- identify potential sources of lead and asbestos;
- identify potential chemical contamination;
- identify physical hazards;
- locate, identify, and document any facility condition or problem situation which had not been previously identified or otherwise documented in appropriate building records or files; and
- identify equipment, structures, process lines, and associated items which require field surveys and/or analytical sampling for the purpose of characterizing the cluster for radioactive and hazardous contaminants.

The final portion of the characterization effort involved the development and execution of a Reconnaissance Level Characterization Plan (RLCP). This document stated the sampling effort to be conducted in the cluster buildings. It included plans for sampling areas potentially containing or contaminated with asbestos, polychlorinated biphenyls

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(PCBs), and lead and metals. The plan was reviewed and approved and the execution was directly supervised by a State of Colorado certified asbestos inspector. Radiological contamination was sufficiently characterized by process knowledge and existing surveys.

3.1 Data Quality Objectives Used

Data Quality Objectives (DQOs) were established and defined in Section 3.0 of the RLCP. Definition of DQOs is a quality requirement as well as a proven tool for optimizing sampling and analysis costs relative to attaining adequate confidence in technical project decisions. The DQO process was designed after EPA (EPA, 1994, G-4) and DOE guidelines. All DQOs were consistent with applicable state and federal regulations governing the contaminants of concern (COCs). A concise summary of the DQOs as presented in the RLCP is given below.

THE PROBLEM

Several contaminants were suspected within the 886 Cluster, but the quantities and concentrations of contaminated media were unknown relative to the requirements associated with D&D activities. Determination of the types and quantities of contamination, and the associated consequent waste streams, are required for successful implementation of D&D. Based on historical process knowledge of the 886 Cluster, the potential COCs are asbestos, PCBs, lead/metals, and radionuclides.

THE DECISIONS

The critical technical decisions for the project were as follows:

- What materials (e.g., paint, concrete, pipe insulation, etc), media (e.g., water, oil, solid, sludge, etc), or equipment within the facility are contaminated or, conversely, not contaminated?
- What are the generic classification categories by which the materials, equipment, and/or media will be managed, relative to an eventual assignment as contaminated (hazardous, radiological, or mixed) or not contaminated (nonhazardous)? In other words, what are the categories of waste streams that will result from the D&D of the 886 Cluster?
- What are the ultimate dispositions (i.e., waste classifications) of the waste streams, including quantities (e.g., a completed summary table)?

INPUTS to the DECISIONS

Inputs to the decisions were designed to be both qualitative and quantitative. Qualitative information consisted of nominal data (e.g., paint color or equipment type) derived from visual observation of buildings' equipment and materials. Quantitative data was produced from analytical and petrographic analyses of samples (for characteristic metals, PCBs, and asbestos). Radiation activities were estimated based on historical surveys.

PROJECT BOUNDARIES

The 886 Building cluster (i.e., the buildings themselves) and all equipment/materials contained within, was relegated as within the project boundaries, whereas environmental media outside the buildings were not.

DECISION RULES and ERROR LIMITS

All decision rules were based on objective, reproducible, and verifiable quantitative criteria as stated in Section 3.5 of the RLCP. Decision error tolerance was established at 5% (i.e., a 95% upper confidence limit) for data sets representing homogeneous media.

OPTIMIZATION OF DESIGN

Any modifications to the DQOs hinged on visual observations and new information revealing data gaps as the project progressed, and are discussed in the Data Quality Analysis.

3.2 Sampling and Field Measurement Methods, Equipment, and Procedures

Acquisition of a sample directly depends on the sampling team's observations of the material, equipment, equipment components, or media of interest. Because of excess equipment noted in some of the rooms and/or buildings, access to all potential survey points is not possible. In addition, the cluster is not through deactivation. These deactivation activities (such as size reduction and removal of radiologically contaminated materials and equipment) may jeopardize the characterization surveys. Therefore, if data gaps are identified subsequent to the characterization sampling and decisions described herein (i.e., the decision cannot be made with confidence), additional sampling of source materials and/or waste streams will be conducted.

As stated earlier in this report, the radiological contamination within the 886 Cluster was able to be characterized using process knowledge and existing surveys. Similarly, process knowledge was conclusive concerning the absence of beryllium contamination with the 886 Cluster. Thus, the characterization effort focused on the following hazardous constituents: asbestos, PCBs, and lead and metals. The sampling and field measurements, equipment, and procedures used to perform the characterization for these contaminants are described below.

Asbestos

Asbestos containing materials (ACM) were inspected and sampled by a State of Colorado certified inspector in accordance with the Colorado Code of Regulations 8 and the Asbestos Hazard Emergency Response Act (AHERA), 40 Code of Federal Regulation (CFR) 763. The materials evaluated include thermal systems (e.g., pipe insulation), surfacing materials (e.g., fireproofing, ceiling texture), and miscellaneous materials (floor tiles, ceiling panels, concrete foundations and walls). Bulk samples were taken using coring bits or hammer and chisel in accordance with the RLCP.

Polychlorinated Biphenyls (PCBs)

Potential PCB contamination was evaluated in accordance with 40 CFR 761.125. To assess material against the regulatory threshold of 50 parts per million (ppm), a practical quantitation limit of 5 ppm (one order of magnitude less than the regulatory action level) was used. Material sampled included transformers, capacitors, fluorescent light ballasts, gaskets in potential PCB-containing systems, and paints in accordance with the RLCP.

Lead and Metals

All materials suspected of containing or being coated with lead or other Resource Conservation and Recovery Act (RCRA) regulated metals were representatively sampled. This included paint, gloveboxes, shielding, piping, plates, lead fills in walls, skirting, and additives (e.g., plaster). The bulk samples were collected as described in American Standard for Testing Materials (ASTM) Method E 1729-95 using chisels, scrapers, and cutting tools in accordance with the RLCP. The analysis routinely includes evaluation for beryllium.

3.3 Laboratory Analysis

Table 3-1 summarizes the analytical methods performed on the various samples taken during the characterization effort.

Table 3-1. Laboratory Analysis Methods

Suspected Contaminant	Laboratory Analysis Method
Asbestos	Polarized Light Microscopy
PCBs	SW8081
Lead and Metals	SW6010A

4.0 CLUSTER OPERATING HISTORY

The purpose of the 886 Cluster was to conduct criticality experiments on liquid, powder, and solid forms of fissionable materials. The date of the last criticality experiment was October 1987. These experiments were essential to validate computer models used to establish nuclear criticality safety limits, now called Criticality Safety Operating Limits.

4.1 History of Buildings

The construction of Buildings 886, 875, and 888A was completed in 1964 and commissioned in 1965. The trailer T886A was located east of Building in approximately 1980; a breeze-way connected the two at a later date. The construction date of Building 880 is unknown. The last criticality experiment was conducted in October 1987. Since then the buildings have been maintained within the safety envelope, but the facility is not operational.

4.2 Significant Releases and Events

There reportedly have been five incidents where uranyl nitrate was spilled onto the floor of the Critical Mass Laboratory (CML). The largest spill involved between 50 and 60 gallons of solution. The laboratory floors are sealed and bermed to contain such spills, and in no case did solution escape the building. The solution was recovered for further use. In another case in the late 1960's, an accumulation of uranyl nitrate salt was found inside the base of the ventilation system filter plenum outside of Building 886. This accumulation, about one foot square and one-quarter inch thick, is thought to have most likely resulted from an incident in which some solution overflowed into a vent line and dried, with subsequent air flow over the vent carrying the salt to the filter plenum.

There are no recorded instances where contamination was released to the environment.

4.3 Current Operations

Building 886 is not currently operational. The buildings have been vacated except for three individuals who are planning moves and T886A, which is being utilized as a project support trailer. Deactivation activities were suspended in late FY97 to because resources were diverted to other efforts. The only ongoing operations are those necessary to maintain the safety envelope and comply with the basis for operation (BIO) building authorization.

4.4 RCRA and CERCLA Designated Areas

There are no RCRA or CERCLA designated areas within the 886 cluster. However, the 886 Cluster Decommissioning Project is being conducted as a CERCLA removal action.

5.0 PHYSICAL DESCRIPTION

The 886 Cluster is located in the RFETS industrial area at the east central portion of the site. It is located just south of Central Avenue and just east of the pedestrian traffic signal. The buildings were used in support of criticality experimentation from 1965 through 1987. Primary construction materials used in the buildings include concrete masonry, steel, and wood with siding.

5.1 Summary Description

The buildings associated with the cluster are 886, 888A, 880, 875, and T886A. The cluster also includes an outside concrete pit containing two raschig ring tanks also referred to as building 828, and an underground tunnel linking the Air Filter Plenum Building (875) with Building 886. All the structures are single story buildings, with the exception of the criticality laboratory portion of Building 886 which is two stories high. The individual buildings are described in more detail in the following sections.

5.2 Specific Description

Building 886

Building 886 contains the Critical Mass Laboratory (CML) where criticality experiments were performed. It is approximately 10,785 square feet, of which approximately 4,000 square feet constitutes the radiological control area (RCA). The remaining area is comprised of office space. The facility has no basement. The RCA is comprised of rooms 101, 102, and 103; and a hallway, referred to as room 108; all with slightly different construction from each other.

Room 101 is the assembly room where all criticality experiments were performed. It is approximately 2,000 square feet. It has four to five feet three thick concrete walls and the north wall is reinforced concrete. The ceiling is 30 feet above the floor and is also thick concrete. The floor is concrete and is a floating floor with respect to the walls.

Room 102 was a storage vault for special nuclear material (SNM). It is approximately 600 square feet. The walls are double reinforced concrete with a cast integral concrete roof.

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Room 103 is the mixing room which serves as a fissile solution mixing and storage area. It is approximately 900 square feet. It has three walls that are reinforced concrete with the west wall constructed of back filled cinder blocks with rebar. The roof is sheet metal with a tar overlay. Approximately half of the room is two to four feet below the building's floor level.

Room 108 is the hallway within the CML connecting Rooms 101, 102, and 103. It is approximately 500 square feet.

Outside of the RCA, Room 111 is the Utility Room and Room 112 is the Control Room. Room 141 is the Stationary Operating Engineer (SOE) Control Room. The remaining rooms within the building are considered office space. The floor of these rooms is a slab on grade and the walls are back filled cinder block with a built up roof.

Recent removal of containers of low enriched uranium oxides and two check sources of Cobalt-60 and one check source of Californium-252 was completed as a risk reduction activity. Highly enriched uranyl nitrate (HEUN) was drained from the tanks in Building 886 and the raschig rings were removed from the tanks in Room 103 as part of a risk reduction activity.

The equipment located in Building 886 is listed in Table 5-1.

Table 5-1. Building 886 Equipment

Equipment	Quantity	Equipment	Quantity
Horizontal Split Table (RCA)	1	Concrete Reflector Panels (RCA)	8
Vertical Split Table (RCA)	1	Solution Transfer Pump (RCA)	6
Solution Base (RCA)	1	Reactor Control Console	1
Water Reflector Apparatus (RCA)	1	Air Compressors	2
Elevated Platform (RCA)	1	Bridgeport Mill	1
Walk-in Hood (RCA)	1	Logan Lathe	1
Stainless Steel Tanks (RCA)	11	Lektriever	1
Glovebox Type Enclosures (RCA)	2		

Building 875

Building 875 is approximately 3,900 square feet and houses the filter plenums that filter air which has been circulated through the Building 886 Exhaust System. The building is cinder block construction with a concrete floor. The roof is tar impregnated felt.

The facility has a concrete pit on the north end which accesses the tunnel. The tunnel connecting 875 and 886 is considered part of this facility. Plenum 501 is a two-stage high efficiency particulate air (HEPA) filter servicing the office area. Plenum 502 is a four-stage HEPA filter plenum servicing the material access area

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(MAA) exhaust air. Tank D-501 is the plenum deluge tank. The building also contains a 1,200-gallon critically safe tank filled with raschig rings. A metal cabinet containing sources is also in the facility. Groundwater seepage into the raschig ring tank area is routinely pumped out. Drummed waste located in Building 875 has been packaged and radiologically surveyed and is presently awaiting shipment.

Building 888A

Building 888A is an approximately 400 square feet enclosure, and is an electrical substation for the cluster's buildings. It consists of two cinder block walls on the north and west, with the remaining sides consisting of chain link fence with razor wire top. There is no roof and the floor is natural ground. The structure encloses one feeder transformer that operates at 13,800 volts which supplies power to Buildings 886 and 875. The transformer has been previously tagged indicating that polychlorinated biphenyls (PCBs) are not present.

Building 880

Building 880 is an unpainted, metal building of approximately 800 square feet currently being used for excess storage. It is a metal "Butler" type building 100 feet south of Building 886. It has several items of used experimental equipment waiting anticipated re-use. Some of these items were, at one time, contaminated with enriched uranium and packaged in the then-acceptable contained configuration. While contaminated materials and equipment are included in the current inventory, no materials are being moved in or out of the building. The majority of waste streams are considered, and will be packaged and handled as, low-level waste.

Building T886A

Building T886A is approximately 1,900 square feet and is an officer trailer attached to the northeast corner of Building 886. It serves as office space for the 886 Cluster Decommissioning Project and is of standard trailer construction.

Building 828

Building 828 is an outside concrete pit containing two 1,000 liter tanks filled with unused raschig rings. Groundwater has historically seeped into the pit and was pumped out to a tanker, sampled, and transported for appropriate disposal.

6.0 IDENTIFIED HAZARDS

The hazards identified during the reconnaissance level characterization for the 886 Cluster are summarized in Table 6-0 and described in the following sections by hazard category and by area.

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Table 6-0. Hazard Summary

Bldg./ Room	Description	Square Feet	Hazard	Matrix
B886	General Building (specific rooms detailed below)	10,785	Asbestos	Piping insulation, skim coat on cinder block, floor and ceiling tiles, filler, wiring insulation, roof
			Press. Gas	one cylinder of nitrogen gas
			Lead	Paint (see Appendix B for concentrations for specific paint colors)
			Chromium	Paint (see Appendix B for concentrations for specific paint colors)
			PCBs	Paint (see Appendix B for concentrations for specific paint colors)
101	Critical Mass Laboratory	2,000	Physical	Elevated platform, overhead equipment, falls
			Radiological	Tanks, process lines, ventilation ducts, assembly hood, floor, and equipment
			Hold up	2 tanks with raschig rings, SCRAM tank, annular tank
102	Storage Vault	600	Radiological	Potential fixed contamination in floor
103	Mixing Room	900	Physical	Un-secured ladder, protruding piping and valves
			Radiological	Tanks, process lines, ventilation ducts, glovebox, floor
			Hold up	Pumps
108	Hallway	500	Radiological	Potential loose surface contamination
111	Utility Room	1,000	Physical	Sharp edges, corners, protruding piping and valves
			PCBs	Gasket material from vibration damper
			Electrical	Equipment, electrical panels

Bldg./ Room	Description	Square Feet	Hazard	Matrix
112	Control Room	480	Physical	Control boxes and sheet metal with sharp edges
			Electrical	Control boxes, electrical panels
All others	Offices	5,300	Physical	Sheet metal with sharp edges
B875	Filter Plenum Facility	3,900	B875 was built at the same time as B886 and from similar materials. It is assumed that the characterization results from B886 apply to B875. The following list of hazards for B875 is provided in addition to the B886 characterization.	
B875	Filter Plenum Facility	3,900	Physical	Noise, sharp edges
			Radiological	Filter Plenum
			Asbestos	Piping insulation, roof
			Electrical	Equipment, electrical panels
B880	Storage	800	Physical	Trip and fall, protruding edges
			Radiological	Stored waste
B828	Tank Pit	170	Physical	Confined space, falls, protruding pipes and valves, slips, spiders
B888A	Electrical Substation	400	Physical	Razor wire
			Asbestos	Wiring insulation, arc chutes, arc protection, insulators, conduit trays
			Electrical	Substation
T886A	Project Trailer	1,900	None	

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6.1 Physical Hazards

The buildings within the 886 Cluster have been maintained within the safety envelope required by the BIO. As a result, there are no physical hazards from damaged or dilapidated infrastructure. However, some physical hazards are intrinsic with portions of the cluster and are described below.

Building 886

Room 101 has an elevated platform with equipment located on it as well as an overhead crane. These may represent an overhead hazard when D&D activities begin. Work on the platform has fall hazards associated with it.

Room 103 has a ladder going to an elevated platform which is not secure and has been barricaded. The room also has protruding piping and valves which represent a hazard to workers when they are working closely around the equipment.

Room 111 has numerous sharp edges, corners, and protruding pieces of equipment, pipes, and valves. Although safe for current operations in that they do not impinge on the walk ways, when workers begin D&D operations in this room, they will need to be cognizant of these hazards.

Room 112 has numerous control boxes and sheet metal with sharp edges.

Throughout the building, and the rest of the cluster, there is sheet metal with sharp edges. Although not normally accessible, as D&D activities begin around the sheet metal, attention to cutting edges will be required.

Building 875

The operation of the air filtration system in Building 875 creates a noise hazard which requires the use of hearing protection within the building when the filter plenum system is in operation.

Building 888A

This enclosure around the electrical substation has razor wire around the top. This represents a hazard to the workers when they proceed with D&D activities.

Building 828

Building 828 is a below grade confined space. Any work within the pit will require a confined space permit. Furthermore, the pit represents a falling hazard if left open and consideration will need to be given during the D&D process to maintaining fall protection or barricades around it.

The pit also contains numerous protruding pipes and valves which will be a hazard for workers in the pit.

Historically, there have been numerous occasions when ground water has enter 828. This water was pumped out, but the pit is wet, muddy, and slick.

The pit is also a natural breeding ground for spiders. Measures have been taken in the past to eliminate the spiders before beginning work in the pit. Similar precautions will be needed for the D&D activities.

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Building 880

Building 880 has been used for storage. The material stored in the building creates numerous trip and fall hazardous, and protruding edges if moving among the containers.

6.2 Radiological Hazards

Past Activities

Deactivation activities had previously begun in Building 886 prior to the initiation of this project. Those activities involved the draining and offsite shipment of the highly enriched uranyl nitrate (HEUN) as well as deactivation of most the HEUN storage tanks. There are several tanks in the cluster that still require the raschig rings to be removed which could potentially contain solution hold up. Deactivation will be completed prior to strip-out of the tanks for waste packaging. Extensive decontamination efforts were also completed to bring all areas of the cluster into current Site radiological requirements. Although the HEUN solutions were removed to the maximum extent possible, there is known to be dry residues contained within the storage tanks and the associated piping. This residue will result in higher levels of contamination during deactivation activities than those currently shown in the cluster routine surveys.

Current Conditions

The Building 886 Cluster radiological areas are posted and controlled in accordance with 10 CFR 835. Contamination control criteria for this project include postings that are currently applicable to the radiological conditions in the 886 Cluster. Those postings are Contamination Area (CA) and High Contamination Area (HCA). There are presently CAs in Building 886, 875, and 880. HCAs are located in Buildings 886 and 875. All control levels for these areas are based on the transuranic limits due to possible uncertainty concerning quantity and locating plutonium handling in Building 886 (transuranic limits are the most conservative). This control process is consistent with DOE radiological policy for other activities at the Site.

Contamination Areas are controlled to a limit of 2000 disintegrations per minute (dpm) per 100 square centimeters. See Table 6-1 for the summary of contamination values used to establish radiological control areas. Radiological surveys are being performed for in-process work and on a regular basis for all areas of the cluster, usually weekly, to ensure that contamination is maintained below requisite levels. As deactivation is completed in each of the remaining areas, decontamination surveys will be the used as the baseline for future decommissioning activities.

The cluster safety envelope has been maintained throughout its life cycle. There is good continuity of personnel from the deactivation and HEUN removal projects. Based on these factors, process and historical knowledge as well as the radiological conditions documented on the survey logs are believed to be very reliable.

As Low As Reasonably Achievable (ALARA)

As Low As Reasonably Achievable (ALARA) principles will be used in the planning and execution of D&D activities to minimize exposures to workers and public. The DOE RadCon Manual and 10 CFR 835 give general guidance on field implementation (e.g., ALARA Committee, Pre-Job Planning, Post-Job Review) of ALARA principles. Project specific work procedures will include ALARA considerations to minimize worker exposure during D&D activities. ALARA principles will also be reflected in the final release criteria to minimize public exposure following D&D.

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Table 6-1. Summary of contamination values for Unrestricted Release

Radionuclide	Average Total (Fixed + Removable) Contamination (dpm/100cm²)	Maximum Total (Fixed + Removable) Contamination (dpm/100cm²)	Removable Contamination (dpm/100cm²)
Transuranic: Ra^{-226}, Ra^{-228}, Th^{-228}, Pa^{-231}, Ac^{-227}, I^{-125}, I^{-129}	100	300	20
Th-Natural: Th^{-232}, Sr^{-90}, Ra^{-223}, Ra^{-224}, U^{-232}, I^{-131}, I^{-133}	1,000	3,000	200
U-Natural: U^{-235}, U^{-238}, and associated decay products, alpha emitters	5,000	15,000	1,000
Beta-gamma emitters (radionuclides with decay modes other than the alpha emission or spontaneous fission) except Sr^{-90} and others noted above.	5,000	15,000	1,000

Isotopes of Concern

The principal DOE isotopes of concern include:

- Uranium-235,
- Uranium-234,
- Uranium-238,
- Plutonium-239, and
- Americium-241.

The specific isotopes were identified based on survey results, personnel interviews, and historical records. Trace amounts of some decay products may be present and will be evaluated during waste characterization.

Surveys Performed/Evaluated

Radiological surveys have been performed in representative areas of the 886 Cluster. The level of detail for specific surveys was based on the radioactive contamination potential for the area. Extensive radiological survey information was used for this characterization effort in lieu of new surveys.

Additional routine surveys were performed in accordance with procedures. In addition to removable alpha surveys, removable beta was also determined. Buildings 875 and 880 were also surveyed in accordance with routine survey procedures. Appendix A contains copies of the surveys that are the basis for this radiological characterization.

As stated previously, the downdraft unit and associated glovebox in Room 103, the assembly hood in Room 101, process piping in Rooms 101 and 103, and the ventilation plenum in Building 875 were not characterized as part of this effort but will be characterized as deactivation activities are completed. These

areas are associated with high levels of contamination (HCAs) and will require deactivation and decontamination prior to decommissioning of the 886 Cluster.

6.3 Chemical Hazards

A summary of the chemical hazards is presented in Table 6-0. Appendix B contains the analytical results used to characterize the chemical hazards within the 886 Cluster. A brief discussion of the significant results is presented below.

Metals

Lead and chromium were found in excess of the regulatory limit in numerous paint samples throughout Building 886. Since Building 875 is of similar construction, it is assumed the same paint in that building will likewise be contaminated.

Beryllium

Historical and process information indicated that beryllium was not a contaminant of concern in the 886 Cluster. This was supported by the characterization results which found no instances of beryllium above the regulatory limit.

PCBs

PCBs were detected above the regulatory limit in a sample from a gasket material in a vibration damper in Room 111 (Utility Room) of Building 886, and in paint samples from the green and purple paints.

6.4 Asbestos

During the inspection process, historical records were accessed and evaluated, along with physical inspection of the cluster. The investigation reviewed original specifications and blueprints, asbestos and lead in paint bulk samples, and interviews with facility occupants, including the Facility Manager. The findings of the characterization are discussed by building in the following sections and Appendix C contains the Certified Asbestos Inspector's Report.

Building 886

Building 886 is the main structure of the cluster. The inspection process discovered asbestos containing thermal systems insulation (TSI) on piping and tanks associated with the domestic water, chiller system, steam system in the interior and exterior of the building, and on a small heating ventilation and air conditioning (HVAC) system located outside on the west side of Building 886. This TSI is generally in good condition and appears to have regular maintenance.

Asbestos containing surface materials discovered during the inspection were limited to a light skim coat on the interior cinder block associated with the oldest section of the structure. This material is covered with a minimum of one coat of paint and is in good condition. Due to the thinness of the application and the relatively low percentage of asbestos (trace to five percent), point counting analysis was utilized to more accurately evaluate asbestos content with results indicating levels consistently above one percent. This material must remain as part of the asbestos waste stream even though a composite of this skim coat and the cinder block would reduce the asbestos percentage to far less than one percent.

Miscellaneous asbestos containing material (ACM) discovered during the inspection included nine inch and twelve inch floor tiles dispersed throughout the cold side of the facility, including under the sheet vinyl in the hallways. The adhesive associated with the floor tiles tested negative for asbestos except in Room 110, the janitorial closet. The tiles are in generally good condition and appear to receive regular maintenance.

The predominant pattern of ceiling tiles (2 by 4 feet white with wide latitudinal grooves, pits, and pin holes) tested positive for asbestos. Due to the modular nature of a suspended ceiling, the remaining patterns must be assumed to be contaminated with asbestos. The suspended ceiling system was in good condition at the time of the inspection.

A filler between the HVAC ducts and wall penetrations is 98 percent asbestos. This filler was not observed in all locations, but is predominant throughout the facility. At the time of the inspection, the filler was painted and in good condition where observable.

A previous inspector acquired a sample of the electrical wiring in Room 114 which indicated asbestos in the insulation. Until the building circuits are de-energized and a comprehensive survey can be completed, it must be assumed that all original wiring insulation for the structure, and for the original structures in the cluster, is asbestos containing.

Building 886 has a built up roof system that was specified as containing asbestos in the felt and tar. As such, the roof is assumed to be asbestos containing without the need of sampling. Tar impregnated roofing felts may be disposed of with normal demolition debris under most circumstances.

Building 828

The Building 828 exterior walls are assumed to be asbestos containing based on historical data from other locations on the Site and on the expert judgement of the Certified Asbestos Inspector. The piping associated with the underground storage tanks is not insulated.

Building T886A

T886A is a modular trailer (S.N. 3404) constructed by Elder in 1984. Alan Koenig from G.E. Capital, the parent company of Elder, verified that this particular structure was not constructed with any materials that contained either lead or asbestos.

Building 888

Although not included as part of the 886 Cluster, Building 888 is powered from 886 and will be impacted by the demolition of the 886 Cluster. Because of this, the inspector evaluated the building on the chance that it may be included, or that work may be required on it during the 886 D&D activities. The building is a guard post constructed in the mid 1980's. As such, building materials have a low possibility of containing asbestos. Based on visual inspection, all materials were eliminated as suspect asbestos containing materials except the roofing and the drywall systems. Samples were acquired of the drywall system and the analytical results were non-detects. The built-up roofing can be assumed to be asbestos containing tar impregnated roofing felt, which can be disposed of with the regular construction debris in most cases.

Building 875

Building 875 is the Plenum Facility for Building 886 and includes the service tunnel to 886. Since this structure is of the same construction date as Building 886, suspected ACM are shared. As such, all piping insulation must be considered to be asbestos containing unless it can be eliminated by physical touch as either foam or fiberglass insulation. The asbestos insulation was predominantly confined to the fittings, reductions, hangers, tees, and elbows, while the straight runs were predominantly foam and fiberglass.

The roofing of Building 875 is similar in construction to that of Building 886. As such, the original specification called for the use of tar and felt containing asbestos. Based on this information, the roofing materials are assumed to be asbestos containing. These materials may be treated as regular demolition debris in most cases.

Building 880

At the time of inspection, no asbestos containing building materials were discovered in Building 880.

Building 888A

Building 888A is the electrical substation for the facility. Due to the inherent safety concerns with sampling live electrical equipment, no samples were acquired. Suspect ACM include wiring insulation, arc chutes, arc protection, insulators, and conduit trays. Once the substation is de-energized, samples can be safely acquired of these materials. In the interim, these materials are assumed to be asbestos containing.

6.5 Pressurized Gas and Liquid Nitrogen

There is only one cylinder of pressurized gas in the 886 Cluster. It is nitrogen gas used for maintenance on the chiller unit. The bottle is located in a bottle rack outside Building 886 on the west side.

6.6 Electrical

The 886 Cluster is currently in a safe condition for electrical hazards. However, when D&D activities begin, significant electrical hazards are located through out the cluster, particularly in the control and utility rooms of Building 886, Building 875, and in and around Building 888A. Additionally, consideration will need to be given as to how to resupply the guard shack located next to 888A with power once the supply from 886 is interrupted.

It should be noted that numerous system changes have been made to the electrical system in the cluster over the years of operation. These changes are not reflected well in the as-built drawings for the facilities. The electrical system will require tracing of questionable lines with a tic tracer or similar device before D&D activities are implemented.

6.7 Wastes

When deactivation activities were suspended in the 886 Cluster in late FY97, some waste remained in the buildings. This waste is all low level (LL) waste. Plans are currently in place to remove this waste from the buildings. There are 80 55-gallon drums which have been assayed, 40 55-gallon drums that are in the process of being assayed, and three full-size waste crates that need to have their contents verified and

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assayed. In addition to this packaged waste, there is some unpackaged waste in Room 101. The majority of this waste is metal and is mainly excess equipment.

7.0 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

Table 7-1 summarizes the types and quantities of wastes estimated for the deactivation of the 886 Cluster. These estimates were derived from existing documentation regarding equipment and materials in the cluster and from inventories compiled during walk-through of the facilities.

Table 7-1. Estimated Wastes From the 886 Cluster Decommissioning Project

Type of Waste	Primary Matrix	Quantity (cubic meters)	Type of Waste Package	Quantity of Waste Package
Hazardous	Painted materials	3	Standard Crate	1
Asbestos	Insulation, building materials, wiring, etc.	200	Bulk	N/A
Low-level	Paper/Glass/Plastic/Pipe	225	Standard Crate	75
Low-level Mixed	Plastic/Pipe	3	Standard Crate	1
TRU	None	0	N/A	N/A
TRU Mixed	None	0	N/A	N/A
Sanitary	Rubble	1,000	Bulk	N/A

8.0 DATA QUALITY ASSESSMENTS

The purpose of data quality assessment is to determine whether a set of data is adequate for its intended use, especially relative to supporting predefined project decisions with acceptable levels of confidence (after EPA G-9, 1996). EPA's approach to data quality assessment heavily emphasizes the use of statistical methodologies, which incorporate "ratio" data, i.e., data exhibiting a broad range of values relative to action levels. This reconnaissance level characterization, however, hinges primarily on nominal data (e.g., paint colors or equipment /material types), with associated analytical results indicating a nominal outcome from at least one judgmental (i.e., non-statistical) sample: Pass/Fail. Therefore, typical statistical (EPA) methodologies that might be used for comparing a project's data set with a background or baseline to evaluate significance is not well suited for use with most of the contaminants of concern evaluated for the 886 Cluster, with the exception of radionuclides. Based on the availability of previous radiological survey data within the areas of interest, DQOs were not formally presented for this reconnaissance effort, but will be addressed for final decontamination surveys.

Notwithstanding the limited statistical applications to the non-radionuclide contaminants of concern, a data quality analysis is still necessary to determine if the data collected are adequate for their intended use. Table 6-0 exhibits a summary of the hazards based on the samples collected for each contaminant category – by location and by nominal category represented (e.g., paint color).

8.1 Project Decisions

A summary of the project decisions is also given in Table 6-0 based on the original DQOs expressed in §3.1, which are:

- definition of the contaminated equipment and materials and hazards, based on sample representativeness and analytical results, and
- definition of the waste classifications and assignment of all contaminated equipment/media to those classifications (for subsequent treatment, storage, transport, and/or disposal). Table 7.1 provides estimated quantities of the waste types.

8.2 Inputs to the Decisions

Inputs to the decisions noted above consisted of the project's data, which is presented in Appendix B. Data quality is addressed in terms of precision, accuracy, representativeness, completeness, and comparability -- the PARCC parameters – in Section 8.4.

8.3 Decision, Rules, and Error Limits

With the exception of asbestos, statistically-based samples, particularly with respect to randomness and quantities, were neither taken nor required. Therefore, calculations of upper confidence limits on the data (e.g., 95% UCLs) are not needed; asbestos sample decisions are based on comparison with the 40 CFR 763.86 action levels. However, it should be noted that the contaminants of concern were either not detected (i.e., well below action levels) or were well above action levels (and therefore, of course, much greater than detection limits). This clustering of the data suggests, semi-quantitatively, that there is little probability of either alpha (false-positives) or beta (false negatives) errors; stated differently, no data resides in the "gray regions", where results are within 5 times or 1/5 the action levels.

Further, in sampling situations where samples were not taken (see Sections 6.3 and 6.4 for example) – typically due to safety precautions – the media of interest is assumed to be contaminated. These assumptions increase the alpha (producer's) error, which translates into more cost for the RFETS, but reduce the beta (consumer's) error, which translates into greater safety for the workers and the public.

8.4 PARCC Parameters

In general, precision and accuracy are determined by analytical lab controls and subsequently qualified based on a data validation process. At least 25% of the results of the data are planned for formal data validation via the K-H APO. The primary categories of interest within the validation process are included within the subsections below.

Accuracy

Accuracies indicate how close the measured values are to "true" values, or conversely, accuracy quantifies the amount of error associated with the measured value as compared to a true value.

Precision

Precision quantifies how repeatable the sample measurements are. Precision is quantified with respect to both the lab and the overall project. Matrix spike duplicates (MSDs) are typically used by the lab whereas

field duplicate samples, blind to the laboratory, are used to evaluate overall repeatability in the project. Precision results based on the field duplicate samples are given in Table 8-4 (by method); all duplicate values were well within tolerances (40% RPD for solids, 30% RPD for liquids), except for TCLP results, where duplicate samples were not taken. As a result, repeatability of TCLP measurements was indeterminate.

Table 8-4. Precision Results by Method

REAL SAMPLES										
			Metals (mg/kg)							
PAIR #	Sample ID	Asbestos (%)	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	PCBs (ug/kg)
1	886-971119-MD-001									350
2	98A0485-007.003		1.1	198	0.14	21.6	220	0.62	0.19	
3	886-971119-MS-022	0								
4	886-971121-MS-053	0.03								
5	886-971119-MS-028	0								
6	886-971124-MS-072	0								
DUPLICATE SAMPLES										
1	886-971119-MD-002									350
2	98A0485-010.003		1.1	220	0.2	22.1	223	0.57	0.25	
3	886-971119-MS-023	0								
4	886-971121-MS-054	0.06								
5	886-971119-MS-029	0								
6	886-971124-MS-073	0								

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			Metals (mg/kg)							
PAIR #	Sample ID	Asbestos (%)	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	PCBs (ug/kg)
RELATIVE PERCENT DIFFERENCE VALUES										
1										0
2			0	3	9	1	1	2	7	
3		~0								
4		17								
5		~0								
6		~0								

RELATIVE PERCENT DIFFERENCE = [(real result) - (duplicate result)]/{[(real result) + (duplicate result)]/2}

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Representativeness

The samples are representative of all potentially contaminated media visible within the 886 Cluster based on the following criteria:

- professional judgment of the sampling team
- walk-throughs and collaborations by and within the sampling team
- summary of the samples acquired and analyzed (Table 6-0)
- implementation of forensic Chain of Custody protocol
- compliance with sample preservation and holding times
- compliance with the RLCP (RMRS, 1997) – reviewed and approved by management consensus

RMRS quality assurance personnel performed surveillance 97-100 to verify compliance with the 886 Cluster RLCP. This surveillance used a checklist developed directly from the approved and controlled 886 Cluster RLCP. One deficiency was identified concerning the documentation of sampling equipment decontamination. This deficiency was resolved satisfactorily resolved prior to the completion of field sampling activities.

Comparability

Analytical results from this project are comparable with similar samples and media on a state-wide, nation-wide, or DOE-complex basis given the use of documented plans and procedures for sample collection and standardized EPA-approved methods for sample analysis.

Completeness

Completeness is typically defined as a percentage, calculated as the ratio of usable results to either 1) the number of samples planned or 2) the number of samples actually acquired for analysis. Because #1 is not applicable, the ratio with respect to #2 is the appropriate measure. Completeness of the data set is given in Table 8-5, and is well above 95 percent, which is a common industry standard, for real and quality control samples (with the exception of metal TCLP and quality control samples). Known data gaps due to components which have yet to be deactivated are listed below. The characterization will be performed and documented after these elements are deactivated.

- Bldg 888A – pending de-energization of the substations
- Assembly Hood - Pending deactivation
- Raschig Ring Tanks - Pending deactivation
- Glovebox - Pending deactivation

Completeness may be corroborated by referencing the associated quality records of analytical results, which include hardcopy data packages and electronic data deliverables (EDDs), managed by the K-H Analytical Projects Office.

Table 8-5. Summary for Completeness of the Data Set

	Asbestos			Total Metals			TCLP Metals			PCBs		
	Total Acquired	Total Usable	Percent	Total Acquired	Total Usable	Percent	Total Acquired	Total Usable	Percent	Total Acquired	Total Usable	Percent
Real Samples	74	74	100	7	7	100	2	2	100	10	10	100
Duplicate Samples	4	4	100	1	1	100				1	1	100

COMPLETENESS = [(total collected) - (unusable)]/(total collected)
Where: (total collected) = total number of samples collected
(unusable) = number of samples unusable in final reporting

9.0 INFORMATION SOURCES

886 Cluster as-built drawings

Site personnel

Task 3 and 4 Final Draft Report, Operations History, August 1992.

10.0 REFERENCES

Basis for Interim Operation Building 886, Revision 5, Kaiser-Hill 1997

Facility/Activity Responsibility Transfer Checklist, Building 886 Cluster Landlord Functions, RMRS 1997.

Guidance for Data Quality Assessment, Practical Methods for Data Analysis, EPA QA/G-9 (QA 96 Version), EPA, 1996

Historical Release Report, DOE 1992.

Reconnaissance Level Characterization Plan for the 886 Cluster Decommissioning Project, Revision 0, RMRS 1997.

11.0 APPENDICES

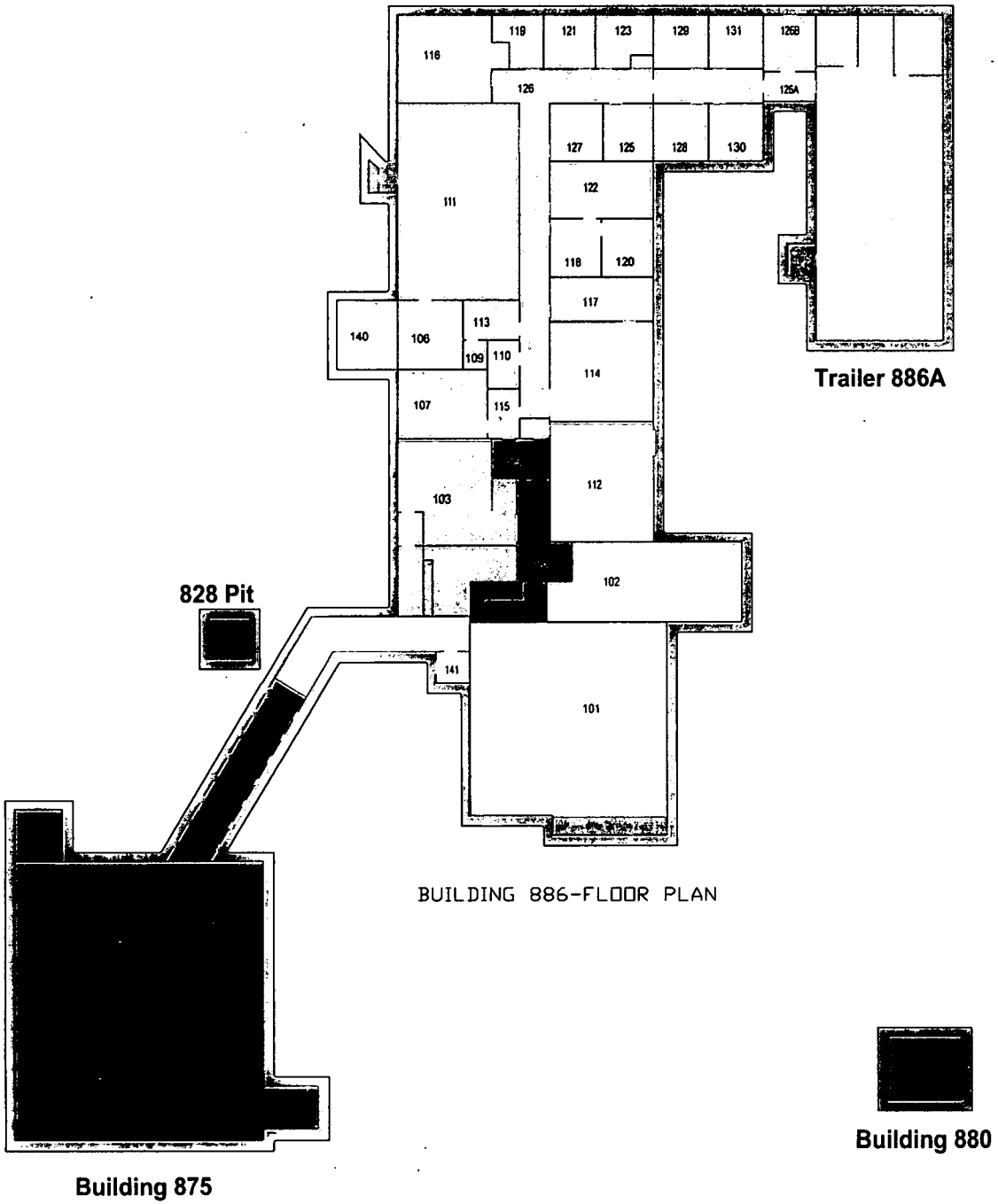
A Radiological Characterization Surveys

B Chemical Hazards Characterization Results

C Certified Asbestos Inspector's Report

ATTACHMENT C

Radiological Data Summaries and Survey Maps



Building 886 Cluster Survey Units

Explanation

- Phase I Interior
- Phase I Exterior

B886 Phase II Part I

- Survey Unit 886-A-001
- Survey Unit 886-A-002
- Survey Unit 886-A-003
- Survey Unit 886-A-004
- Survey Unit 886-B-005
- Survey Unit 886-B-006
- Survey Unit 886-B-008
- Survey Unit 886-C-009

886 Phase II Part II

B828 - 886-A-010
B880 Int - G15-A-001
B880 Ext - G15-B-002
B875 & Tunnel - 886-B-007

North

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U.S. Department of Energy
Rocky Flats Environmental Technology Site

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DynCorp
THE ART OF TECHNOLOGY

Prepared for:
KAISER HILL

MAP ID: 02-0099/886-COMP

March 26, 2002

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ATTACHMENT C-1

B886 Rooms 107, 109, 110, 113, 115, 126, 126A, 126B and 140

(Survey Unit 886-C-009)

SURVEY UNIT 886-C-009
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B886, Rooms 107, 109, 110, 113, 115, 126, 126A, 126B, & 140

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Total Surface Activity Measurements

	28	28	
	Number Required	Number Obtained	
MIN	-11.2		dpm/100 cm^2
MAX	32.9		dpm/100 cm^2
MEAN	10.5		dpm/100 cm^2
STD DEV	11.7		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	28	28	
	Number Required	Number Obtained	
MIN	-1.2		dpm/100 cm^2
MAX	2.4		dpm/100 cm^2
MEAN	-0.3		dpm/100 cm^2
STD DEV	1.1		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

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SURVEY UNIT B886-C-009
TSA - DATA SUMMARY

Manufacturer:	NE Electra	NE Electra
Model:	DP-6	DP-6
Instrument ID#:	7	8
Serial #:	3114	3125
Cal Due Date:	8/13/02	4/1/02
Analysis Date:	3/12/02	3/12/02
Alpha Eff. (c/d):	0.208	0.211
Alpha Bkgd (cpm)	2.0	2.7
Sample Time (min)	1.5	1.5
LAB Time (min)	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	7	7.3	35.1	3.3	15.9	11.1
2	8	8.0	37.9	8.2	38.9	14.0
3	7	5.3	25.5	1.3	6.3	1.5
4	8	7.3	34.6	4.0	19.0	10.6
5	7	8.0	38.5	4.0	19.2	14.5
6	7	10.0	48.1	5.3	25.5	24.1
7	8	2.7	12.8	6.0	28.4	-11.2
8	7	8.0	38.5	3.3	15.9	14.5
9	7	9.3	44.7	6.7	32.2	20.8
10	8	8.7	41.2	6.7	31.8	17.3
11	8	9.3	44.1	4.7	22.3	20.1
12	7	8.0	38.5	4.0	19.2	14.5
13	7	2.7	13.0	3.3	15.9	-11.0
14	8	5.3	25.1	3.3	15.6	1.2
15	7	9.3	44.7	5.3	25.5	20.8
16	8	12.0	56.9	4.0	19.0	32.9
17	8	10.7	50.7	8.7	41.2	26.8
18	8	4.7	22.3	4.7	22.3	-1.7
19	8	7.3	34.6	8.7	41.2	10.6
20	8	4.0	19.0	2.7	12.8	-5.0
21	7	7.3	35.1	3.3	15.9	11.1
22	8	5.3	25.1	9.3	44.1	1.2
23	8	6.0	28.4	7.3	34.6	4.5
24	8	7.3	34.6	6.0	28.4	10.6
25	7	11.3	54.3	5.3	25.5	30.4
26	8	8.0	37.9	2.7	12.8	14.0
27	8	5.3	25.1	4.7	22.3	1.2
28	7	4.0	19.2	4.0	19.2	-4.7

1 - Average LAB used to subtract from Gross Sample Activity

24.0	Sample LAB Average
MIN	-11.2
MAX	32.9
MEAN	10.5
SD	11.7
Transuranic DCGL$_W$	100

QC Measurements

17QC	7	8.7	41.8	5.3	25.5	16.5
21QC	8	8.0	37.9	5.3	25.1	12.6

1 - Average QC LAB used to subtract from Gross Sample Activity

25.3	QC LAB Average
QC MIN	12.6
QC MAX	16.5
QC MEAN	14.6
QC SD	2.8
Transuranic DCGL$_W$	100

55

SURVEY UNIT B886-C-009
RSC - DATA SUMMARY

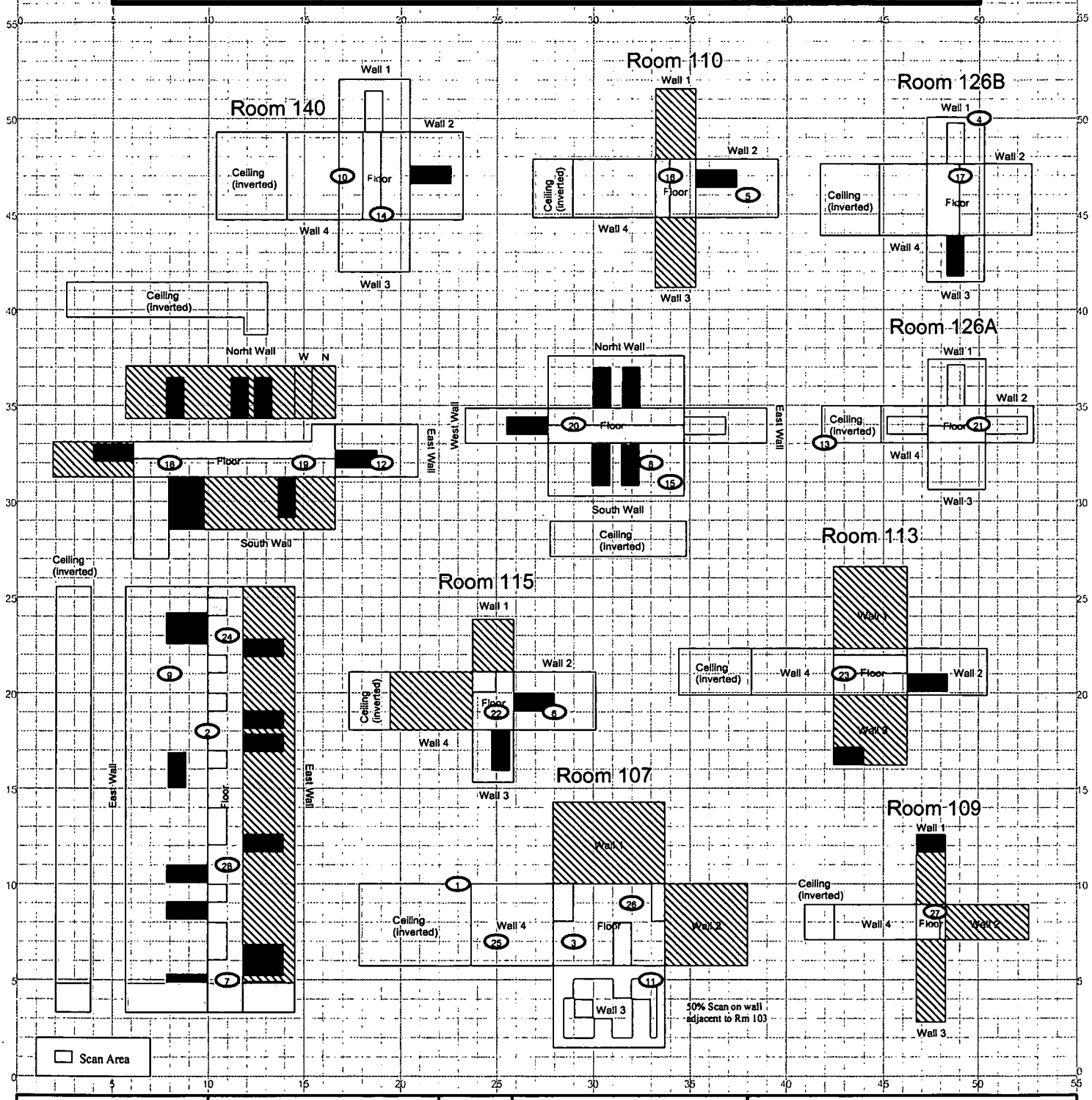
Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4
Serial #:	767	1164	770	959
Cal Due Date:	4/30/02	5/13/02	7/25/02	7/14/02
Analysis Date:	3/12/02	3/12/02	3/12/02	3/12/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.2	0.2	0.4	0.0
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	8.0	8.0	9.4	4.5

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	3	0.0	-1.2
2	2	0.0	-0.6
3	1	0.0	-0.6
4	2	0.0	-0.6
5	3	0.0	-1.2
6	2	0.0	-0.6
7	4	0.0	0.0
8	2	0.0	-0.6
9	4	0.0	0.0
10	1	0.0	-0.6
11	3	0.0	-1.2
12	1	1.0	2.4
13	1	0.0	-0.6
14	1	1.0	2.4
15	1	0.0	-0.6
16	2	1.0	2.4
17	3	0.0	-1.2
18	2	0.0	-0.6
19	3	0.0	-1.2
20	4	0.0	0.0
21	4	0.0	0.0
22	4	0.0	0.0
23	3	0.0	-1.2
24	3	0.0	-1.2
25	4	0.0	0.0
26	4	0.0	0.0
27	2	0.0	-0.6
28	1	0.0	-0.6
		MIN	-1.2
		MAX	2.4
		MEAN	-0.3
		SD	1.1
		Transuranic $DCGL_W$	20

56

PRE-DEMOLITION SURVEY

Survey Area: C **Survey Unit: 886-C-009** **Classification: 3**
Building: 886
Survey Unit Description: Interior Rooms 107, 109, 110, 113, 115, 126,126A, 126B, & 140
Total Area: 662.4 sq. m. **Total Floor Area: 152.6 sq. m.**



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit
- Previous Existing Walls

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N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): 7,8,9,10
RCT ID #(s): 3,4,5

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for: KAISER HILL

MAP ID: 02-0099/C009-V2-SC

March 13, 2002

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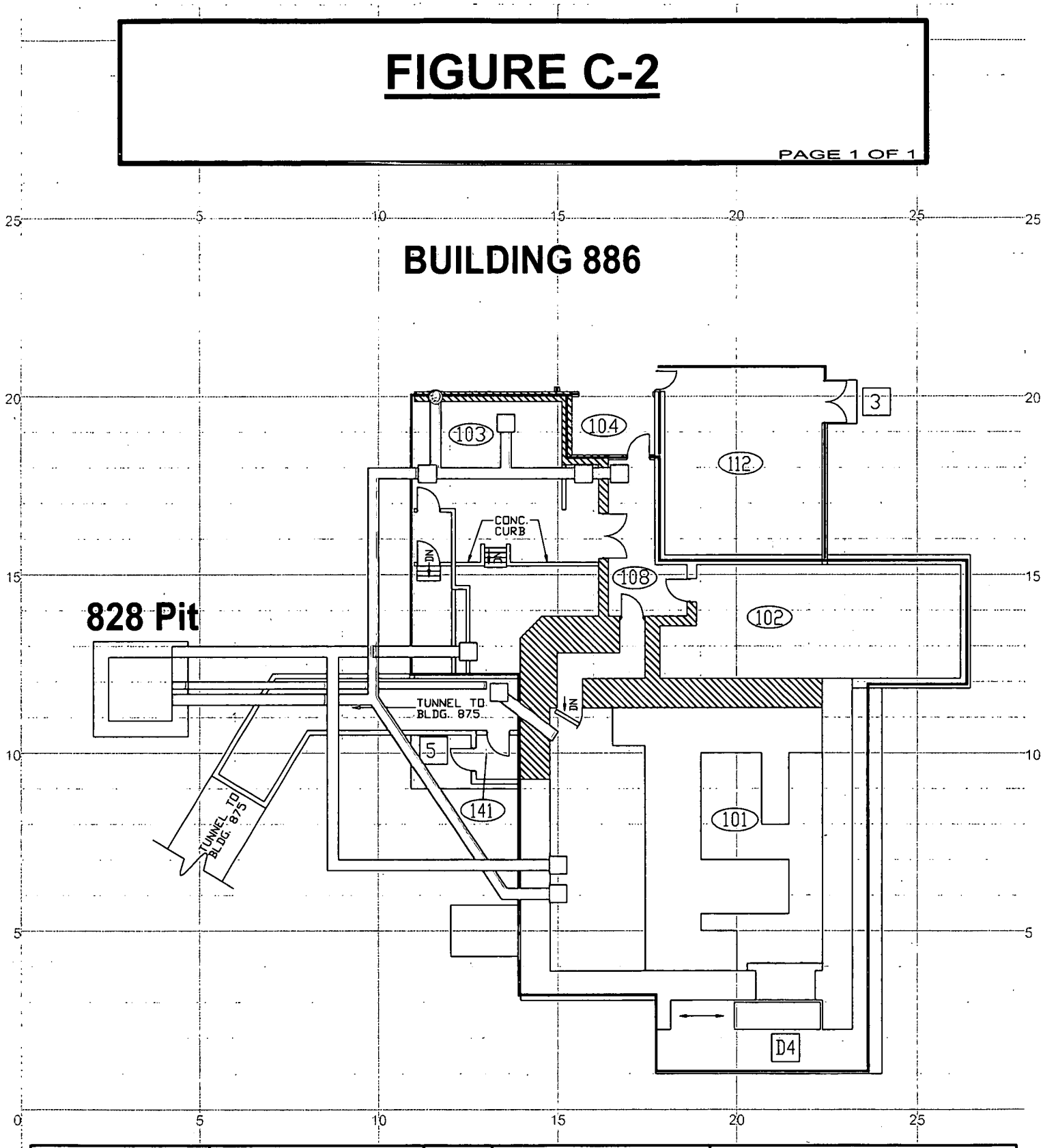
ATTACHMENT C-2

B886 Room 101

(Survey Unit 886-A-001)

FIGURE C-2



SURVEY MAP LEGEND

- Ventilation Duct (8" diameter)
- HUEN Lines (1" diameter)
- Contaminated Drain Piping (2"-3" diameter)
- 2" Vent From Ground thru Roof
- Concrete Block Section
- 3" Hot Plenum Underground

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N

0 FEET 0

0 METERS 0

DRAWING NOT TO SCALE

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for:
KAISER-HILL COMPANY

MAP ID: 02-0099/FIGC-2

March 25, 2002

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SURVEY UNIT 886-A-001
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B886, Room 101

60

Total Surface Activity Measurements

	19	19	
	Number Required	Number Obtained	
MIN	-10.3		dpm/100 cm^2
MAX	35.7		dpm/100 cm^2
MEAN	11.6		dpm/100 cm^2
STD DEV	14.1		dpm/100 cm^2
URANIUM DCGL$_W$	5000		dpm/100 cm^2

Removable Activity Measurements

	19	19	
	Number Required	Number Obtained	
MIN	-0.3		dpm/100 cm^2
MAX	6.1		dpm/100 cm^2
MEAN	1.3		dpm/100 cm^2
STD DEV	2.1		dpm/100 cm^2
URANIUM DCGL$_W$	1000		dpm/100 cm^2

61

SURVEY UNIT B886-A-001
TSA - DATA SUMMARY

Manufacturer:	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6
Instrument ID#:	7	8	11
Serial #:	1136	1379	1379
Cal Due Date:	8/6/02	5/6/02	5/6/02
Analysis Date:	2/21/02	2/21/02	2/21/02
Alpha Eff. (c/d):	0.207	0.202	0.202
Alpha Bkgd (cpm)	0.7	3.3	3.3
Sample Time (min)	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	7	5.3	25.6	2.0	9.7	15.3
2	7	4.0	19.3	1.3	6.3	9.0
3	7	1.3	6.3	2.0	9.7	-4.0
4	7	2.0	9.7	4.4	21.3	-0.7
5	7	0.0	0.0	1.3	6.3	-10.3
6	11	8.0	39.6	6.7	33.2	29.3
7	11	9.3	46.0	3.3	16.3	35.7
8	7	4.0	19.3	1.3	6.3	9.0
9	7	0.7	3.4	1.3	6.3	-6.9
10	7	3.3	15.9	3.3	15.9	5.6
11	7	2.7	13.0	0.7	3.4	2.7
12	11	8.7	43.1	2.7	13.4	32.7
13	7	8.0	38.6	1.3	6.3	28.3
14	7	4.7	22.7	1.3	6.3	12.4
15	7	2.7	13.0	0.7	3.4	2.7
16	7	2.7	13.0	0.0	0.0	2.7
17	7	4.0	19.3	1.3	6.3	9.0
18	7	8.7	42.0	2.7	13.0	31.7
19	7	5.3	25.6	2.7	13.0	15.3
					10.3	Sample LAB Average
					MIN	-10.3
					MAX	35.7
					MEAN	11.6
					SD	14.1
					Uranium DCGL$_W$	5,000

1 - Average LAB used to subtract from Gross Sample Activity

QC Measurements

13 QC	8	4.0	19.3	2.0	9.7	11.4
8 QC	8	6.0	29.0	1.3	6.3	21.0
					8.0	QC LAB Average
					QC MIN	11.4
					QC MAX	21.0
					QC MEAN	16.2
					QC SD	6.8
					Uranium DCGL$_W$	5,000

1 - Average QC LAB used to subtract from Gross Sample Activity

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SURVEY UNIT B886-A-001
RSC - DATA SUMMARY

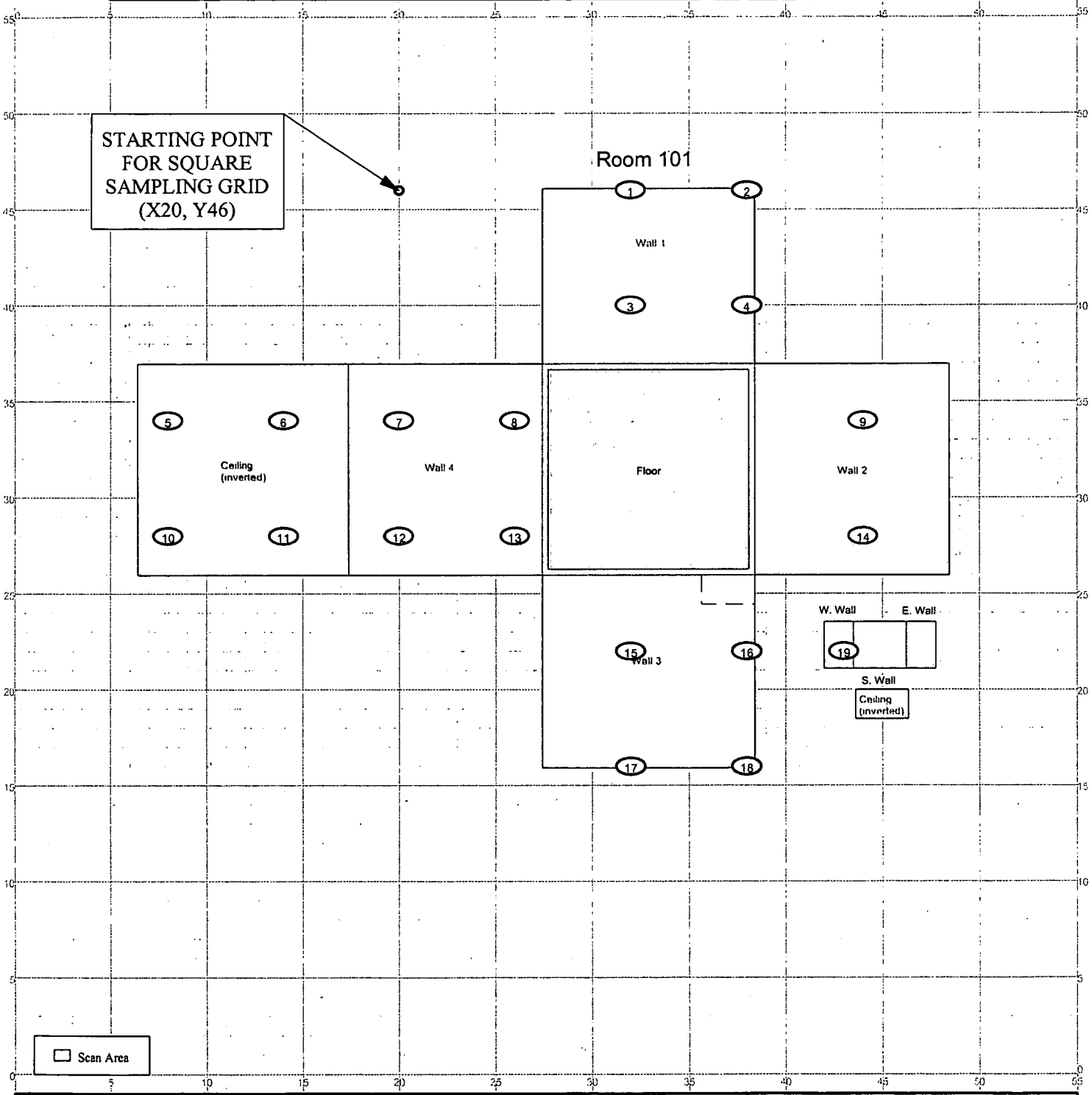
Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4
Serial #:	767	1164	770	959
Cal Due Date:	4/30/02	5/13/02	7/25/02	7/14/02
Analysis Date:	2/22/02	2/22/02	2/22/02	2/22/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.1	0.0	0.1	0.0
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	7.0	4.5	7.0	4.5

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	1.0	2.7
2	1	1.0	2.7
3	2	2.0	6.1
4	3	0.0	-0.3
5	3	1.0	2.7
6	2	0.0	0.0
7	2	1.0	3.0
8	3	0.0	-0.3
9	4	0.0	0.0
10	2	0.0	0.0
11	3	0.0	-0.3
12	4	0.0	0.0
13	1	0.0	-0.3
14	1	0.0	-0.3
15	3	0.0	-0.3
16	2	0.0	0.0
17	1	1.0	2.7
18	4	0.0	0.0
19	4	2.0	6.1
		MIN	-0.3
		MAX	6.1
		MEAN	1.3
		SD	2.1
		Uranium $DCGL_W$	1,000

63

PRE-DEMOLITION SURVEY FOR B886 CLUSTER

Survey Area: A **Survey Unit: 886-A-001** **Classification: 1**
Building: 886
Survey Unit Description: Room 101
Total Area: 570 sq. m. **Total Floor Area: 120 sq. m.**
Grid Spacing for Survey Points: 6m. X 6 m.



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): 8,9,10,12,19,20,21,22,23
RCT ID #(s): 2,3,4,5,6,7,10

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:

DynCorp
THE ART OF TECHNOLOGY

KAISER HILL COMPANY

MAP ID: 02-0099/886 101SCN February 226, 2002

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SURVEY UNIT 886-A-001
RADIOLOGICAL DATA SUMMARY - MEDIA

Survey Unit Description: B886, Room 101

65

PRE MEDIA MEASUREMENTS

Total Surface Activity Measurements

	37	37	
	Number Required	Number Obtained	
MIN	-18.8		dpm/100 cm^2
MAX	38.6		dpm/100 cm^2
MEAN	4.0		dpm/100 cm^2
STD DEV	12.9		dpm/100 cm^2
URANIUM DCGL$_W$	5,000		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	37	37	
	Number Required	Number Obtained	
MIN	-0.6		dpm/100 cm^2
MAX	15.2		dpm/100 cm^2
MEAN	4.4		dpm/100 cm^2
STD DEV	3.9		dpm/100 cm^2
URANIUM DCGL$_W$	1,000		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

POST MEDIA MEASUREMENTS

Total Surface Activity Measurements

	37	37	
	Number Required	Number Obtained	
MIN	-7.7		dpm/100 cm^2
MAX *	203.0		dpm/100 cm^2
MEAN	22.6		dpm/100 cm^2
STD DEV	33.3		dpm/100 cm^2
URANIUM DCGL$_W$	5,000		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	37	37	
	Number Required	Number Obtained	
MIN	-0.9		dpm/100 cm^2
MAX	8.5		dpm/100 cm^2
MEAN	1.1		dpm/100 cm^2
STD DEV	2.1		dpm/100 cm^2
URANIUM DCGL$_W$	1,000		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

* Sample Location 36 was decontaminated (top layer of concrete removed) using the hydrolazer prior to Final PDS surveys.

Media Sample Activity

Media Samples	37	37
	Number Required	Number Obtained

Total Uranium Results

MIN	0.0	dpm/100 cm^2
MAX	85.5	
MEAN	19.5	
STD DEV	30.9	
DCGL$_W$	5000	dpm/100 cm^2

Total Transuranic Results

MIN	0.0	dpm/100 cm^2
MAX	0.0	
MEAN	0.0	
STD DEV	0.0	
DCGL$_W$	100	dpm/100 cm^2

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SURVEY UNIT 886-A-001
PRE AND POST TSA
DATA SUMMARY

Manufacturer:	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	7	8	9	10	11
Serial #:	3114	1379	3114	1379	3114
Cal Due Date:	4/25/02	5/6/02	4/25/02	5/6/02	4/25/02
Analysis Date:	1/10/02	1/10/02	1/17/02	1/21/02	1/21/02
Alpha Eff. (c/d):	0.209	0.202	0.209	0.202	0.209
Alpha Bkgd (cpm)	2.0	2.7	2.7	5.3	2.7
Sample Time (min)	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0	48.0

Manufacturer:	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	12	19	20	21	22
Serial #:	3114	3125	2352	2352	1379
Cal Due Date:	4/25/02	4/1/02	4/17/02	4/17/02	5/6/02
Analysis Date:	1/22/02	1/23/02	1/23/02	1/24/02	1/24/02
Alpha Eff. (c/d):	0.209	0.210	0.228	0.228	0.202
Alpha Bkgd (cpm)	4.0	2.0	2.7	6.7	4.0
Sample Time (min)	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0	48.0

PRE TSA MEASUREMENTS

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	11	9.3	44.5	8.7	41.6	19.5
2	9	9.3	44.5	4.7	22.5	19.5
3	9	5.3	25.4	10.7	51.2	0.3
4	11	8.7	41.6	5.3	25.4	16.6
5	8	5.3	26.2	7.3	36.1	1.2
6	8	6.7	33.2	4.0	19.8	8.1
7	7	4.8	23.0	5.2	24.9	-2.1
8	11	6.0	28.7	5.3	25.4	3.7
9	11	5.3	25.4	5.3	25.4	0.3
10	11	1.3	6.2	2.5	12.0	-18.8
11	8	4.0	19.8	4.7	23.3	-5.2
12	8	6.0	29.7	6.7	33.2	4.7
13	7	5.3	25.4	5.8	27.8	0.3
14	7	13.3	63.6	0.7	3.3	38.6
15	19	2.7	12.9	2.0	9.5	-12.2
16	7	7.3	34.9	4.7	22.5	9.9
17	7	8.7	41.6	5.7	27.3	16.6
18	7	2.7	12.9	5.3	25.4	-12.1
19	9	4.7	22.5	4.7	22.5	-2.5
20	9	10.0	47.8	4.0	19.1	22.8
21	19	4.7	22.4	4.0	19.0	-2.6
22	8	6.7	33.2	4.0	19.8	8.1
23	7	6.0	28.7	6.7	32.1	3.7
24	8	8.7	43.1	12.0	59.4	18.0
25	8	6.7	33.2	3.3	16.3	8.1
26	22	8.0	39.6	6.7	33.2	14.6
27	22	9.3	46.0	8.0	39.6	21.0
28	19	2.7	12.9	2.7	12.9	-12.2
29	19	4.0	19.0	2.0	9.5	-6.0
30	8	6.0	29.7	6.0	29.7	4.7
31	7	4.7	22.5	4.7	22.5	-2.5
32	7	2.0	9.6	2.0	9.6	-15.5
33	8	2.7	13.4	2.7	13.4	-11.7
34	7	6.7	32.1	6.7	32.1	7.0
35	8	4.0	19.8	4.0	19.8	-5.2
36	8	9.3	46.0	9.3	46.0	21.0
37	7	2.7	12.9	2.7	12.9	-12.1
					25.0	Sample LAB Average
					MIN	-18.8
					MAX	38.6
					MEAN	4.0
					SD	12.9
					URANIUM DCGL$_w$	5,000
					TRANSURANIC DCGL$_w$	100

PRE QC Measurements

35QC	22	7.8	38.6	7.3	36.1	2.5
37QC	22	7.8	38.6	7.3	36.1	2.5
					36.1	QC LAB Average
					QC MIN	2.5
					QC MAX	2.5
					QC MEAN	2.5
					QC SD	0.0
					URANIUM DCGL$_w$	5,000
					TRANSURANIC DCGL$_w$	100

1 - Average QC LAB used to subtract from Gross Sample Activity

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SURVEY UNIT 886-A-001
PRE AND POST TSA
DATA SUMMARY

Manufacturer:	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	7	8	9	10	11
Serial #:	3114	1379	3114	1379	3114
Cal Due Date:	4/25/02	5/6/02	4/25/02	5/6/02	4/25/02
Analysis Date:	1/10/02	1/10/02	1/17/02	1/21/02	1/21/02
Alpha Eff. (c/d):	0.209	0.202	0.209	0.202	0.209
Alpha Bkgd (cpm)	2.0	2.7	2.7	5.3	2.7
Sample Time (min)	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0	48.0

Manufacturer:	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	12	19	20	21	22
Serial #:	3114	3125	2352	2352	1379
Cal Due Date:	4/25/02	4/1/02	4/17/02	4/17/02	5/6/02
Analysis Date:	1/22/02	1/23/02	1/23/02	1/24/02	1/24/02
Alpha Eff. (c/d):	0.209	0.210	0.228	0.228	0.202
Alpha Bkgd (cpm)	4.0	2.0	2.7	6.7	4.0
Sample Time (min)	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0	48.0

POST TSA MEASURMENTS

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	11	8.7	41.6	6.7	32.1	10.6
2	11	6.7	32.1	5.3	25.4	1.1
3	11	5.3	25.4	5.3	25.4	-5.6
4	12	8.7	41.6	4.7	22.5	10.6
5	20	13.3	58.3	7.3	32.0	27.3
6	21	12.0	52.6	2.6	11.4	21.6
7	21	10.0	43.9	4.0	17.5	12.9
8	12	8.7	41.6	6.7	32.1	10.6
9	12	10.0	47.8	9.0	43.1	16.9
10	20	15.3	67.1	6.7	29.4	36.1
11	20	10.0	43.9	4.0	17.5	12.9
12	20	5.3	23.2	6.7	29.4	-7.7
13	20	12.7	55.7	6.7	29.4	24.7
14	12	8.7	41.6	6.7	32.1	10.6
15	20	16.0	70.2	3.3	14.5	39.2
16	10	12.0	59.4	5.3	26.2	28.4
17	10	13.3	65.8	6.7	33.2	34.8
18	20	7.3	32.0	7.3	32.0	1.0
19	20	12.7	55.7	7.3	32.0	24.7
20	20	15.3	67.1	4.0	17.5	36.1
21	20	15.3	67.1	2.0	8.8	36.1
22	11	10.7	51.2	8.0	38.3	20.2
23	11	12.0	57.4	7.3	34.9	26.4
24	11	11.3	54.1	10.7	51.2	23.1
25	11	9.3	44.5	10.7	51.2	13.5
26	21	8.7	38.2	4.0	17.5	7.2
27	21	6.0	26.3	6.7	29.4	-4.7
28	21	12.7	55.7	2.7	11.8	24.7
29	21	10.7	46.9	9.3	40.8	15.9
30	11	12.0	57.4	8.7	41.6	26.4
31	11	6.0	28.7	7.3	34.9	-2.3
32	11	10.7	51.2	8.0	38.3	20.2
33	11	6.7	32.1	9.3	44.5	1.1
34	10	14.0	69.3	10.0	49.5	38.3
35	10	13.3	65.8	7.3	36.1	34.8
36*	11	48.9	234.0	8.7	41.6	202.0
37	11	7.3	34.9	8.7	41.6	3.9

1 - Average LAB used to subtract from Gross Sample Activity

31.0	Sample LAB Average
MIN	-7.7
MAX	203.0
MEAN	22.6
SD	33.3
URANIUM DCGL$_w$	5,000
TRANSURANIC DCGL$_w$	100

POST QC Measurements

35QC	22	12.7	62.9	7.3	36.1	26.7
37QC	22	10.5	52.0	7.3	36.1	15.8

1 - Average QC LAB used to subtract from Gross Sample Activity

36.1	QC LAB Average
QC MIN	15.8
QC MAX	26.7
QC MEAN	21.3
QC SD	7.7
URANIUM DCGL$_w$	5,000
TRANSURANIC DCGL$_w$	100

* Sample Location 36 was decontaminated (top layer of concrete removed) using the hydrolazer prior to PDSI surveys.

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SURVEY UNIT 886-A-001
PRE AND POST RSC
DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4	5	6	13	14
Serial #:	767	963	830	770	767	963	830	770
Cal Due Date:	4/30/02	1/26/02	2/16/02	1/19/02	4/30/02	1/26/02	2/16/02	1/19/02
Analysis Date:	1/10/02	1/10/02	1/10/02	1/10/02	1/18/02	1/18/02	1/18/02	1/18/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.1	0.0	0	0.1	0.1	0.1	0.0	0.3
Sample Time (min)	2	2	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10	10	10
MDC (dpm/100cm^2)	7.0	4.5	4.5	7.0	7.0	7.0	4.5	8.8

Manufacturer:	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	15	16	17	18	25	26	27	28
Serial #:	767	1164	830	959	767	1164	830	959
Cal Due Date:	4/30/02	5/13/02	2/16/02	7/14/02	4/30/02	5/13/02	2/16/02	7/14/02
Analysis Date:	1/22/02	1/22/02	1/22/02	1/22/02	1/24/02	1/24/02	1/24/02	1/24/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.2	0.3	0.2	0.1	0.0	0.0	0.0	0.1
Sample Time (min)	2	2	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10	10	10
MDC (dpm/100cm^2)	7.0	4.5	4.5	7.0	7.0	7.0	4.5	8.8

PRE RSC MEASUREMENTS

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	15	2.0	5.5
2	6	1.0	2.7
3	5	1.0	2.7
4	18	3.0	8.8
5	13	1.0	3.0
6	6	1.0	2.7
7	25	1.0	3.0
8	16	1.0	2.1
9	17	0.0	-0.6
10	25	2.0	6.1
11	5	2.0	5.8
12	5	2.0	5.8
13	1	0.0	-0.3
14	2	2.0	6.1
15	25	2.0	6.1
16	4	2.0	5.8
17	2	0.0	0.0
18	4	0.0	-0.3
19	14	2.0	5.2
20	13	1.0	3.0
21	28	2.0	5.8
22	3	2.0	6.1
23	1	2.0	5.8
24	2	2.0	6.1
25	4	0.0	-0.3
26	26	5.0	15.2
27	4	2.0	5.8
28	26	0.0	0.0
29	27	4.0	12.1
30	4	2.0	5.8
31	3	5.0	15.2
32	2	2.0	6.1
33	1	0.0	-0.3
34	1	1.0	2.7
35	3	1.0	3.0
36	2	0.0	0.0
37	3	0.0	0.0
		MIN	-0.6
		MAX	15.2
		MEAN	4.4
		SD	3.9
		Uranium $DCGL_w$	1,000
		Transuranic $DCGL_w$	20

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SURVEY UNIT 886-A-001
PRE AND POST RSC
DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4	5	6	13	14
Serial #:	767	963	830	770	767	963	830	770
Cal Due Date:	4/30/02	1/26/02	2/16/02	1/19/02	4/30/02	1/26/02	2/16/02	1/19/02
Analysis Date:	1/10/02	1/10/02	1/10/02	1/10/02	1/18/02	1/18/02	1/18/02	1/18/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.1	0.0	0	0.1	0.1	0.1	0.0	0.3
Sample Time (min)	2	2	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10	10	10
MDC (dpm/100cm^2)	7.0	4.5	4.5	7.0	7.0	7.0	4.5	8.8

Manufacturer:	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	15	16	17	18	25	26	27	28
Serial #:	767	1164	830	959	767	1164	830	959
Cal Due Date:	4/30/02	5/13/02	2/16/02	7/14/02	4/30/02	5/13/02	2/16/02	7/14/02
Analysis Date:	1/22/02	1/22/02	1/22/02	1/22/02	1/24/02	1/24/02	1/24/02	1/24/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.2	0.3	0.2	0.1	0.0	0.0	0.0	0.1
Sample Time (min)	2	2	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10	10	10
MDC (dpm/100cm^2)	7.0	4.5	4.5	7.0	7.0	7.0	4.5	8.8

POST RSC MEASUREMENTS

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	15	1.0	2.4
2	16	0.0	-0.9
3	17	0.0	-0.6
4	27	0.0	0.0
5	28	1.0	2.7
6	26	0.0	0.0
7	27	0.0	0.0
8	25	0.0	0.0
9	26	1.0	3.0
10	26	0.0	0.0
11	26	1.0	3.0
12	25	0.0	0.0
13	26	0.0	0.0
14	28	0.0	-0.3
15	25	0.0	0.0
16	18	0.0	-0.3
17	15	1.0	2.4
18	27	1.0	3.0
19	25	0.0	0.0
20	27	2.0	6.1
21	28	0.0	-0.3
22	17	1.0	2.4
23	15	1.0	2.4
24	17	0.0	-0.6
25	16	0.0	-0.9
26	28	0.0	-0.3
27	25	1.0	3.0
28	28	0.0	-0.3
29	27	0.0	0.0
30	18	1.0	2.7
31	16	1.0	2.1
32	15	0.0	-0.6
33	15	0.0	-0.6
34	16	0.0	-0.9
35	18	0.0	-0.3
36	17	3.0	8.5
37	18	1.0	2.7
		MIN	-0.9
		MAX	8.5
		MEAN	1.1
		SD	2.1
		Uranium DCGL$_w$	1,000
		Transuranic DCGL$_w$	20

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886-A-001
Paint and Media Sample Results

LOCATION DESCRIPTION	SAMPLE LOCATION NUMBER	SITE SAMPLE ID	NUCLIDE	pCi/g (2)	MDA (pCi/g)	WEIGHT (g)	SURFACE AREA (in^2)	INDIVIDUAL NUCLIDE ($dpm/100cm^2$) (3)	ESTIMATED MDA ($dpm/100cm^2$) (4)	URANIUM TOTAL ($dpm/100cm^2$)	TRANSURANIC TOTAL ($dpm/100cm^2$)
886, Room 101	22, 23 24, 25	O2D0592.038.001	U-234	0.000	0.113	107	16	0	26		
			U-235	0.003	0.018			1	4		
			U-238	0.000	0.113			0	26	**0.8**	
			Pu-239 Pu-240	0.000	0.154			0	35		
			Am-241	0.000	0.021			0	5		**0.0**
B886, Room 101	30, 31 32, 33	O2D0592.039.001	U-234	0.000	0.141	85	16	0	26		
			U-235	0.011	0.018			2	3		
			U-238	0.000	0.141			0	26	**2.0**	
			Pu-239 Pu-240	0.000	0.152			0	28		
			Am-241	0.000	0.020			0	4		**0.0**
B886, Room 101	34, 35 36, 37	O2D0592.040.001	U-234	0.000	0.335	88	16	0	64		
			U-235	0.451	0.021			85	4		
			U-238	0.000	0.335			0	64	**85.5**	
			Pu-239 Pu-240	0.000	0.218			0	41		
			Am-241	0.000	0.029			0	6		**0.0**
B886, Room 101	1, 2, 3 8, 14 16, 17	O2D0592.041.001	U-234	0.017	0.092	205	16	8	41		
			U-235	0.004	0.016			2	7		
			U-238	0.017	0.092			8	41	**16.8**	
			Pu-239 Pu-240	0.000	0.140			0	62		
			Am-241	0.000	0.019			0	8		**0.0**
B886, Room 101	18, 26 27, 28, 29	O2D0592.045.001	U-234	0.000	0.222	147	16	0	70		
			U-235	0.007	0.020			2	6		
			U-238	0.000	0.222			0	70	**2.3**	
			Pu-239 Pu-240	0.000	0.184			0	58		
			Am-241	0.000	0.025			0	8		**0.0**

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886-A-001
Paint and Media Sample Results

LOCATION DESCRIPTION	SAMPLE LOCATION NUMBER	SITE SAMPLE ID	NUCLIDE	pCi/g (2)	MDA (pCi/g)	WEIGHT (g)	SURFACE AREA (in^2)	INDIVIDUAL NUCLIDE ($dpm/100cm^2$) (3)	ESTIMATED MDA ($dpm/100cm^2$) (4)	URANIUM TOTAL ($dpm/100cm^2$)	TRANSURANIC TOTAL ($dpm/100cm^2$)
B886, Room 101	9, 15 19, 20, 21	O2D0592.042.001	U-234	0.000	0.226	162	16	0	79		
			U-235	0.007	0.021			2	7		
			U-238	0.000	0.226			0	79	2.5	
			Pu-239 Pu-240	0.000	0.192			0	67		
			Am-241	0.000	0.026			0	9		0.0
B886, Room 101	4, 5 10, 11	O2D0592.043.001	U-234	0.000	0.208	99	16	0.0	44.5		
			U-235	0.000	0.021			0.0	4.4		
			U-238	0.000	0.208			0.0	44.5	0.0	
			Pu-239 Pu-240	0.000	0.166			0.0	35.6		
			Am-241	0.000	0.022			0.0	4.8		0.0
B886, Room 101	6, 7 12, 13	O2D0592.044.001	U-234	0.091	0.143	117	16	23.0	36.1		
			U-235	0.000	0.017			0.0	4.3		
			U-238	0.091	0.143			23.0	36.1	46.0	
			Pu-239 Pu-240	0.000	0.147			0.0	37.1		
			Am-241	0.000	0.020			0.0	5.0		0.0
									MIN	0.0	0.0
									MAX	85.5	0.0
									MEAN	19.5	0.0
									SD	30.9	0.0
									$DCGL_W$ =	5000	100

(1) Paint samples collected in B886, Room 101, were analyzed as grouped composites using the Canberra ISOCS Gamma Spectroscopy system.

(2) Critical Level test criterion were utilized in this analysis. If the net peak area was less than the L_C (critcal level), then a "not detected" or "zero" decision was made. The L_C value is always less than the applicable MDA, but greater than zero.

(3) Individual nuclide dpm/100 cm^2 conversion is conservatively based on the composite sample weight. This assumption presumes that the total sample activity from composited samples is located at one, single sample location. This methodology ensures that no single sample location exceeds the applicable $DCGL_W$.

(4) Estimated MDA dpm/100 cm^2 conversion is conservatively based on the composite sample weight.

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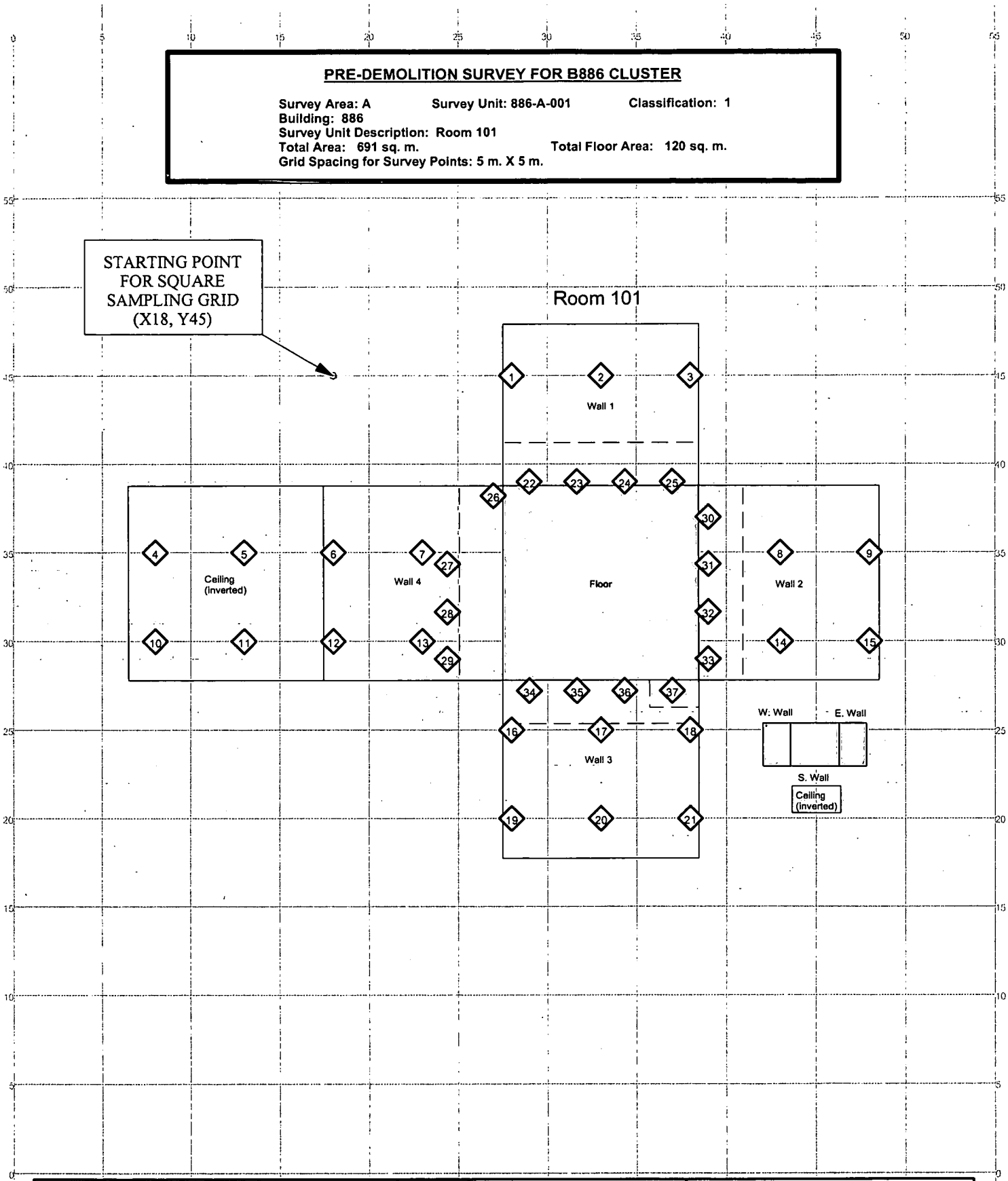
PRE-DEMOLITION SURVEY FOR B886 CLUSTER

Survey Area: A **Survey Unit: 886-A-001** **Classification: 1**
Building: 886
Survey Unit Description: Room 101
Total Area: 691 sq. m. **Total Floor Area: 120 sq. m.**
Grid Spacing for Survey Points: 5 m. X 5 m.



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area Not Included In This Survey

Neither the United States Government nor Kaiser Hill Co., nor DynCorp I&ET, nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.

N

0 FEET 30
0 METERS 10
1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): N/A
RCT ID #(s): N/A

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:
DynCorp THE ART OF TECHNOLOGY
KAISER HILL

MAP ID: 02-0099/101-media December 28, 2001

886-A-001

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B886, ROOM 101

INSITU GAMMA SPECTROSCOPY

ANALYTICAL RESULTS

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CANBERRA

COVER PAGE

RC10B, On-Site Radiological Screening by Gamma Spectrometry

***In Situ* Gamma Spectrometry**

PROJECT SAMPLE IDENTIFICATION CROSS-REFERENCE TO CMLS SAMPLE LABORATORY IDs

BATCH 0202203968
Subcontract KH001076OZ

COC NUMBER	PROJECT SAMPLE ID NUMBER	SITE SAMPLE NUMBER(S)	CMLS SAMPLE ID NUMBER(S)	OBJECT NUMBER(S) CMLS	LINE ITEM CODE(S)
02D0862#001	02D0862-001.001	02D0862-001.001	CMLS-942	FI00008	RC10B014
02D0862#001	02D0862-002.001	02D0862-002.001	CMLS-943	FI00009	RC10B014
02D0862#001	02D0862-003.001	02D0862-003.001	CMLS-944	FI00010	RC10B014

Calibration Package ID: Various, each object individually modeled using ISOCS.

Comments:

Measurements were made using Coaxial Detector LI011.

Certification Statement:

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature."

Daniel Remington Date: 02/26/02
Signature

Laboratory Director's Designee
Title

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CANBERRA

CMLS RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC: 02D0862#001	Page 1 of 1

Sampler(s) (time/date)	Contact/Requester: JOHNSEN, SHELLY/BRITTEN, JAY	Telephone No.: 6401/3050
RIN: 02D0862	Sampling Origin: 888	Purchase Order/Charge Code: EED60132
Project Title: B888 RM 101 FLOOR GAMMA	Logbook No.	Ice Chest No. Temp.
To (Lab): Canberra Mobile Lab Service	Method of Shipment	Bill of Lading/Air Bill No.
Protocol	Related COC (if any)	PRE

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 1163 Table III? YES NO
Are other known hazardous substances present? YES NO
•• •• ••

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time

Bottle No.	Customer Number	Matrix	Date/Time	Location	Container (size/type)	Sample Analysis (Field-Filtered) LIC (Method Title) [TAT]/(Parameter List)	Preservative; Packing
02D0862 -001.001	CMLS-942	OBJECT		888	1-SAMPLE N/A	RC10B014 (Field-Object-Nstd ISOCS-pCi) [24hrS] (AM241, U235, U238)	None None
02D0862 -002.001	CMLS-943	OBJECT		888	1-SAMPLE N/A	RC10B014 (Field-Object-Nstd ISOCS-pCi) [24hrS] (AM241, U235, U238)	None None
02D0862 -003.001	CMLS-944	OBJECT		888	1-SAMPLE N/A	RC10B014 (Field-Object-Nstd ISOCS-pCi) [24hrS] (AM241, U235, U238)	None None

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
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 COC printed: 02/20/02 09:52

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CANBERRA


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***********************************************************************
*****        G A M M A   S P E C T R U M   A N A L Y S I S        *****
** C a n b e r r a  M o b i l e  L a b o r a t o r y  S e r v i c e s **
***********************************************************************
```

Report Generated On : 2/27/2002 12:51:29 PM

RIN Number : 02D0862
Analytical Batch ID : 0202203968
Line Item Code : RC10B011

Filename: A:\FI00008.CNF

Sample Number : 02D0862-001.001
Lab Sample Number : CMLS-942
Sample Receipt Date :
Sample Volume Received : 1.00E+000 Grams

Result Identifier : N/A

Peak Locate Threshold : 3.50
Peak Locate Range (in channels) : 100 - 8192
Peak Area Range (in channels) : 100 - 8192
Identification Energy Tolerance : 1.500 keV

Sample (Final Aliquot Size) : 8.129E+001 Grams
Sample Quantity Error : 0.000E+000
Systematic Error Applied : 1.910E+001

Sample Taken On : 2/20/2002 12:19:41 PM
Acquisition Started : 2/20/2002 12:19:41 PM

Count Time : 43200.0 seconds
Real Time : 43481.5 seconds
Dead Time : 0.65 %

Energy Calibration Used Done On : 12/12/01
Energy = 0.059 + 0.250*ch + -1.36E-008*ch^2 + 1.22E-012*ch^3

Corrections Applied:
None

Efficiency Calibration Used Done On : 2/27/02
Efficiency Geometry ID : 02D0862-001.001

Analyzed By: Marilyn Umbaugh Date: 2/27/02

Reviewed By: Daniel Remington Date: 2/27/02

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CANBERRA

****
***** Sample and QC Sample Results Summary *****
****

Site Sample ID : 02D0862-001.001

Analytical Batch ID : 0202203968

Sample Type (Result Identifier): FI

Lab Sample Number : CMLS-942

Geometry ID : 02D0862-001.001

Filename: A:\FI00008.CNF

Detector Name: DET01

MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B; Basic Algorithms.

Analyte	Activity (pCi/Grams)	2-Sigma Uncertainty (pCi/Grams)	MDA (pCi/Grams)
K-40	2.11E+004	8.19E+003	8.73E+001
TL-208	5.74E+002	2.25E+002	9.81E+000
PO-210	0.00E+000	0.00E+000	9.00E+005
BI-212	2.15E+003	9.12E+002	1.57E+002
PB-212	1.91E+003	7.63E+002	1.42E+001
BI-214	6.92E+002	2.75E+002	2.17E+001
PB-214	4.70E+002	1.87E+002	2.33E+001
RA-226	5.43E+004	2.20E+004	3.28E+003
AC-228	1.78E+003	6.97E+002	2.53E+001
TH-230	0.00E+000	0.00E+000	3.41E+003
Th-231	0.00E+000	0.00E+000	1.45E+002
PA-234	0.00E+000	0.00E+000	4.14E+001
PA-234M	0.00E+000	0.00E+000	1.13E+003
TH-234	0.00E+000	0.00E+000	1.84E+002
U-235	3.91E+001	2.54E+001	1.80E+001
AM-241	0.00E+000	0.00E+000	3.74E+001

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CANBERRA


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***********************************************************************
*****      G A M M A   S P E C T R U M   A N A L Y S I S       *****
** C a n b e r r a  M o b i l e  L a b o r a t o r y  S e r v i c e s **
***********************************************************************
```

Report Generated On : 2/27/2002 4:00:48 PM

RIN Number : 02D0862
Analytical Batch ID : 0202213968
Line Item Code : RC10B014

Filename: A:\FI00009.CNF

Sample Number : 02D0862-002.001
Lab Sample Number : CMLS-943
Sample Receipt Date :
Sample Volume Received : 1.00E+000 Grams

Result Identifier : N/A

Peak Locate Threshold : 3.50
Peak Locate Range (in channels) : 100 - 8192
Peak Area Range (in channels) : 100 - 8192
Identification Energy Tolerance : 1.500 keV

Sample (Final Aliquot Size) : 1.626E+002 Grams
Sample Quantity Error : 0.000E+000
Systematic Error Applied : 2.130E+001

Sample Taken On : 2/21/2002 12:49:48 PM
Acquisition Started : 2/21/2002 12:49:48 PM

Count Time : 43200.0 seconds
Real Time : 43479.7 seconds
Dead Time : 0.64 %

Energy Calibration Used Done On : 12/12/01
Energy = 0.059 + 0.250*ch + -1.36E-008*ch^2 + 1.22E-012*ch^3

Corrections Applied:
None

Efficiency Calibration Used Done On : 2/27/02
Efficiency Geometry ID : 02D0862-002.001

Analyzed By: Marilyn Umbaugh Date: 2/27/02

Reviewed By: Daniel Remington Date: 2/27/02

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CANBERRA

****
***** Sample and QC Sample Results Summary *****
****

Site Sample ID : 02D0862-002.001

Analytical Batch ID : 0202213968

Sample Type (Result Identifier): FI000

Lab Sample Number : CMLS-943

Geometry ID : 02D0862-002.001

Filename: A:\FI00009.CNF

Detector Name: DET01

MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B; Basic Algorithms.

Analyte	Activity (pCi/Grams)	2-Sigma Uncertainty (pCi/Grams)	MDA (pCi/Grams)
K-40	2.17E+004	9.43E+003	9.15E+001
TL-208	6.38E+002	2.78E+002	1.20E+001
PO-210	0.00E+000	0.00E+000	9.42E+005
BI-212	2.23E+003	1.04E+003	1.66E+002
PB-212	2.16E+003	1.00E+003	1.54E+001
BI-214	6.89E+002	3.04E+002	2.23E+001
PB-214	4.47E+002	1.98E+002	2.34E+001
RA-226	5.88E+004	2.95E+004	3.44E+003
AC-228	1.81E+003	8.07E+002	2.61E+001
TH-230	0.00E+000	0.00E+000	3.68E+003
Th-231	0.00E+000	0.00E+000	1.52E+002
PA-234	0.00E+000	0.00E+000	4.32E+001
PA-234M	0.00E+000	0.00E+000	1.19E+003
TH-234	1.58E+002	2.47E+002	2.05E+002
U-235	6.26E+001	3.66E+001	1.73E+001
AM-241	0.00E+000	0.00E+000	4.01E+001

CANBERRA


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*********************************************************************
*****      G A M M A   S P E C T R U M   A N A L Y S I S      *****
** C a n b e r r a  M o b i l e  L a b o r a t o r y  S e r v i c e s **
*********************************************************************
```

Report Generated On : 2/27/2002 4:15:22 PM

RIN Number : 02D0862
Analytical Batch ID : 0202203968
Line Item Code : RC10B014

Filename: A:\FI00010.CNF

Sample Number : 02D0862-003.001
Lab Sample Number : CMLS-944
Sample Receipt Date : 2/23/2002
Sample Volume Received : 1.00E+000 Grams

Result Identifier : N/A

Peak Locate Threshold : 3.50
Peak Locate Range (in channels) : 100 - 8192
Peak Area Range (in channels) : 100 - 8192
Identification Energy Tolerance : 1.500 keV

Sample (Final Aliquot Size) : 8.129E+001 Grams
Sample Quantity Error : 0.000E+000
Systematic Error Applied : 1.593E+001

Sample Taken On : 2/23/2002 7:51:51 AM
Acquisition Started : 2/23/2002 7:51:51 AM

Count Time : 43200.0 seconds
Real Time : 43477.1 seconds
Dead Time : 0.64 %

Energy Calibration Used Done On : 12/12/01
Energy = 0.059 + 0.250*ch + -1.36E-008*ch^2 + 1.22E-012*ch^3

Corrections Applied:
None

Efficiency Calibration Used Done On : 2/27/02
Efficiency Geometry ID : 02D0862-003.001

Analyzed By: Marilyn Umbaugh Date: 2/27/02

Reviewed By: Daniel Remington Date: 2/27/02

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CANBERRA

****
***** Sample and QC Sample Results Summary *****
****

Site Sample ID : 02D0862-003.001

Analytical Batch ID : 0202203968

Sample Type (Result Identifier): FI000

Lab Sample Number : CMLS-944

Geometry ID : 02D0862-003.001

Filename: A:\FI00010.CNF

Detector Name: DET01

MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B; Basic Algorithms.

Analyte	Activity (pCi/Grams)	2-Sigma Uncertainty (pCi/Grams)	MDA (pCi/Grams)
K-40	1.79E+004	5.84E+003	7.46E+001
TL-208	5.14E+002	1.70E+002	9.94E+000
PO-210	0.00E+000	0.00E+000	7.55E+005
BI-212	1.55E+003	5.83E+002	1.34E+002
PB-212	1.64E+003	5.91E+002	1.23E+001
BI-214	5.42E+002	1.82E+002	1.79E+001
PB-214	3.93E+002	1.35E+002	2.03E+001
RA-226	4.25E+004	1.71E+004	2.65E+003
AC-228	1.44E+003	4.92E+002	2.10E+001
TH-230	0.00E+000	0.00E+000	2.82E+003
Th-231	0.00E+000	0.00E+000	1.17E+002
PA-234	0.00E+000	0.00E+000	3.44E+001
PA-234M	3.51E+002	4.77E+002	6.16E+002
TH-234	0.00E+000	0.00E+000	1.54E+002
U-235	5.18E+001	2.53E+001	1.51E+001
AM-241	0.00E+000	0.00E+000	3.09E+001

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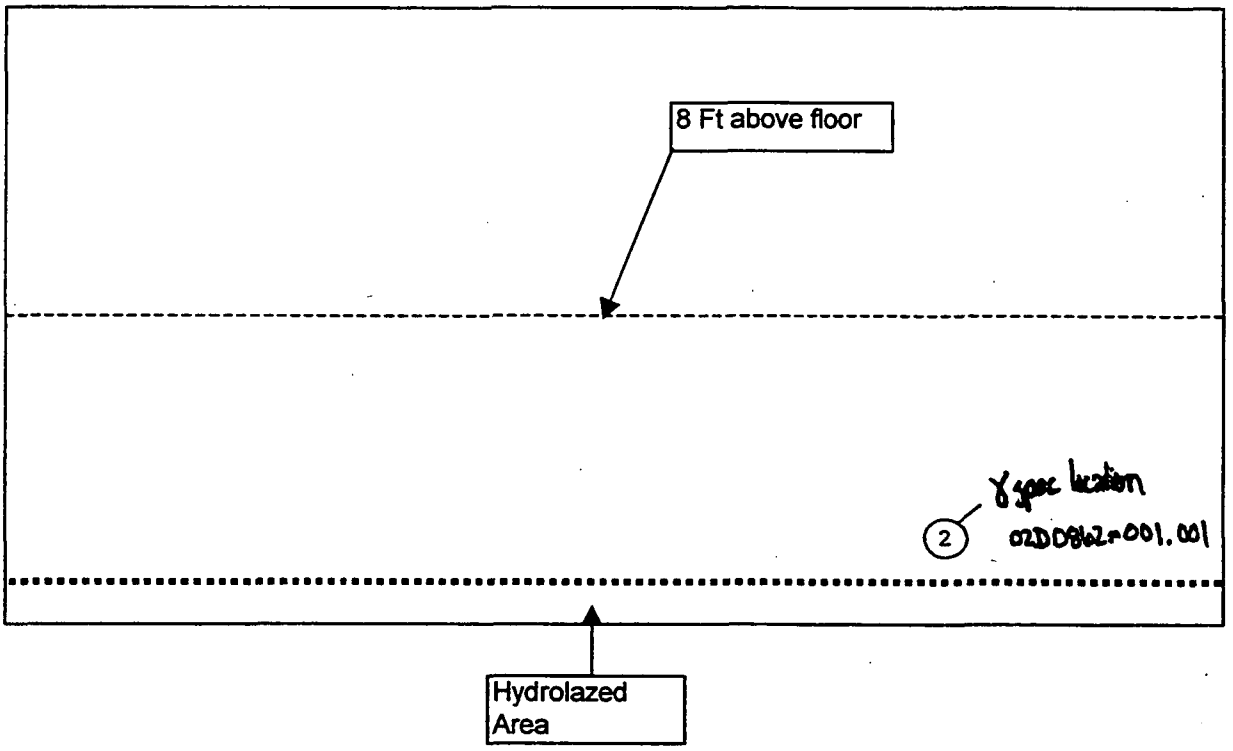
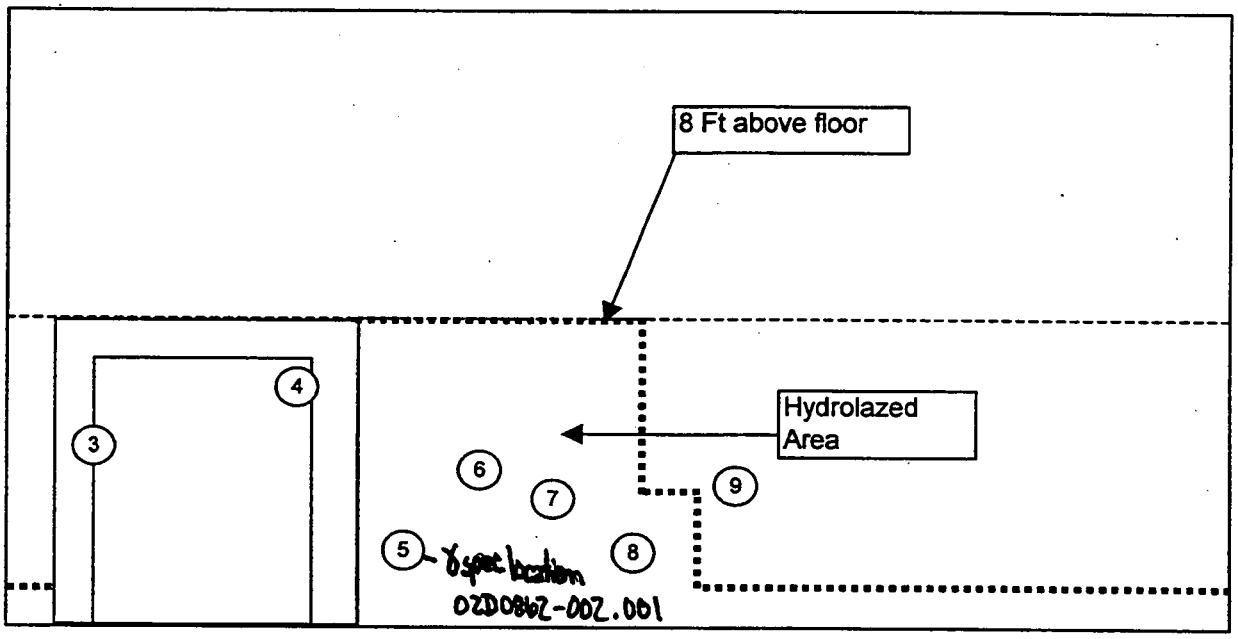
Drawing Showing Survey Points

ROOM 101 EAST WALL



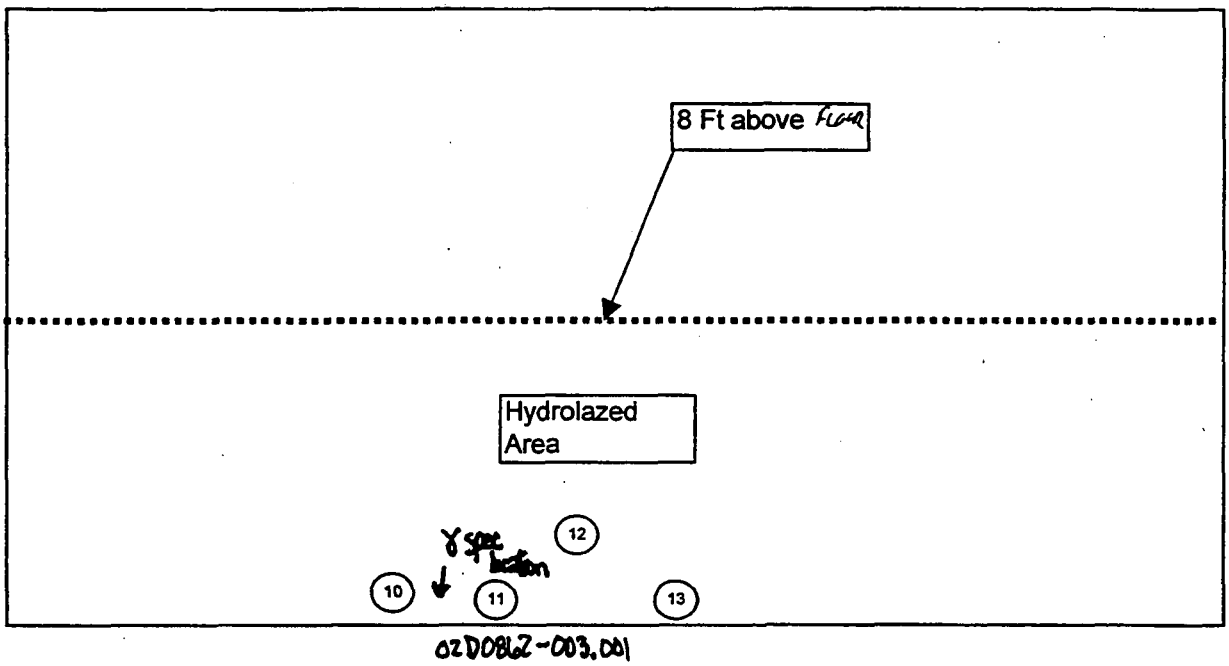
Drawing Showing Survey Points

ROOM 101 SOUTH WALL



Drawing Showing Survey Points

ROOM 101 WEST WALL



[ ] Property [X] Waste [ ] Sample

RELEASE EVALUATION FORM

Release Evaluation No.: 020220-00883-003 **EXTENDED:** NO **EXPIRES:** N/A **Charge No.:** N/A

PART I
SENDER/CUSTODIAN ACKNOWLEDGEMENT

Description of Property/Waste/Sample To Be Released/Transferred:

Overhead crane,support tracks, catwalk, motor, cable, and other associated parts and materials from the crane located in Room 101 of B886.

Current Location: Building 886, Room 101

Destination: Republic Services, Front Range Landfill, Erie, CO

New Recipient/Custodian: Republic Services, Front Range Landfill, Erie, CO

History/Process Knowledge:

These items come from use in Room 101 of B886. The items have come from an area posted or controlled for radiological purposes (CA). There is a potential for these items to have contamination from DOE controlled radioactive materials present on any of its exterior surfaces (isotope of concern is 93% enriched uranium). Documented interviews with Dr. Robert Rothe (former lead scientist of Building 886) show that the crane was installed new during construction, and there is no potential for contamination to be held up behind the support structures (i.e., area flush up on the wall that is inaccessible).

Has the specified material ever been in an RBA/CA or contacted DOE controlled radioactive materials? YES

1) By signing below, I certify information provided in Part I of this release evaluation to be true and accurate.
2) By signing below, I agree to comply with the specific requirements noted in Part II of this release evaluation.

Sender/Custod[redacted] Date: 2/20/02 Ext: 6438

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[ ] Property [X] Waste [ ] Sample

RELEASE EVALUATION FORM

Release Evaluation No.: 020220-00883-003 **EXTENDED:** NO **EXPIRES:** N/A **Charge No.:** N/A

PART II RADIOLOGICAL ENGINEERING SPECIFIC REQUIREMENTS AND/OR COMMENTS:

SURVEYS REQUIRED

The items described in this release evaluation have a low potential for presence of DOE controlled radioactive material. All items have been reviewed and inspected by B883 Radiological Engineering (R. Neveau, x3461) and meet requirements for unrestricted release of property (i.e., original paint, relatively free of grease/oil) and may be considered for unrestricted release from radiological controls. In addition, all surfaces have been aggressively scrubbed/wiped down with MARIKO solution.

Survey Requirements:
The equipment described in this release evaluation shall be surveyed for unrestricted release in accordance with RSP 07.02 and 09.01. A representative survey shall be performed for both fixed and removable contamination and shall be defined as follows:
(All surveys shall be performed for both alpha and beta total and removable activity.)

SURVEY REQUIREMENTS:

- Minimum scan survey (alpha and beta) on 50 - 75% of exterior surfaces of entire unit.
- A minimum of twenty (20) PAT surveys (fixed, alpha +beta) and twenty (20) swipe survey (using disc smear counted on a SAC/BC-4, Ludlum-2929, or equivalent) shall be performed on the exterior surfaces.
- RCT may use professional judgement on any additional PAT/swipe surveys for the items covered in this release evaluation.

NOTE: In addition to the survey requirements listed above, RCT(s) shall map the unit to provide information on the location of all survey points. All surveys and accompanying maps SHALL be forwarded to Radiological Engineering for review.

Evaluated [redacted] Date: 2-20-02 Ext: 3461

APPROVAL FOR TRANSFER/SHIPMENT

Process history, known use, interviews with former building scientists , and spectral analysis (see attached) show the isotope of concern on this equipment to be Highly Enriched Uranyl Nitrate (HEUN) (93% enriched U-235).

The equipment and associated materials meet the unrestricted release criteria listed in Table 2-2 of the RFETS Radiological Control Manual for U-235 and may be disposed in a sanitary waste landfill and non-radioactive material.

Approved: [redacted] Date: 2/20/02 Ext: 3050

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PROPERTY/WASTE RELEASE EVALUATION SIGNATURE REQUIREMENTS

Release Evaluation #: 020220-00883-003 **Page 3 of** 8

Release Evaluation for Waste:

A Release Evaluation for Waste requires an evaluation and unrestricted release approval signature. The evaluation signature is by the Radiological Engineer (RE) providing the methods or criteria for unrestricted release (i.e., survey requirements, analytical requirements, no survey required, etc.). The unrestricted release approval signature for a Release Evaluation for Waste shall be a RE authorized to provide unrestricted release approval. In addition, the evaluation and unrestricted release approval signatures shall not be the same RE. The intent of this provision is to provide peer review of the evaluation and method of unrestricted release. It is important the RE take the peer review process seriously and not become a "rubber stamp" for their fellow engineer.

Release Evaluation for Property:

A Release Evaluation for Property requires an evaluation and unrestricted release approval signature. For a Release Evaluation for Property, the evaluation and unrestricted release signature may be the same RE. In the past, only one signature was required for property for which a RE could provide an unrestricted release on the basis of process knowledge/history.

Release Evaluation for Samples:

Samples are any waste or material that is being shipped to an off-site facility for analysis. Samples that may be provided with an unrestricted release using process knowledge/history or standard contamination survey techniques may be authorized for shipment to an off-site facility using the signatory requirements specified for property. Samples which cannot be provided with an unrestricted release using process knowledge/history or standard contamination survey techniques shall be authorized for shipment from the Site using the methodology specified for waste, i.e., second signature being provided by a RE authorized to perform peer review and approval for shipment.

The approval for transfer/shipment section of a Sample Release Evaluation (SRE) shall be revised as noted below for samples which cannot be provide with an unrestricted release.

"The samples specified in Part 1 of this release evaluation are being provided with authorization for transport as non-radioactive materials in accordance with Department of Transportation (49 CFR) regulation. This authorization for shipment does not constitute an unrestricted release."

Additional Documentation:

Number of lines per section may be modified or additional pages attached to ensure adequate documentation of information necessary to perform release evaluation.

Additional pages or attachments to a release evaluation shall have the evaluation number, Page __ of __, initials of Radiological Engineer signing approval for transfer/shipment and date.

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Neveau, Rock

From: Bob & Judy Rothe [judybobr@attbi.com]
Sent: Wednesday, December 19, 2001 2:34 PM
To: Neveau, Rock
Subject: The 5 Ton Crane

Rock,

Pursuant to our phone conversation of December 19, 2001, I am certain that the 5 ton crane in Room 101 of Building 886 was installed and painted during the initial construction of the facility in 1964. The crane was never painted again, so the paint seen is the original coat. To my knowledge, that crane was never known to be contaminated.

I hope these words assist you with your demolition project on the building.

Sincerely,

Dr. Robert E. Rothe

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Ludlum	Mfg.	Ludlum	Mfg.	NE Electra
Model	2929	Model	2929	Model	DP-6
Serial #	176102	Serial #	176082	Serial #	1393
Cal Due	6-10-02	Cal Due	6-11-02	Cal Due	6-10-02
Bkg	0.3 cpm α	Bkg	0.3 cpm α	Bkg	7.0 cpm α
Eff.	33.6 % α	Eff.	33.9 % α	Eff.	19.6 % α
MDA	18 dpm α	MDA	18 dpm α	MDA	90 dpm α
Mfg.	Ludlum	Mfg.	Ludlum	Mfg.	NE Electra
Model	2929	Model	2929	Model	DP-6
Serial #	176102	Serial #	176082	Serial #	1393
Cal Due	6-10-02	Cal Due	6-11-02	Cal Due	6-10-02
Bkg	135.5 cpm β	Bkg	128.2 cpm β	Bkg	612 cpm β
Eff.	40.0 % β	Eff.	39.2 % β	Eff.	32.3 % β
MDA	205 dpm β	MDA	205 dpm β	MDA	424 dpm β

Survey Type: Alpha, beta contamination
Building: 886
Location: Rm. 101 overhead
Purpose: Post decontamination of overhead crane

RWP #: 02-886-011

Date: 1-29-02 Time: 1450

[redacted]

Print name Signature Emp. #

PRN/REN # : N/A

Comments: Survey performed after decontamination efforts of overhead crane and support tracks. Isotope of concern for B-886, room 101 is HEUN: highly enriched uranyl nitrate (93 % U-235). * See note on survey map pertaining to the AP-2 reading that was taken and attached to this survey. The area around each survey point was scanned with electra to determine the highest reading, the direct one minute PAT was then taken at that point.

SURVEY RESULTS

Swipe #	Location/Description See attached drawing if applicable	Swipe DPM/100cm2	ALPHA Direct DPM/100cm2	ALPHA Wipe DPM/wipe	BETA Swipe DPM/100cm2	BETA Direct DPM/100cm2	BETA Wipe DPM/wipe
1	On catwalk	<18	420	<90	<205	<424	<424
2	On crossrail	<18	384	N/A	<205	<424	N/A
3	On hoist cable housing	<18	348	<90	<205	<424	<424
4	On catwalk	<18	384	N/A	<205	<424	N/A
5	On crossrail	<18	300	N/A	<205	<424	N/A
6	On catwalk	<18	336	<90	<205	<424	<424
7	On crossrail	<18	216	N/A	<205	<424	N/A
8	On crane motor	<18	210	N/A	<205	<424	N/A
9	On track	<18	156	<90	<205	<424	<424
10	On electrical tracks	<18	498	N/A	<205	<424	N/A
11	On electrical tracks	<18	<90	<90	<205	<424	<424
12	On hoist motor	<18	390	<90	<205	<424	<424
13	On electrical tracks	<18	126	N/A	<205	<424	N/A
14	On track	<18	348	N/A	<205	<424	N/A
15	On track	<18	882	<90	<205	<424	<424
16	On track	<18	432	N/A	<205	<424	N/A
17	On track	<18	<90	N/A	<205	<424	N/A
18	On track	<18	126	<90	<205	<424	<424
19	On track	<18	<90	<90	<205	<424	<424
20	On track	<18	228	N/A	<205	<424	N/A

Date Reviewed: 1-30-02 **RS Supervision:** [redacted]

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PRF # 020220-00883-003

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

SURVEY RESULTS

Swipe #	Location/Description See attached drawing if applicable	Swipe DPM/100cm2	ALPHA Direct DPM/100cm2	Wipe DPM/wipe	Swipe DPM/100cm2	BETA Direct DPM/100cm2	Wipe DPM/wipe
21	On track	<18	<90	N/A	<205	<424	N/A
22	On track	<18	108	<90	<205	<424	<424
23	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24							
25							
26							
27							
28							
29							
30							
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60							
61	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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COPY

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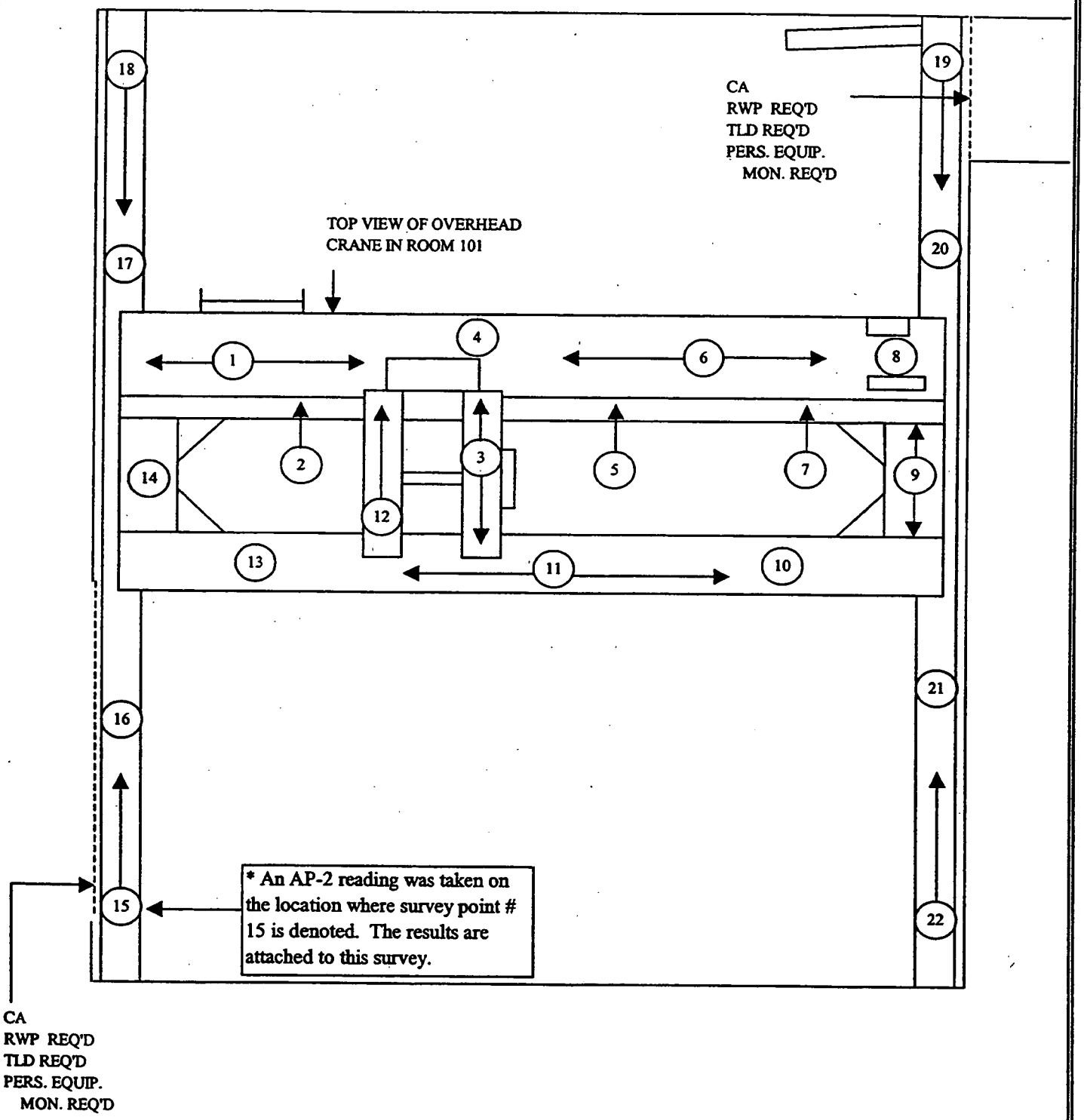
COPY

BABCOCK & WILCOX ENVIRONMENTAL TECHNOLOGY

Drawing Showing Survey Points



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COPY

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T:\Desktop\AP-2\SDA95PC.EXE - FROZEN

013002.SPE
REC# 2 OF 2

MIN: 0
MAX: 40
RANGE: 40
ZOOM: MAX x 0.750

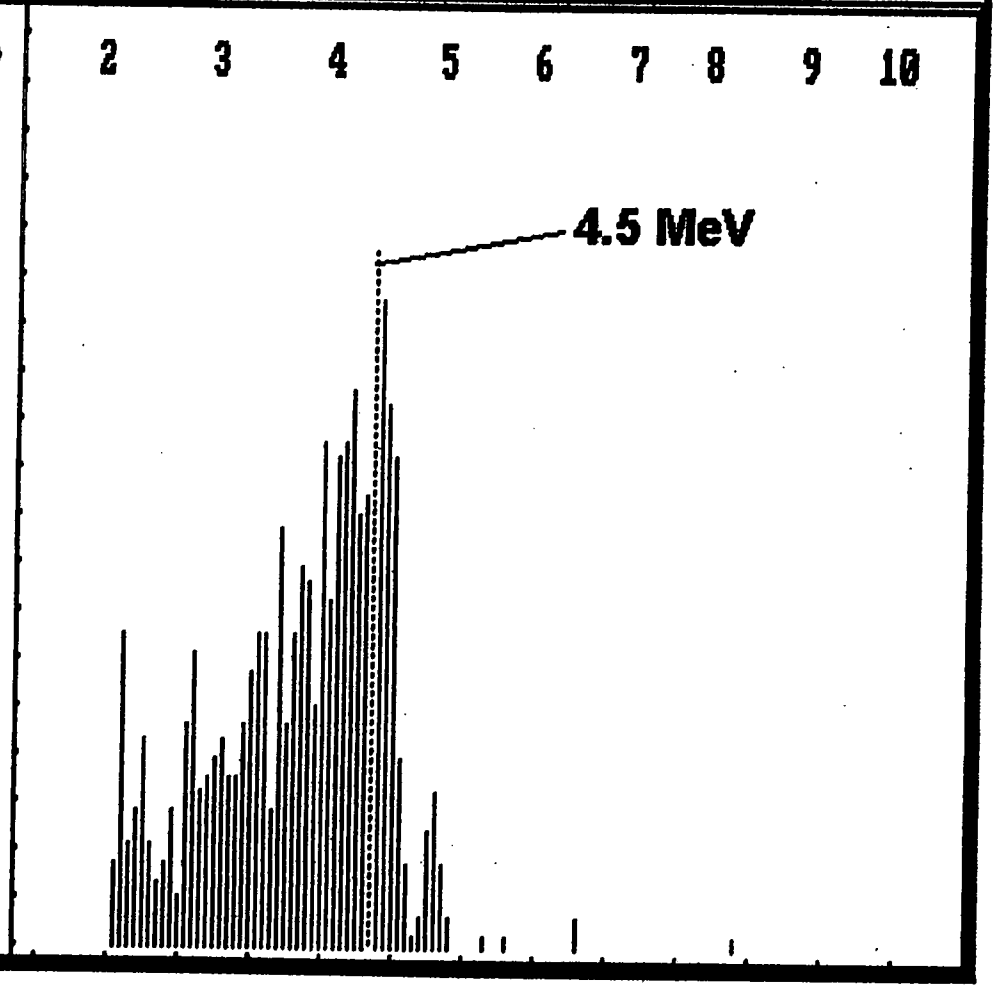
Record Keys:
Up Dn Home End

Zoom Keys:
+ - 0-9

Video Mode Keys:
c C (CGA) e E (EGA)

Esc to QUIT

Cursor MEV: 4.5
COUNT: 40



AP-2 S/N A142 Cal Due 4/19/02
Room 101 Overhead-South Crane Rail
Count Time: 60 minutes
Performed by: S Mahoney 431384
1/30/02 0955

Peak energies show 4.4→4.7 MeV, typical energy for emissions of U-234 and U-235. Contamination appears to be classic spectrum resulting from residue of enriched uranyl nitrate (HEUN).

R.N. 2.4.02

PREF#020220-00883-003

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	N/A
Model	SAC-4	Model	SAC-4	Model	N/A
Serial #	767	Serial #	1164	Serial #	N/A
Cal Due	4/30/02	Cal Due	5/13/02	Cal Due	N/A
Bkg	0.1 cpmα	Bkg	0 cpmα	Bkg	N/A cpmα
Efficiency	33.00 %	Efficiency	33.00 %	Efficiency	N/A %
MDA	20 dpmα	MDA	20 dpmα	MDA	N/A dpmα
Mfg.	Eberline	Mfg.	Eberline	Mfg.	N/A
Model	SAC-4	Model	SAC-4	Model	N/A
Serial #	770	Serial #	959	Serial #	N/A
Cal Due	7/25/02	Cal Due	7/14/02	Cal Due	N/A
Bkg	0.1 cpmα	Bkg	0.2 cpmα	Bkg	N/A cpmβ
Efficiency	33.00 %	Efficiency	33.00 %	Efficiency	N/A %
MDA	20 dpmα	MDA	20 dpmα	MDA	N/A dpmβ

Survey Type: Contamination
Building: 886
Location: Rm 101
Purpose: Confirmatory swipe survey

RWP #: N/A

Date: 3/21/02 Time: 1300

[redacted]

PRN/REN # : N/A

Comments: Survey was performed on the walls after the concrete floor had been cut and removed. 20 swipes at various heights were performed on each wall.

SURVEY RESULTS

Swipe #	Location / Description Results in DPM/100sq.cm	Removable Alpha	Removable Beta	Total Alpha	Total Beta
1	See map/drawing for location	<20	n/a	n/a	n/a
2	See map/drawing for location	<20	n/a	n/a	n/a
3	See map/drawing for location	<20	n/a	n/a	n/a
4	See map/drawing for location	<20	n/a	n/a	n/a
5	See map/drawing for location	<20	n/a	n/a	n/a
6	See map/drawing for location	<20	n/a	n/a	n/a
7	See map/drawing for location	<20	n/a	n/a	n/a
8	See map/drawing for location	<20	n/a	n/a	n/a
9	See map/drawing for location	<20	n/a	n/a	n/a
10	See map/drawing for location	<20	n/a	n/a	n/a
11	See map/drawing for location	<20	n/a	n/a	n/a
12	See map/drawing for location	<20	n/a	n/a	n/a
13	See map/drawing for location	<20	n/a	n/a	n/a
14	See map/drawing for location	<20	n/a	n/a	n/a
15	See map/drawing for location	<20	n/a	n/a	n/a
16	See map/drawing for location	<20	n/a	n/a	n/a
17	See map/drawing for location	<20	n/a	n/a	n/a
18	See map/drawing for location	<20	n/a	n/a	n/a
19	See map/drawing for location	<20	n/a	n/a	n/a
20	See map/drawing for location	<20	n/a	n/a	n/a
21	See map/drawing for location	<20	n/a	n/a	n/a
22	See map/drawing for location	<20	n/a	n/a	n/a
23	See map/drawing for location	<20	n/a	n/a	n/a
24	See map/drawing for location	<20	n/a	n/a	n/a
25	See map/drawing for location	<20	n/a	n/a	n/a
26	See map/drawing for location	<20	n/a	n/a	n/a
27	See map/drawing for location	<20	n/a	n/a	n/a
28	See map/drawing for location	<20	n/a	n/a	n/a
29	See map/drawing for location	<20	n/a	n/a	n/a
30	See map/drawing for location	<20	n/a	n/a	n/a
31	See map/drawing for location	<20	n/a	n/a	n/a
32	See map/drawing for location	<20	n/a	n/a	n/a
33	See map/drawing for location	<20	n/a	n/a	n/a
34	See map/drawing for location	<20	n/a	n/a	n/a
35	See map/drawing for location	<20	n/a	n/a	n/a
36	See map/drawing for location	<20	n/a	n/a	n/a
37	See map/drawing for location	<20	n/a	n/a	n/a
38	See map/drawing for location	<20	n/a	n/a	n/a
39	See map/drawing for location	<20	n/a	n/a	n/a
40	See map/drawing for location	<20	n/a	n/a	n/a
41	See map/drawing for location	<20	n/a	n/a	n/a
42	See map/drawing for location	<20	n/a	n/a	n/a
43	See map/drawing for location	<20	n/a	n/a	n/a
44	See map/drawing for location	<20	n/a	n/a	n/a
45	See map/drawing for location	<20	n/a	n/a	n/a
46	See map/drawing for location	<20	n/a	n/a	n/a
47	See map/drawing for location	<20	n/a	n/a	n/a
48	See map/drawing for location	<20	n/a	n/a	n/a
49	See map/drawing for location	<20	n/a	n/a	n/a
50	See map/drawing for location	<20	n/a	n/a	n/a

Date Reviewed: 3-22-02 **RS Supervision:** [redacted]

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SAFETY

Continuation Sheet

SURVEY RESULTS

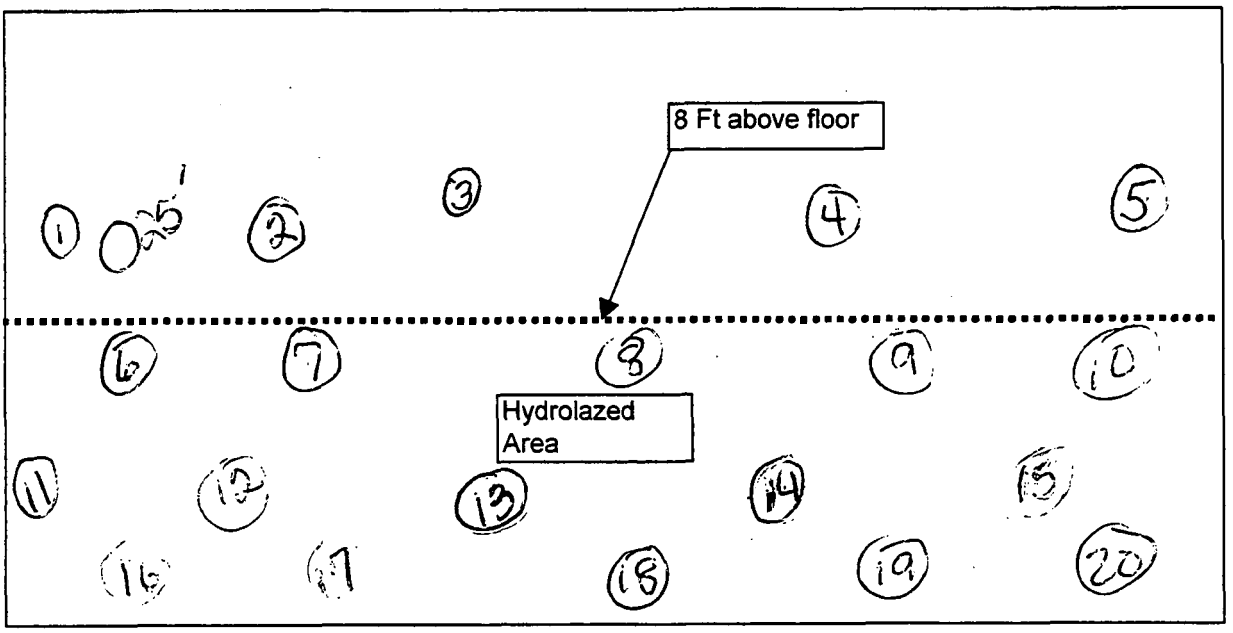
Swipe #	Location/Description Results in DPM/100CM^2	Removable		Total	
		Alpha	Beta	Alpha	Beta
51	See map/drawing for location	<20	n/a	n/a	n/a
52	See map/drawing for location	<20	n/a	n/a	n/a
53	See map/drawing for location	<20	n/a	n/a	n/a
54	See map/drawing for location	<20	n/a	n/a	n/a
55	See map/drawing for location	<20	n/a	n/a	n/a
56	See map/drawing for location	<20	n/a	n/a	n/a
57	See map/drawing for location	<20	n/a	n/a	n/a
58	See map/drawing for location	<20	n/a	n/a	n/a
59	See map/drawing for location	<20	n/a	n/a	n/a
60	See map/drawing for location	<20	n/a	n/a	n/a
61	See map/drawing for location	<20	n/a	n/a	n/a
62	See map/drawing for location	<20	n/a	n/a	n/a
63	See map/drawing for location	<20	n/a	n/a	n/a
64	See map/drawing for location	<20	n/a	n/a	n/a
65	See map/drawing for location	<20	n/a	n/a	n/a
66	See map/drawing for location	<20	n/a	n/a	n/a
67	See map/drawing for location	<20	n/a	n/a	n/a
68	See map/drawing for location	<20	n/a	n/a	n/a
69	See map/drawing for location	<20	n/a	n/a	n/a
70	See map/drawing for location	<20	n/a	n/a	n/a
71	See map/drawing for location	<20	n/a	n/a	n/a
72	See map/drawing for location	<20	n/a	n/a	n/a
73	See map/drawing for location	<20	n/a	n/a	n/a
74	See map/drawing for location	<20	n/a	n/a	n/a
75	See map/drawing for location	<20	n/a	n/a	n/a
76	See map/drawing for location	<20	n/a	n/a	n/a
77	See map/drawing for location	<20	n/a	n/a	n/a
78	See map/drawing for location	<20	n/a	n/a	n/a
79	See map/drawing for location	<20	n/a	n/a	n/a
80	See map/drawing for location	<20	n/a	n/a	n/a

Date Reviewed: 3-22-00 **RS Supervision:** [redacted]

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

Drawing Showing Survey Points

ROOM 101 WEST WALL

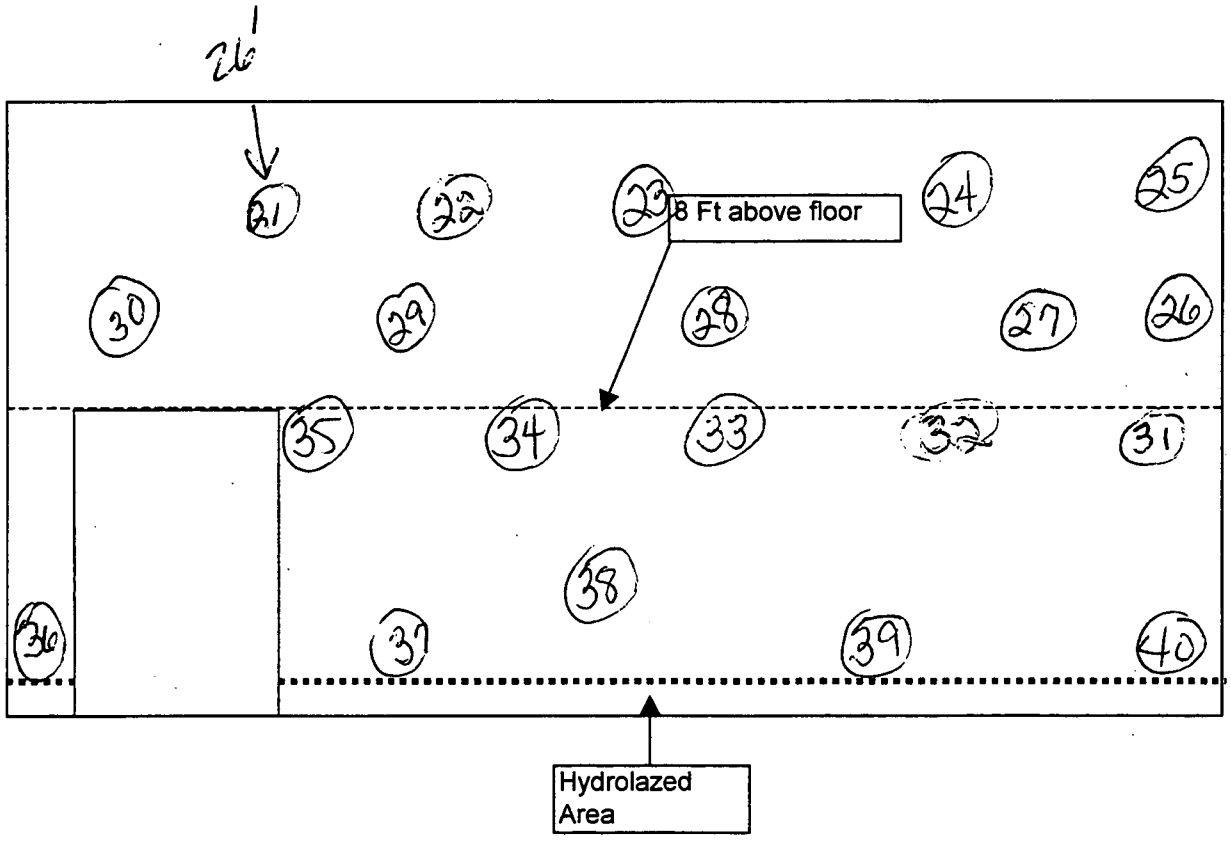


96

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

Drawing Showing Survey Points

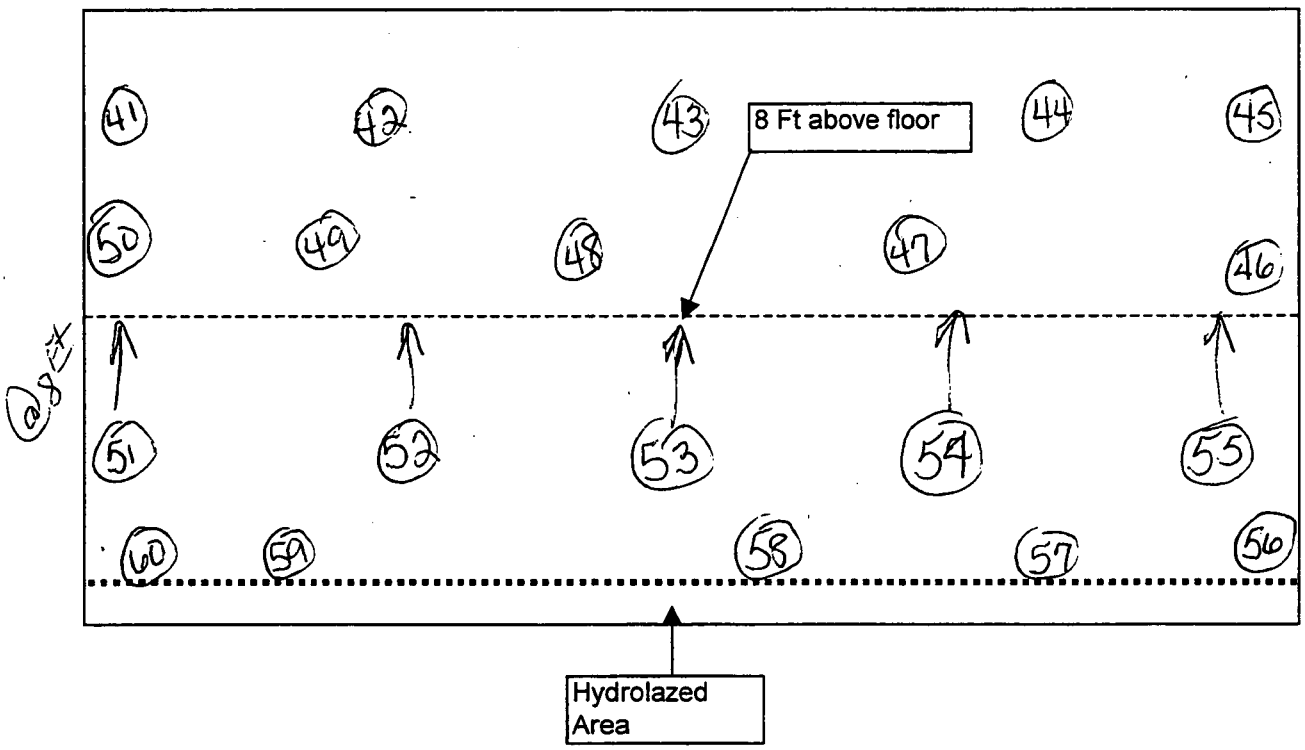
ROOM 101 NORTH WALL



ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

Drawing Showing Survey Points

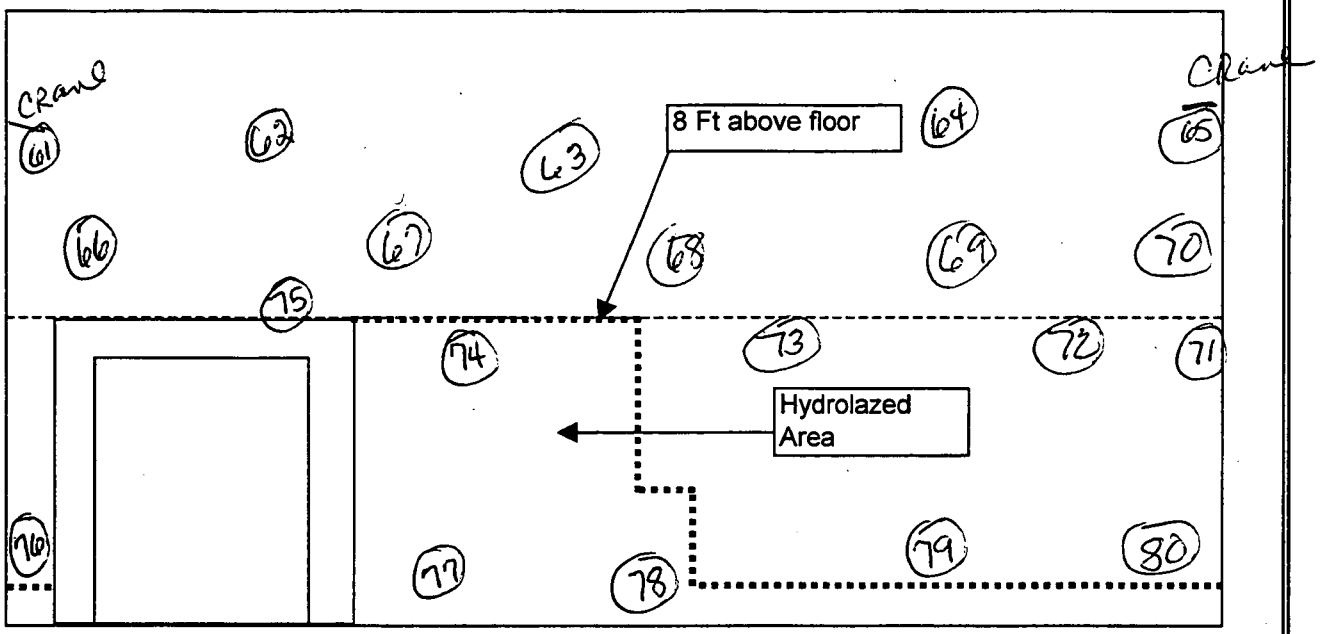
ROOM 101 EAST WALL



ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

Drawing Showing Survey Points

ROOM 101 SOUTH WALL

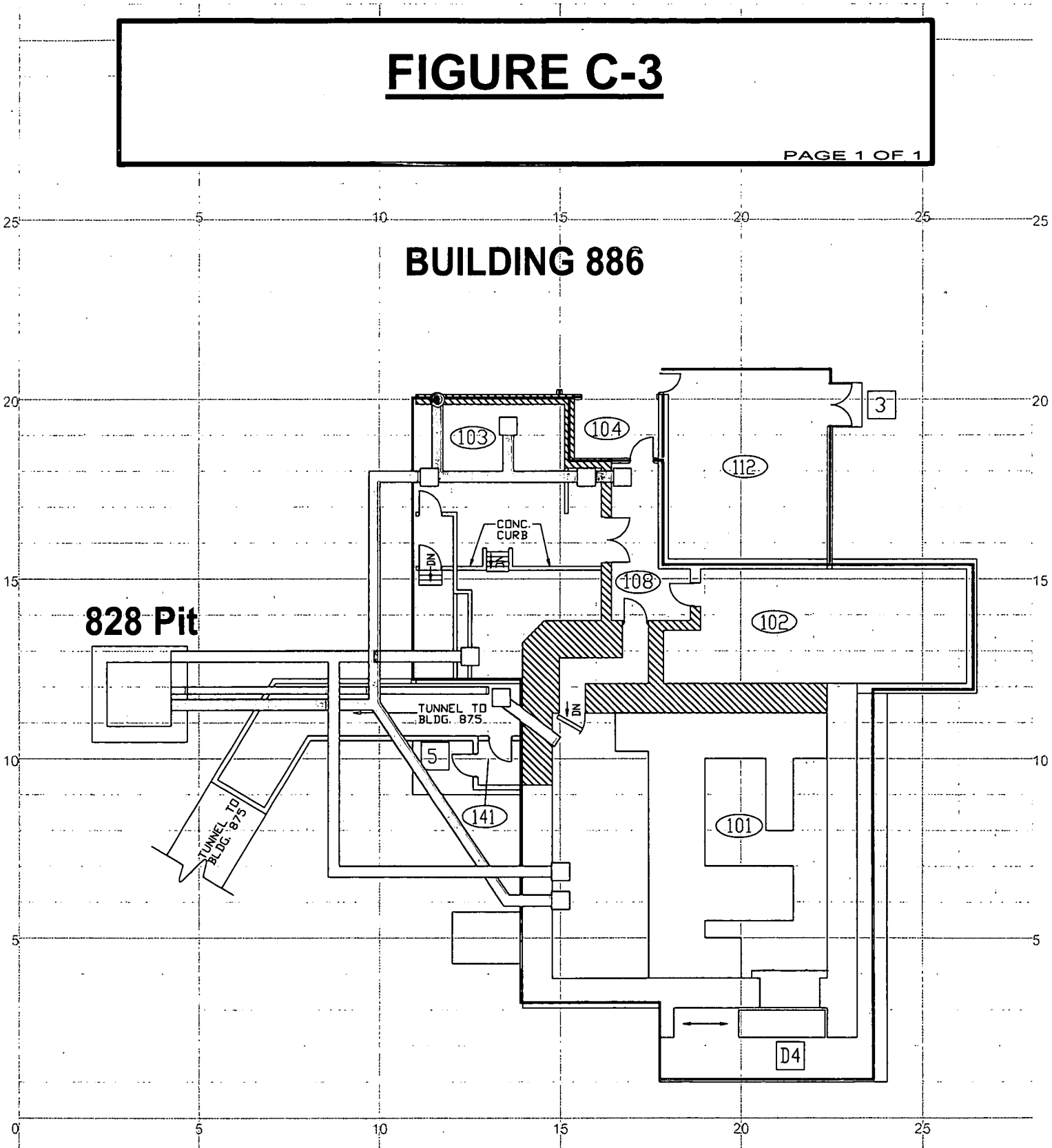


ATTACHMENT C-3

B886, Room 104 & 108

(Survey Unit 886-A-002)

FIGURE C-3



SURVEY MAP LEGEND

- Ventilation Duct (8" diameter)
- HUEN Lines (1" diameter)
- Contaminated Drain Piping (2"-3" diameter)
- 2" Vent From Ground thru Roof
- Concrete Block Section
- 3" Hot Plenum Underground

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N

0 FEET 0

0 METERS 0

DRAWING NOT TO SCALE

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for:

KAISER-HILL COMPANY

MAP ID: 02-0099/FIGC-3

March 25, 2002

101

SURVEY UNIT 886-A-002
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B886, Rooms 104 & 108

102

Total Surface Activity Measurements

	15	15	
	Number Required	Number Obtained	
MIN	-3.6		dpm/100 cm^2
MAX	34.3		dpm/100 cm^2
MEAN	14.8		dpm/100 cm^2
STD DEV	11.8		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	15	15	
	Number Required	Number Obtained	
MIN	-0.3		dpm/100 cm^2
MAX	6.1		dpm/100 cm^2
MEAN	0.7		dpm/100 cm^2
STD DEV	1.8		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

103

SURVEY UNIT B886-A-002
TSA - DATA SUMMARY

Manufacturer:	NE Electra	NE Electra
Model:	DP-6	DP-6
Instrument ID#:	7	8
Serial #:	1379	3125
Cal Due Date:	5/6/02	4/1/02
Analysis Date:	3/27/02	3/27/02
Alpha Eff. (c/d):	0.211	0.208
Alpha Bkgd (cpm)	2.7	1.3
Sample Time (min)	1.5	1.5
LAB Time (min)	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	7	9.3	44.1	9.3	44.1	15.4
2	7	9.3	44.1	2.7	12.8	15.4
3	7	13.3	63.0	6.7	31.8	34.3
4	7	12.7	60.2	1.3	6.2	31.5
5	7	5.3	25.1	6.7	31.8	-3.6
6	7	11.3	53.6	8.0	37.9	24.9
7	7	10.3	48.8	6.0	28.4	20.1
8	7	6.7	31.8	6.7	31.8	3.1
9	7	6.7	31.8	9.3	44.1	3.1
10	7	6.0	28.4	6.0	28.4	-0.3
11	7	12.0	56.9	2.7	12.8	28.2
12	7	10.0	47.4	2.7	12.8	18.7
13	7	8.0	37.9	6.7	31.8	9.2
14	7	9.3	44.1	8.7	41.2	15.4
15	7	7.3	34.6	7.3	34.6	5.9

1 - Average LAB used to subtract from Gross Sample Activity

28.7	Sample LAB Average
MIN	-3.6
MAX	34.3
MEAN	14.8
SD	11.8
Transuranic $DCGL_W$	100

QC Measurements

2 QC	8	6.0	28.8	3.3	15.9	14.4
6 QC	8	3.3	15.9	2.7	13.0	1.4

1 - Average QC LAB used to subtract from Gross Sample Activity

14.4	QC LAB Average
QC MIN	1.4
QC MAX	14.4
QC MEAN	7.9
QC SD	9.2
Transuranic $DCGL_W$	100

104

SURVEY UNIT B886-A-002
RSC - DATA SUMMARY

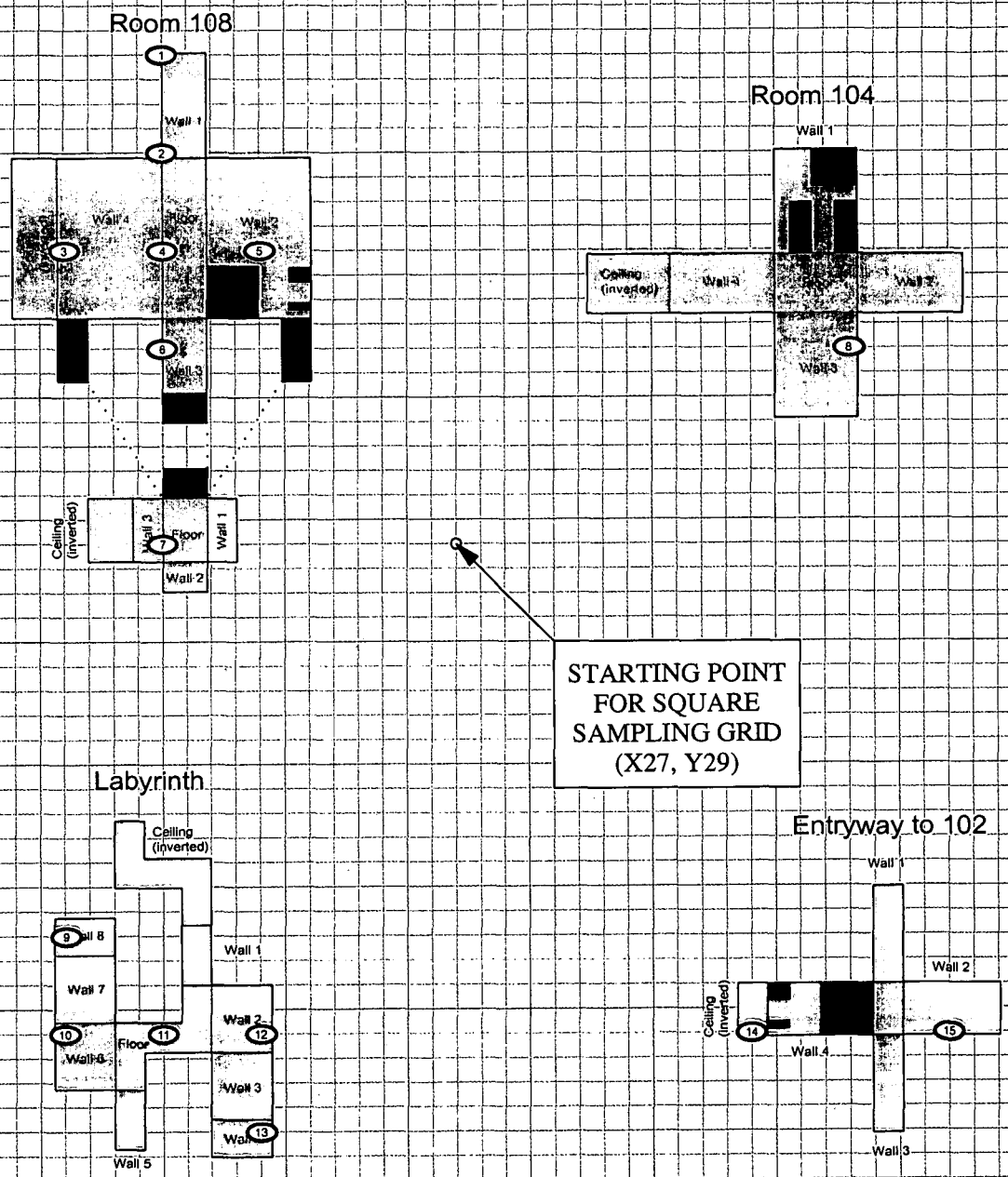
Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4
Serial #:	767	1164	770	959
Cal Due Date:	4/30/02	5/13/02	7/25/02	7/14/02
Analysis Date:	3/27/02	3/27/02	3/27/02	3/27/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.1	0.0	0.0	0.0
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	7.0	4.5	4.5	4.5

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	1.0	2.7
2	2	0.0	0.0
3	3	0.0	0.0
4	4	0.0	0.0
5	1	0.0	-0.3
6	2	0.0	0.0
7	3	1.0	3.0
8	4	0.0	0.0
9	1	0.0	-0.3
10	2	2.0	6.1
11	3	0.0	0.0
12	4	0.0	0.0
13	1	0.0	-0.3
14	2	0.0	0.0
15	3	0.0	0.0
		MIN	-0.3
		MAX	6.1
		MEAN	0.7
		SD	1.8
		Transuranic $DCGL_W$	20

105

PRE-DEMOLITION SURVEY FOR B886

Survey Area: A **Survey Unit: 886-A-002** **Classification: 1**
Building: 886
Survey Unit Description: Interior of 104, 108 & Labyrinth
Total Area: 249.2 sq. m. **Total Floor Area: 36 sq. m.**
Grid Spacing for Survey Points: 3 m. X 3 m.



Scan Area

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): 9,10,11,12
RCT ID #(s): 1,2,3,4

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:

DynCorp
THE ART OF TECHNOLOGY

KAISER HILL

MAP ID: fy2002/02-0099/108-SC March 26, 2002

886-A-002

106

SURVEY UNIT 886-A-002
RADIOLOGICAL DATA SUMMARY - MEDIA

Survey Unit Description: B886, Room 104, 108, & Labyrinth

107

886-A-002
Media Data Summary

PRE MEDIA MEASUREMENTS

Total Surface Activity Measurements

	Number Required	Number Obtained	
	30	30	
MIN	-7.9		dpm/100 cm^2
MAX	37.0		dpm/100 cm^2
MEAN	10.3		dpm/100 cm^2
STD DEV	11.1		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	Number Required	Number Obtained	
	30	30	
MIN	-0.3		dpm/100 cm^2
MAX	8.8		dpm/100 cm^2
MEAN	1.3		dpm/100 cm^2
STD DEV	2.3		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

POST MEDIA MEASUREMENTS

Total Surface Activity Measurements

	Number Required	Number Obtained	
	30	30	
MIN	1.3		dpm/100 cm^2
MAX	40.9		dpm/100 cm^2
MEAN	19.3		dpm/100 cm^2
STD DEV	9.2		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	Number Required	Number Obtained	
	30	30	
MIN	-0.6		dpm/100 cm^2
MAX	6.1		dpm/100 cm^2
MEAN	1.2		dpm/100 cm^2
STD DEV	2.4		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

Media Sample Activity

Media Samples	Number Required	Number Obtained
	30	30

Total Uranium Results			Total Transuranic Results		
TOTAL	102.7	dpm/100 cm^2	TOTAL	0.0	dpm/100 cm^2
DCGL$_W$	5000	dpm/100 cm^2	DCGL$_W$	100	dpm/100 cm^2

108

SURVEY UNIT 886-A-002
PRE AND POST TSA
DATA SUMMARY

Manufacturer:	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	7	8	9	10	11
Serial #:	1136	1136	1379	1379	1136
Cal Due Date:	1/17/02	1/17/02	5/6/02	5/6/02	1/17/02
Analysis Date:	1/2/02	1/3/02	1/7/02	1/8/02	1/9/02
Alpha Eff. (c/d):	0.209	0.209	0.202	0.202	0.209
Alpha Bkgd (cpm)	0.7	0.0	2.0	3.3	0.7
Sample Time (min)	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0	48.0

PRE TSA MEASUREMENTS

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	8	5.3	25.4	2.7	12.9	11.2
2	8	8.0	38.3	4.7	22.5	24.1
3	8	3.3	15.8	4.7	22.5	1.6
4	8	4.7	22.5	0.7	3.3	8.3
5	8	3.3	15.8	2.0	9.6	1.6
6	8	6.0	28.7	2.0	9.6	14.6
7	8	1.3	6.2	2.0	9.6	-7.9
8	8	6.0	28.7	3.3	15.8	14.6
9	8	3.3	15.8	5.3	25.4	1.6
10	9	4.7	23.3	4.0	19.8	9.1
11	8	4.0	19.1	1.3	6.2	5.0
12	8	8.7	41.6	4.0	19.1	27.5
13	8	5.3	25.4	4.0	19.1	11.2
14	9	5.3	26.2	4.7	23.3	12.1
15	8	5.3	25.4	1.3	6.2	11.2
16	9	5.3	26.2	1.3	6.4	12.1
17	8	2.0	9.6	2.0	9.6	-4.6
18	9	6.7	33.2	4.0	19.8	19.0
19	8	4.7	22.5	4.0	19.1	8.3
20	8	4.0	19.1	2.7	12.9	5.0
21	8	2.0	9.6	1.3	6.2	-4.6
22	7	2.0	9.6	1.3	6.2	-4.6
23	7	4.7	22.5	1.3	6.2	8.3
24	7	8.7	41.6	1.3	6.2	27.5
25	9	7.3	36.1	2.7	13.4	22.0
26	9	8.7	43.1	8.0	39.6	28.9
27	7	10.7	51.2	3.3	15.8	37.0
28	8	4.0	19.1	3.3	15.8	5.0
29	8	3.3	15.8	4.0	19.1	1.6
30	8	3.3	15.8	0.7	3.3	1.6
					14.2	Sample LAB Average
					MIN	-7.9
					MAX	37.0
					MEAN	10.3
					SD	11.1
					TRANSURANIC DCGL$_w$	100

PRE QC Measurements

17 QC	11	5.3	25.4	4.0	19.1	11.0
21 QC	11	3.3	15.8	2.0	9.6	1.4
					14.4	QC LAB Average
					QC MIN	1.4
					QC MAX	11.0
					QC MEAN	6.2
					QC SD	6.8
					TRANSURANIC DCGL$_w$	100

1 - Average QC LAB used to subtract from Gross Sample Activity

109

SURVEY UNIT 886-A-002
PRE AND POST TSA
DATA SUMMARY

Manufacturer:	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	7	8	9	10	11
Serial #:	1136	1136	1379	1379	1136
Cal Due Date:	1/17/02	1/17/02	5/6/02	5/6/02	1/17/02
Analysis Date:	1/2/02	1/3/02	1/7/02	1/8/02	1/9/02
Alpha Eff. (c/d):	0.209	0.209	0.202	0.202	0.209
Alpha Bkgd (cpm)	0.7	0.0	2.0	3.3	0.7
Sample Time (min)	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0	48.0

POST TSA MEASURMENTS

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	10	7.3	36.1	4.0	19.8	27.6
2	10	3.3	16.3	1.3	6.4	7.8
3	10	10.0	49.5	1.3	6.4	40.9
4	10	5.3	26.2	1.3	6.4	17.7
5	10	6.0	29.7	1.3	6.4	21.1
6	10	7.3	36.1	1.3	6.4	27.6
7	10	6.7	33.2	1.3	6.4	24.6
8	10	3.3	16.3	0.7	3.5	7.8
9	10	8.0	39.6	0.7	3.5	31.0
10	10	4.7	23.3	2.0	9.9	14.7
11	10	5.3	26.2	1.3	6.4	17.7
12	10	6.7	33.2	1.3	6.4	24.6
13	10	5.3	26.2	1.3	6.4	17.7
14	10	5.3	26.2	1.3	6.4	17.7
15	10	7.3	36.1	0.7	3.5	27.6
16	10	5.3	26.2	1.3	6.4	17.7
17	10	6.0	29.7	3.3	16.3	21.1
18	10	7.3	36.1	2.0	9.9	27.6
19	10	5.3	26.2	2.0	9.9	17.7
20	10	3.3	16.3	2.7	13.4	7.8
21	10	8.7	43.1	4.0	19.8	34.5
22	10	2.0	9.9	2.7	13.4	1.3
23	10	3.3	16.3	1.3	6.4	7.8
24	10	4.0	19.8	0.0	0.0	11.2
25	10	6.0	29.7	0.7	3.5	21.1
26	10	4.0	19.8	2.7	13.4	11.2
27	10	5.3	26.2	2.7	13.4	17.7
28	10	5.3	26.2	0.7	3.5	17.7
29	10	8.0	39.6	2.7	13.4	31.0
30	10	3.3	16.3	2.0	9.9	7.8
					8.6	Sample LAB Average
					MIN	1.3
					MAX	40.9
					MEAN	19.3
					SD	9.2
					TRANSURANIC DCGL$_w$	100

POST QC Measurements

17. QC	11	8.7	41.6	3.3	15.8	19.4
21. QC	11	9.7	46.4	6.0	28.7	24.2
					22.2	QC LAB Average
					QC MIN	19.4
					QC MAX	24.2
					QC MEAN	21.8
					QC SD	3.4
					TRANSURANIC DCGL$_w$	100

1 - Average QC LAB used to subtract from Gross Sample Activity

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SURVEY UNIT 886-A-002
PRE AND POST RSC
DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4	5	6	13	14
Serial #:	767	963	830	770	767	963	830	770
Cal Due Date:	4/30/02	1/26/02	2/16/02	1/19/02	4/30/02	1/26/02	2/16/02	1/19/02
Analysis Date:	1/3/02	1/3/02	1/3/02	1/3/02	1/8/02	1/8/02	1/8/02	1/8/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.1	0.0	0.1	0.2	0.1	0.0	0.0	0.1
Sample Time (min)	2	2	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10	10	10
MDC (dpm/100cm^2	7.0	4.5	7.0	8.0	7.0	4.5	4.5	7.0

PRE RSC MEASUREMENTS

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	6	0.0	0.0
2	14	0.0	-0.3
3	14	0.0	-0.3
4	6	1.0	3.0
5	13	0.0	0.0
6	6	0.0	0.0
7	14	0.0	-0.3
8	13	0.0	0.0
9	5	0.0	-0.3
10	5	0.0	-0.3
11	6	0.0	0.0
12	13	2.0	6.1
13	14	0.0	-0.3
14	14	1.0	2.7
15	13	1.0	3.0
16	5	0.0	-0.3
17	6	0.0	0.0
18	13	0.0	0.0
19	5	0.0	-0.3
20	5	0.0	-0.3
21	6	0.0	0.0
22	5	1.0	2.7
23	13	1.0	3.0
24	5	3.0	8.8
25	6	0.0	0.0
26	14	0.0	-0.3
27	14	2.0	5.8
28	5	1.0	2.7
29	6	1.0	3.0
30	13	0.0	0.0
		MIN	-0.3
		MAX	8.8
		MEAN	1.3
		SD	2.3
		Transuranic DCGL$_{sb}$	20

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SURVEY UNIT 886-A-002
PRE AND POST RSC
DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4	5	6	13	14
Serial #:	767	963	830	770	767	963	830	770
Cal Due Date:	4/30/02	1/26/02	2/16/02	1/19/02	4/30/02	1/26/02	2/16/02	1/19/02
Analysis Date:	1/3/02	1/3/02	1/3/02	1/3/02	1/8/02	1/8/02	1/8/02	1/8/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.1	0.0	0.1	0.2	0.1	0.0	0.0	0.1
Sample Time (min)	2	2	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10	10	10
MDC (dpm/100cm^2)	7.0	4.5	7.0	8.0	7.0	4.5	4.5	7.0

POST RSC MEASUREMENTS

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	4	0.0	-0.6
2	1	1.0	2.7
3	1	0.0	-0.3
4	1	0.0	-0.3
5	2	0.0	0.0
6	2	0.0	0.0
7	3	2.0	5.8
8	3	1.0	2.7
9	4	0.0	-0.6
10	4	0.0	-0.6
11	1	1.0	2.7
12	4	0.0	-0.6
13	2	0.0	0.0
14	3	2.0	5.8
15	3	2.0	5.8
16	1	0.0	-0.3
17	4	0.0	-0.6
18	2	2.0	6.1
19	2	0.0	0.0
20	3	0.0	-0.3
21	4	0.0	-0.6
22	4	0.0	-0.6
23	2	2.0	6.1
24	1	0.0	-0.3
25	3	1.0	2.7
26	4	0.0	-0.6
27	1	0.0	-0.3
28	1	0.0	-0.3
29	2	0.0	0.0
30	3	1.0	2.7
		MIN	-0.6
		MAX	6.1
		MEAN	1.2
		SD	2.4
		Transuranic DCGL$_w$	20

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886-A-002
Paint and Media Sample Results

LOCATION DESCRIPTION	SAMPLE LOCATION NUMBER	SITE SAMPLE ID	NUCLIDE	pCi/g (2)	MDA (pCi/g)	WEIGHT (g)	SURFACE AREA (in^2)	INDIVIDUAL NUCLIDE ($dpm/100cm^2$) (3)	ESTIMATED MDA ($dpm/100cm^2$) (4)	URANIUM TOTAL ($dpm/100cm^2$)	TRANSURANIC TOTAL ($dpm/100cm^2$)
886, Room 104/108		O2D0594.092.001	U-234	0.000	2.030	346	40	0	49		
			U-235	0.345	0.162			103	4		
			U-238	0.000	2.030			0	49	102.7	
			Pu-239	0.000	2.080			0	50		
			Pu-240	0.000	2.080			0	50		
			Am-241	0.000	0.297			0	7		0.0
									$DCGL_W$ =	5000	100

(1) All paint samples collected in B886, Room 103, were analyzed as an individual composite using the Canberra ISOCS Gamma Spectroscopy system.

(2) Critical Level test criterion were utilized in this analysis. If the net peak area was less than the L_C (critcal level), then a "not detected" or "zero" decision was made. The L_C value is always less than the applicable MDA, but greater than zero.

(3) Individual nuclide dpm/100 cm^2 conversion is conservatively based on the total sample weight. This assumption presumes that the total sample activity from all samples is located at one, single sample location.

(4) Estimated MDA dpm/100 cm^2 conversion is conservatively based on the heaviest sample weight.

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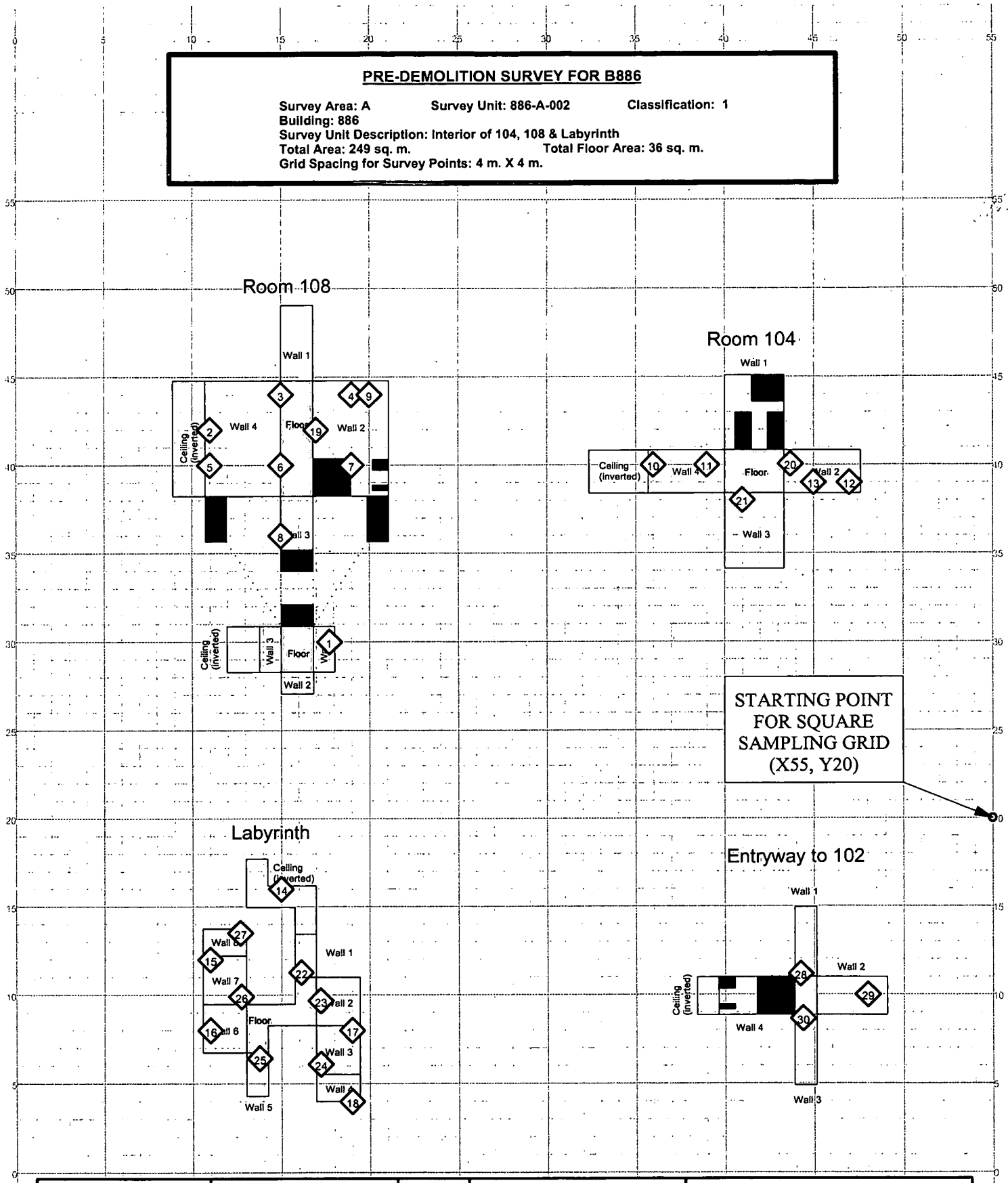
PRE-DEMOLITION SURVEY FOR B886

Survey Area: A **Survey Unit: 886-A-002** **Classification: 1**
Building: 886
Survey Unit Description: Interior of 104, 108 & Labyrinth
Total Area: 249 sq. m. **Total Floor Area: 36 sq. m.**
Grid Spacing for Survey Points: 4 m. X 4 m.



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area Not Included In This Survey

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N

Scan Survey Information
Survey Instrument ID #(s): NA
RCT ID #(s): NA

0 FEET 30
0 METERS 10
1 inch = 24 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:
DynCorp
THE ART OF TECHNOLOGY
KAISER HILL

MAP ID: 02-0099/108-media December 28, 2001

886-A-002

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ATTACHMENT C-4

B886, Room 102

(Survey Unit 886-A-003)

SURVEY UNIT 886-A-003
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B886, Room 102

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Total Surface Activity Measurements

	16	16	
	Number Required	Number Obtained	
MIN	-9.2		dpm/100 cm^2
MAX	44.8		dpm/100 cm^2
MEAN	6.5		dpm/100 cm^2
STD DEV	14.1		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	16	16	
	Number Required	Number Obtained	
MIN	-0.9		dpm/100 cm^2
MAX	5.8		dpm/100 cm^2
MEAN	0.3		dpm/100 cm^2
STD DEV	1.9		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

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SURVEY UNIT B886-A-003
TSA - DATA SUMMARY

Manufacturer:	NE Electra	NE Electra
Model:	DP-6	DP-6
Instrument ID#:	7	11
Serial #:	1589	396
Cal Due Date:	5/15/02	6/10/02
Analysis Date:	1/22/02	1/22/02
Alpha Eff. (c/d):	0.211	0.229
Alpha Bkgd (cpm)	0.0	2.7
Sample Time (min)	1.5	1.5
LAB Time (min)	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	7	2.7	12.8	2.7	12.8	-2.6
2	7	4.0	19.0	2.7	12.8	3.6
3	7	2.7	12.8	4.0	19.0	-2.6
4	7	2.7	12.8	2.0	9.5	-2.6
5	7	2.7	12.8	3.3	15.6	-2.6
6	7	2.0	9.5	2.0	9.5	-5.9
7	7	4.7	22.3	2.7	12.8	6.9
8	7	12.7	60.2	3.3	15.6	44.8
9	7	9.3	44.1	2.7	12.8	28.7
10	7	7.3	34.6	4.7	22.3	19.2
11	7	1.3	6.2	1.3	6.2	-9.2
12	7	3.3	15.6	5.3	25.1	0.2
13	7	4.7	22.3	2.7	12.8	6.9
14	7	6.0	28.4	3.3	15.6	13.0
15	7	3.3	15.6	6.0	28.4	0.2
16	7	4.7	22.3	3.3	15.6	6.9

1 - Average LAB used to subtract from Gross Sample Activity

15.4	Sample LAB Average
MIN	-9.2
MAX	44.8
MEAN	6.5
SD	14.1
Transuranic DCGL$_W$	100

QC Measurements

9 QC	11	6.7	31.8	7.3	34.6	3.3
13 QC	11	6.0	28.4	4.7	22.3	0.0

1 - Average QC LAB used to subtract from Gross Sample Activity

28.4	QC LAB Average
QC MIN	0.0
QC MAX	3.3
QC MEAN	1.7
QC SD	2.4
Transuranic DCGL$_W$	100

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SURVEY UNIT B886-A-003
RSC - DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4
Serial #:	767	1164	830	959
Cal Due Date:	4/30/02	5/13/02	2/16/02	7/14/02
Analysis Date:	1/22/02	1/22/02	1/22/02	1/22/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.2	0.3	0.2	0.1
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	8.0	8.8	8.0	7.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	0.0	-0.6
2	3	1.0	2.4
3	4	1.0	2.7
4	2	0.0	-0.9
5	2	1.0	2.1
6	1	0.0	-0.6
7	4	0.0	-0.3
8	3	0.0	-0.6
9	2	0.0	-0.9
10	2	0.0	-0.9
11	4	0.0	-0.3
12	3	0.0	-0.6
13	3	0.0	-0.6
14	4	2.0	5.8
15	1	0.0	-0.6
16	1	0.0	-0.6
		MIN	-0.9
		MAX	5.8
		MEAN	0.3
		SD	1.9
		Transuranic $DCGL_W$	20

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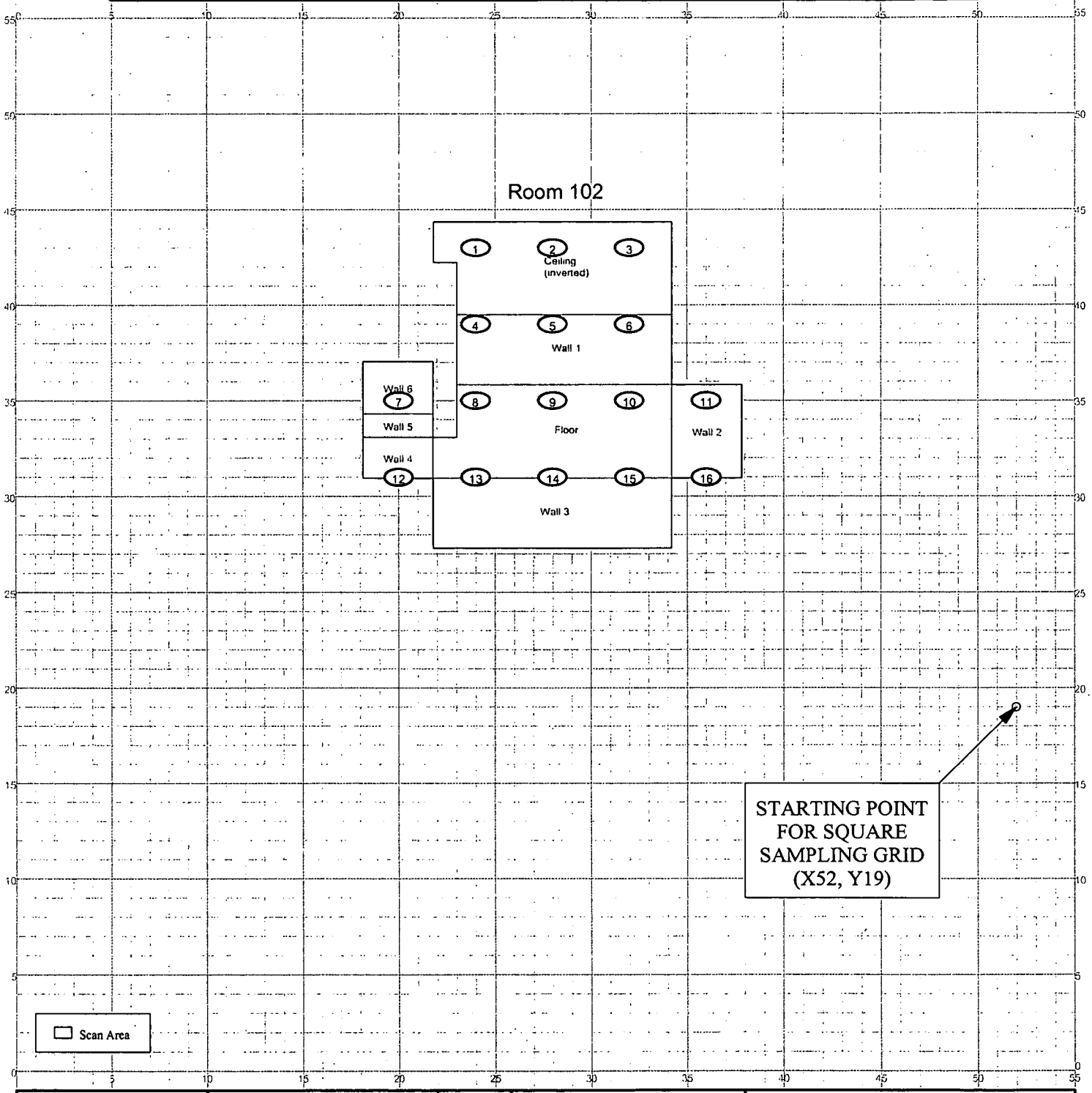
PRE-DEMOLITION SURVEY FOR B886

Survey Area: A **Survey Unit: 886-A-003** **Classification: 1**
Building: 886 Room 102
Survey Unit Description: Interior (Floors, Walls, & Ceiling)
Total Area: 241 sq. m. **Total Floor Area: 57 sq. m.**
Grid Spacing for Survey Points: 4 m. X 4 m.



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): 8,9,10,12,19,20,21,22,23
RCT ID #(s): 2,3,4,5,6,8

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707
DynCorp
THE ART OF TECHNOLOGY

Prepared for:
KAISER HILL

MAP ID: fy2001/02-0099/RM102 January 25, 2002

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SURVEY UNIT 886-A-003
RADIOLOGICAL DATA SUMMARY - MEDIA

Survey Unit Description: B886, Room 102

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886-A-003
Media Data Summary

PRE MEDIA MEASUREMENTS

Total Surface Activity Measurements

	Number Required	Number Obtained	
	22	22	
MIN	-7.0		dpm/100 cm^2
MAX	35.6		dpm/100 cm^2
MEAN	13.5		dpm/100 cm^2
STD DEV	10.5		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	Number Required	Number Obtained	
	22	22	
MIN	-0.6		dpm/100 cm^2
MAX	5.8		dpm/100 cm^2
MEAN	1.0		dpm/100 cm^2
STD DEV	1.8		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

POST MEDIA MEASUREMENTS

Total Surface Activity Measurements

	Number Required	Number Obtained	
	22	22	
MIN	-6.7		dpm/100 cm^2
MAX	35.0		dpm/100 cm^2
MEAN	12.7		dpm/100 cm^2
STD DEV	13.8		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	Number Required	Number Obtained	
	22	22	
MIN	-0.6		dpm/100 cm^2
MAX	3.0		dpm/100 cm^2
MEAN	0.4		dpm/100 cm^2
STD DEV	1.3		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

Media Sample Activity

Media Samples	Number Required	Number Obtained
	22	22

Total Uranium Results

TOTAL	85.7	dpm/100 cm^2
DCGL$_W$	5000	dpm/100 cm^2

Total Transuranic Results

TOTAL	0.0	dpm/100 cm^2
DCGL$_W$	100	dpm/100 cm^2

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SURVEY UNIT 886-A-003
PRE AND POST TSA
DATA SUMMARY

Manufacturer:	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6
Instrument ID#:	7	8	9
Serial #:	1379	3114	1589
Cal Due Date:	5/6/02	4/28/02	5/15/02
Analysis Date:	1/3/02	1/7/02	1/22/02
Alpha Eff. (c/d):	0.202	0.209	0.211
Alpha Bkgd (cpm)	6.7	2.0	0.0
Sample Time (min)	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0

PRE TSA MEASUREMENTS

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	7	4.0	19.8	3.3	16.3	-0.6
2	7	6.7	33.2	2.7	13.4	12.8
3	7	5.3	26.2	3.3	16.3	5.9
4	7	5.3	26.2	4.7	23.3	5.9
5	7	6.0	29.7	2.7	13.4	9.3
6	7	6.7	33.2	2.7	13.4	12.8
7	7	9.3	46.0	2.0	9.9	25.7
8	7	7.3	36.1	3.3	16.3	15.8
9	7	6.0	29.7	2.0	9.9	9.3
10	7	8.7	43.1	5.3	26.2	22.7
11	7	7.3	36.1	1.3	6.4	15.8
12	7	6.0	29.7	6.7	33.2	9.3
13	7	8.0	39.6	3.3	16.3	19.2
14	7	6.0	29.7	5.3	26.2	9.3
15	7	5.3	26.2	6.7	33.2	5.9
16	7	11.3	55.9	2.7	13.4	35.6
17	7	8.0	39.6	6.0	29.7	19.2
18	7	4.0	19.8	5.3	26.2	-0.6
19	7	2.7	13.4	6.7	33.2	-7.0
20	7	10.7	53.0	7.3	36.1	32.6
21	7	7.3	36.1	3.3	16.3	15.8
22	7	8.7	43.1	4.0	19.8	22.7
					20.4	Sample LAB Average
					MIN	-7.0
					MAX	35.6
					MEAN	13.5
					SD	10.5
					Transuranic DCGL$_w$	100

PRE QC Measurements

11 QC	9	6.7	31.8	3.3	15.6	16.1
14 QC	9	8.7	41.2	3.3	15.6	25.6
					15.6	QC LAB Average
					QC MIN	16.1
					QC MAX	25.6
					QC MEAN	20.9
					QC SD	6.7
					Transuranic DCGL$_w$	100

1 - Average QC LAB used to subtract from Gross Sample Activity

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SURVEY UNIT 886-A-003
PRE AND POST TSA
DATA SUMMARY

Manufacturer:	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6
Instrument ID#:	7	8	9
Serial #:	1379	3114	1589
Cal Due Date:	5/6/02	4/28/02	5/15/02
Analysis Date:	1/3/02	1/7/02	1/22/02
Alpha Eff. (c/d):	0.202	0.209	0.211
Alpha Bkgd (cpm)	6.7	2.0	0.0
Sample Time (min)	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0

POST TSA MEASURMENTS

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	8	7.3	34.9	3.3	15.8	18.7
2	8	3.3	15.8	4.0	19.1	-0.4
3	8	2.7	12.9	4.7	22.5	-3.3
4	8	8.7	41.6	2.7	12.9	25.4
5	8	2.0	9.6	1.3	6.2	-6.7
6	8	10.7	51.2	4.0	19.1	35.0
7	8	8.0	38.3	8.0	38.3	22.1
8	8	10.0	47.8	1.3	6.2	31.6
9	8	6.0	28.7	4.0	19.1	12.5
10	8	2.7	12.9	1.3	6.2	-3.3
11	8	5.3	25.4	2.7	12.9	9.1
12	8	5.3	25.4	5.3	25.4	9.1
13	8	8.7	41.6	4.0	19.1	25.4
14	8	9.3	44.5	3.3	15.8	28.3
15	8	10.0	47.8	4.7	22.5	31.6
16	8	3.3	15.8	3.3	15.8	-0.4
17	8	2.0	9.6	5.3	25.4	-6.7
18	8	3.3	15.8	2.0	9.6	-0.4
19	8	7.3	34.9	2.7	12.9	18.7
20	8	3.3	15.8	0.7	3.3	-0.4
21	8	8.0	38.3	2.0	9.6	22.1
22	8	6.0	28.7	4.0	19.1	12.5

1 - Average LAB used to subtract from Gross Sample Activity

16.2	Sample LAB Average
MIN	-6.7
MAX	35.0
MEAN	12.7
SD	13.8
Transuranic $DCGL_w$	100

POST QC Measurements

11 QC	9	4.0	19.0	2.7	12.8	6.2
14 QC	9	6.7	31.8	2.7	12.8	19.0

1 - Average QC LAB used to subtract from Gross Sample Activity

12.8	QC LAB Average
QC MIN	6.2
QC MAX	19.0
QC MEAN	12.6
QC SD	9.1
Transuranic $DCGL_w$	100

124

SURVEY UNIT 886-A-003
PRE AND POST RSC
DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4	5	6	13	14
Serial #:	767	963	830	770	767	963	830	770
Cal Due Date:	4/30/02	1/26/02	2/16/02	1/19/02	4/30/02	1/26/02	2/16/02	1/19/02
Analysis Date:	1/3/02	1/3/02	1/3/02	1/3/02	1/8/02	1/8/02	1/8/02	1/8/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.1	0.0	0.1	0.2	0.1	0.2	0.0	0.0
Sample Time (min)	2	2	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10	10	10
MDC (dpm/100cm^2)	7.0	4.5	7.0	8.0	7.0	8.0	4.5	4.5

PRE RSC MEASUREMENTS

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	2	1.0	3.0
2	4	0.0	-0.6
3	1	0.0	-0.3
4	3	0.0	-0.3
5	2	0.0	0.0
6	1	1.0	2.7
7	4	1.0	2.4
8	1	1.0	2.7
9	2	0.0	0.0
10	4	0.0	-0.6
11	2	0.0	0.0
12	3	0.0	-0.3
13	1	2.0	5.8
14	2	0.0	0.0
15	4	0.0	-0.6
16	3	1.0	2.7
17	1	1.0	2.7
18	2	0.0	0.0
19	3	0.0	-0.3
20	4	0.0	-0.6
21	1	1.0	2.7
22	3	0.0	-0.3
		MIN	-0.6
		MAX	5.8
		MEAN	1.0
		SD	1.8
		Transuranic $DCGL_W$	20

125

SURVEY UNIT 886-A-003
PRE AND POST RSC
DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4	5	6	13	14
Serial #:	767	963	830	770	767	963	830	770
Cal Due Date:	4/30/02	1/26/02	2/16/02	1/19/02	4/30/02	1/26/02	2/16/02	1/19/02
Analysis Date:	1/3/02	1/3/02	1/3/02	1/3/02	1/8/02	1/8/02	1/8/02	1/8/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.1	0.0	0.1	0.2	0.1	0.2	0.0	0.0
Sample Time (min)	2	2	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10	10	10
MDC (dpm/100cm^2)	7.0	4.5	7.0	8.0	7.0	8.0	4.5	4.5

POST RSC MEASUREMENTS

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	13	1.0	3.0
2	5	0.0	-0.3
3	6	1.0	2.4
4	14	0.0	0.0
5	6	0.0	-0.6
6	5	1.0	2.7
7	14	0.0	0.0
8	5	0.0	-0.3
9	6	0.0	-0.6
10	13	0.0	0.0
11	13	0.0	0.0
12	14	0.0	0.0
13	13	0.0	0.0
14	6	0.0	-0.6
15	5	1.0	2.7
16	14	0.0	0.0
17	5	0.0	-0.3
18	13	0.0	0.0
19	14	1.0	3.0
20	5	0.0	-0.3
21	6	0.0	-0.6
22	6	0.0	-0.6
		MIN	-0.6
		MAX	3.0
		MEAN	0.4
		SD	1.3
		Transuranic $DCGL_W$	20

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886-A-003
Paint and Media Sample Results

LOCATION DESCRIPTION	SAMPLE LOCATION NUMBER	SITE SAMPLE ID	NUCLIDE	pCi/g (2)	MDA (pCi/g)	WEIGHT (g)	SURFACE AREA (in^2)	INDIVIDUAL NUCLIDE ($dpm/100cm^2$) (3)	ESTIMATED MDA ($dpm/100cm^2$) (4)	URANIUM TOTAL ($dpm/100cm^2$)	TRANSURANIC TOTAL ($dpm/100cm^2$)
886, Room 102 102	1 thru 22	O2D0597.032.001	U-234	0.000	2.010	353	40	0.0	51.9		
			U-235	0.282	0.167			85.7	4.3		
			U-238	0.000	2.010			0.0	51.9	85.7	
			Pu-239	0.000	2.250			0.0	58.1		
			Pu-240	0.000	2.250			0.0	58.1		
			Am-241	0.000	0.321			0.0	8.3		0.0
									$DCGL_W$ =	5000	100

(1) All paint samples collected in B886, Room 102, were analyzed as an individual composite using the Canberra ISOCS Gamma Spectroscopy system.

(2) Critical Level test criterion were utilized in this analysis. If the net peak area was less than the L_C (critcal level), then a "not detected" or "zero" decision was made. The L_C value is always less than the applicable MDA, but greater than zero.

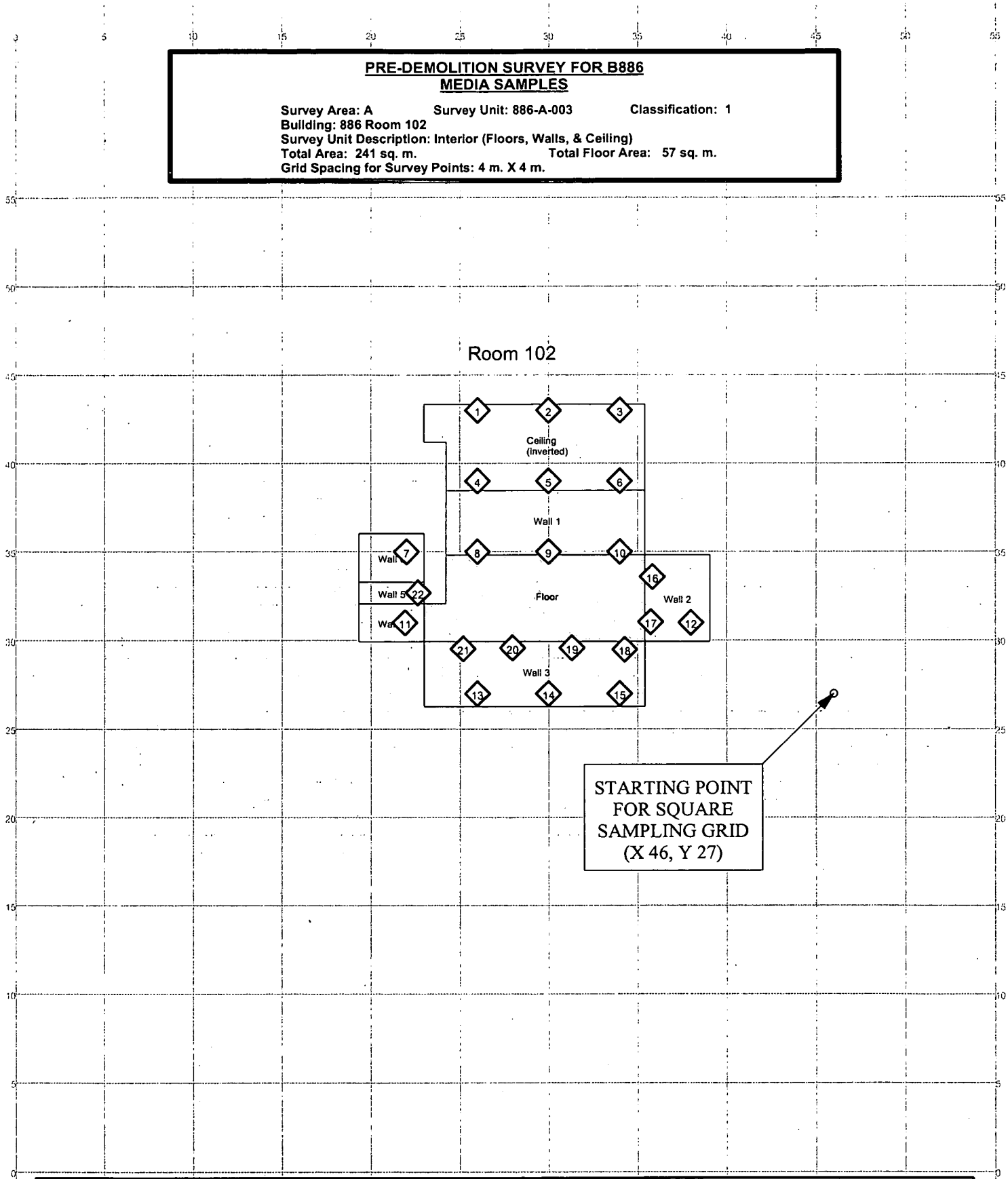
(3) Individual nuclide dpm/100 cm^2 conversion is conservatively based on the total sample weight. This assumption presumes that the total sample activity from all samples is located at one, single sample location. This methodology ensures that no single sample location exceeds the applicable $DCGL_W$.

(4) Estimated MDA dpm/100 cm^2 conversion is conservatively based on the heaviest sample weight.

127

PRE-DEMOLITION SURVEY FOR B886
MEDIA SAMPLES

Survey Area: A **Survey Unit: 886-A-003** **Classification: 1**
Building: 886 Room 102
Survey Unit Description: Interior (Floors, Walls, & Ceiling)
Total Area: 241 sq. m. **Total Floor Area: 57 sq. m.**
Grid Spacing for Survey Points: 4 m. X 4 m.



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area Not Included In This Survey

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N

Scan Survey Information
Survey Instrument ID #(s): NA
RCT ID #(s): NA

0 FEET 30
0 METERS 10
1 inch = 24 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:
DynCorp THE ART OF TECHNOLOGY
KAISER HILL

MAP ID: 02-0099/RM102-media December 28, 2001

886-A-003

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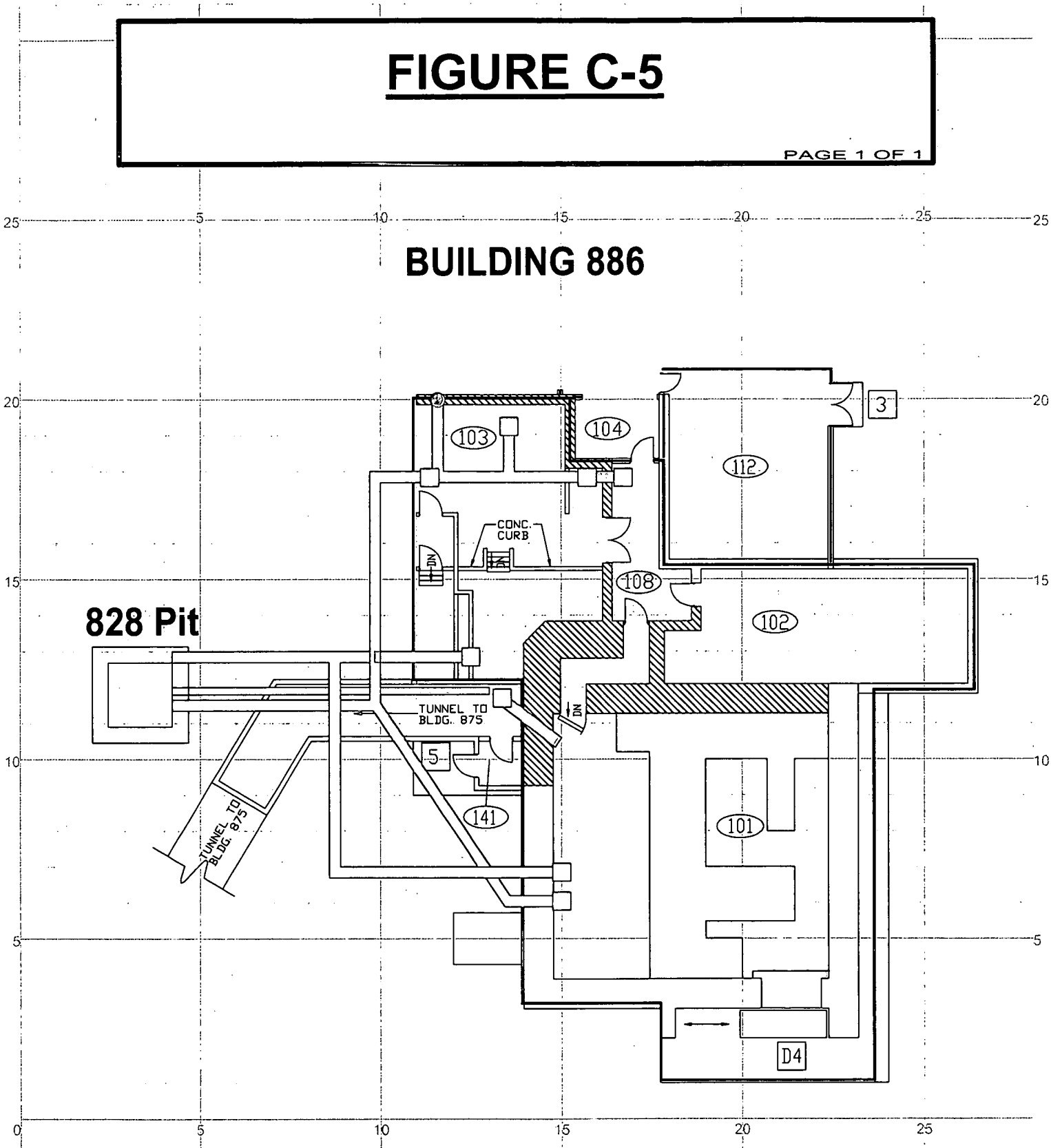
ATTACHMENT C-5

Rooms 103

(Survey Unit 886-A-004)

FIGURE C-5



SURVEY MAP LEGEND

- ☐ Ventilation Duct (8" diameter)
- ☐ HUEN Lines (1" diameter)
- ☐ Contaminated Drain Piping (2"-3" diameter)
- ☐ 2" Vent From Ground thru Roof
- ☐ Concrete Block Section
- ☐ 3" Hot Plenum Underground

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N

0 FEET 0

0 METERS 0

DRAWING NOT TO SCALE

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for:
KAISER-HILL COMPANY

MAP ID: 02-0099/FIGC-5

March 25, 2002

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SURVEY UNIT 886-A-004
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B886, Room 103

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Total Surface Activity Measurements

	19	19	
	Number Required	Number Obtained	
MIN	-6.5		dpm/100 cm^2
MAX	69.3		dpm/100 cm^2
MEAN	29.7		dpm/100 cm^2
STD DEV	21.5		dpm/100 cm^2
Transuranic $DCGL_W$	100		dpm/100 cm^2

Removable Activity Measurements

	19	19	
	Number Required	Number Obtained	
MIN	-0.3		dpm/100 cm^2
MAX	8.8		dpm/100 cm^2
MEAN	1.5		dpm/100 cm^2
STD DEV	2.5		dpm/100 cm^2
Transuranic $DCGL_W$	20		dpm/100 cm^2

132

SURVEY UNIT B886-A-004
TSA - DATA SUMMARY

Manufacturer:	NE Electra	NE Electra
Model:	DP-6	DP-6
Instrument ID#:	11	12
Serial #:	3125	1379
Cal Due Date:	4/1/02	5/6/02
Analysis Date:	3/22/02	3/22/02
Alpha Eff. (c/d):	0.198	0.211
Alpha Bkgd (cpm)	2.0	4.0
Sample Time (min)	1.5	1.5
LAB Time (min)	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	11	8.7	43.9	6.7	33.8	27.9
2	11	10.0	50.5	4.0	20.2	34.5
3	12	2.7	12.8	0.7	3.3	-3.2
4	11	9.3	47.0	2.0	10.1	30.9
5	12	4.7	22.3	2.7	12.8	6.3
6	12	6.0	28.4	0.0	0.0	12.4
7	12	2.0	9.5	2.7	12.8	-6.5
8	11	13.3	67.2	4.7	23.7	51.1
9	12	5.3	25.1	4.7	22.3	9.1
10	12	11.3	53.6	3.3	15.6	37.5
11	12	14.7	69.7	2.0	9.5	53.6
12	11	12.0	60.6	6.0	30.3	44.6
13	12	7.3	34.6	1.3	6.2	18.6
14	12	10.7	50.7	3.3	15.6	34.7
15	12	4.7	22.3	2.7	12.8	6.3
16	11	12.0	60.6	5.3	26.8	44.6
17	11	14.7	74.2	5.3	26.8	58.2
18	12	10.7	50.7	1.3	6.2	34.7
19	12	18.0	85.3	3.3	15.6	69.3
					16.0	Sample LAB Average
					MIN	-6.5
					MAX	69.3
					MEAN	29.7
					SD	21.5
					Transuranic $DCGL_W$	100

1 - Average LAB used to subtract from Gross Sample Activity

QC Measurements

10 QC	11	10.0	50.5	8.0	40.4	12.9
11 QC	11	12.0	60.6	6.9	34.8	23.0
					37.6	QC LAB Average
					QC MIN	12.9
					QC MAX	23.0
					QC MEAN	17.9
					QC SD	7.1
					Transuranic $DCGL_W$	100

1 - Average QC LAB used to subtract from Gross Sample Activity

133

SURVEY UNIT B886-A-004
RSC - DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4
Serial #:	767	1164	770	959
Cal Due Date:	4/30/02	5/13/02	7/25/02	7/14/02
Analysis Date:	3/22/02	3/22/02	3/22/02	3/22/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.0	0.0	0.0	0.1
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	4.5	4.5	4.5	7.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	2	0.0	0.0
2	3	0.0	0.0
3	3	0.0	0.0
4	1	0.0	0.0
5	4	1.0	2.7
6	4	0.0	-0.3
7	1	0.0	0.0
8	2	0.0	0.0
9	1	1.0	3.0
10	3	1.0	3.0
11	3	0.0	0.0
12	2	1.0	3.0
13	4	3.0	8.8
14	2	0.0	0.0
15	2	1.0	3.0
16	3	2.0	6.1
17	1	0.0	0.0
18	4	0.0	-0.3
19	1	0.0	0.0
		MIN	-0.3
		MAX	8.8
		MEAN	1.5
		SD	2.5
		Transuranic $DCGL_W$	20

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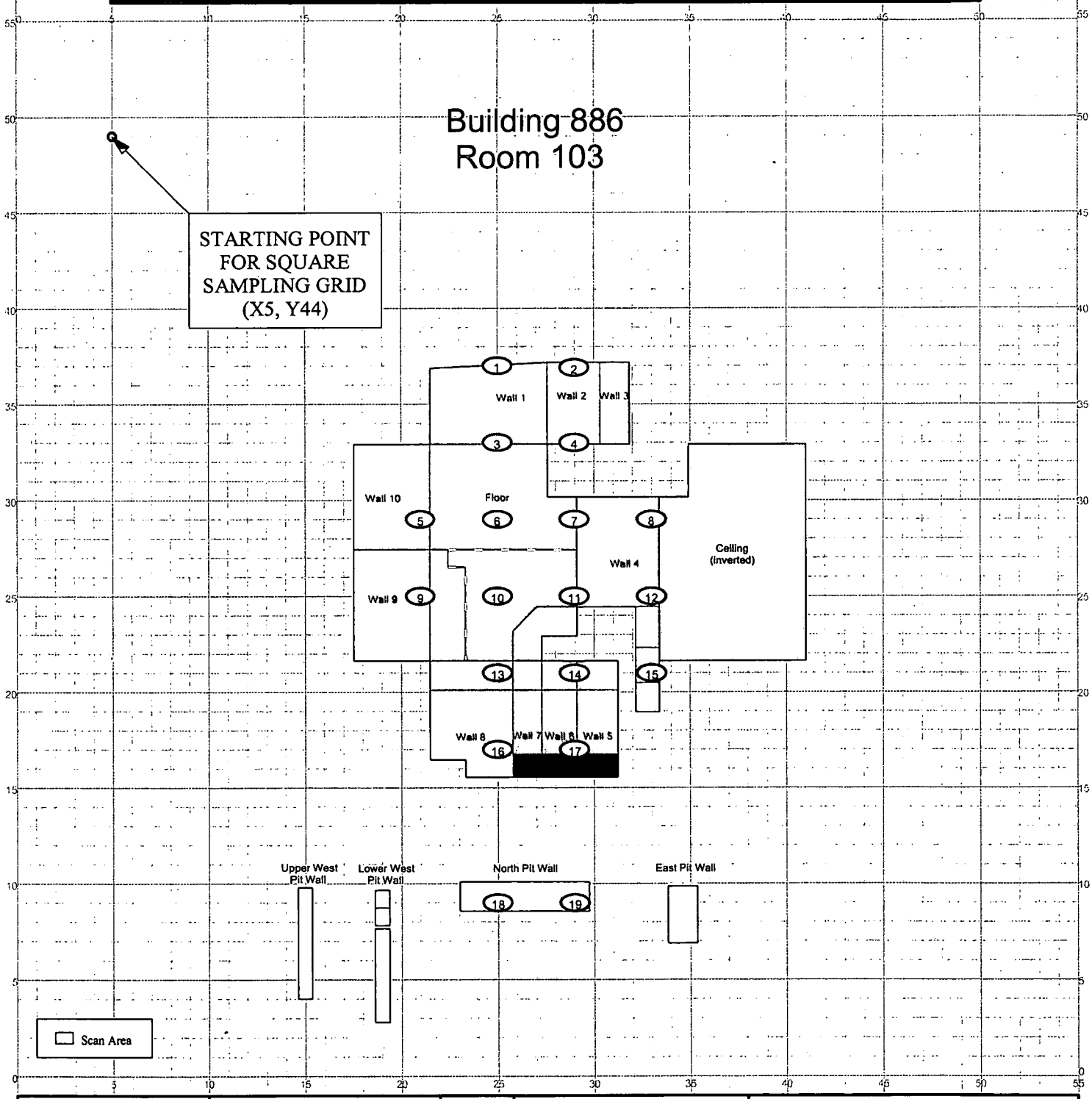
PRE-DEMOLITION SURVEY FOR 886

Survey Area: A **Survey Unit: 886-A-004** **Classification: 1**
Building: 886
Survey Unit Description: Interior walls & ceiling
Total Area: 274 sq. m. **Total Floor Area: 73.2 sq. m.**
Grid Spacing for Survey Points: 4m. X 4 m.



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): 7, 9, 10, 13
RCT ID #(s): 3, 4, 5, 6

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707
DynCorp
THE ART OF TECHNOLOGY

Prepared for:
KAISER-HILL

MAP ID: 02-0099/RM103-SC
March 25, 2002

135

SURVEY UNIT 886-A-004
RADIOLOGICAL DATA SUMMARY - MEDIA

Survey Unit Description: B886, Room 103

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886-A-004
Media Data Summary

PRE MEDIA MEASUREMENTS

Total Surface Activity Measurements

	18	18	
	Number Required	Number Obtained	
MIN	-16.0		dpm/100 cm^2
MAX	70.2		dpm/100 cm^2
MEAN	13.6		dpm/100 cm^2
STD DEV	24.3		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	18	18	
	Number Required	Number Obtained	
MIN	-0.6		dpm/100 cm^2
MAX	11.8		dpm/100 cm^2
MEAN	3.1		dpm/100 cm^2
STD DEV	3.8		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

POST MEDIA MEASUREMENTS

Total Surface Activity Measurements

	18	18	
	Number Required	Number Obtained	
MIN	-7.0		dpm/100 cm^2
MAX	40.9		dpm/100 cm^2
MEAN	17.1		dpm/100 cm^2
STD DEV	13.2		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	18	18	
	Number Required	Number Obtained	
MIN	-1.2		dpm/100 cm^2
MAX	3.0		dpm/100 cm^2
MEAN	0.9		dpm/100 cm^2
STD DEV	1.6		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

Media Sample Activity

Media Samples	18	18
	Number Required	Number Obtained

Total Uranium Results

TOTAL	2276.3	dpm/100 cm^2
DCGL$_W$	5000	dpm/100 cm^2

Total Transuranic Results

TOTAL	0.0	dpm/100 cm^2
DCGL$_W$	100	dpm/100 cm^2

137

SURVEY UNIT 886-A-004
PRE AND POST TSA
DATA SUMMARY

Manufacturer:	NE Electra	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	7	8	9	10
Serial #:	1379	1379	3114	1379
Cal Due Date:	5/6/02	5/6/02	4/25/02	5/6/02
Analysis Date:	1/9/02	1/10/02	1/11/02	1/11/02
Alpha Eff. (c/d):	0.202	0.202	0.209	0.202
Alpha Bkgd (cpm)	3.3	2.7	1.3	3.3
Sample Time (min)	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0

PRE TSA MEASUREMENTS

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	8	9.2	45.5	4.0	19.8	13.2
2	8	6.0	29.7	4.7	23.3	-2.6
3	8	7.3	36.1	5.3	26.2	3.8
6	8	7.3	36.1	8.7	43.1	3.8
7	7	9.3	46.0	4.0	19.8	13.7
11	8	4.7	23.3	8.0	39.6	-9.0
12	8	6.7	33.2	10.7	53.0	0.9
15	8	5.3	26.2	12.7	62.9	-6.1
16	7	10.0	49.5	4.0	19.8	17.2
17	7	3.3	16.3	2.7	13.4	-16.0
18	7	9.3	46.0	4.7	23.3	13.7
19	8	4.7	23.3	8.7	43.1	-9.0
20	8	6.7	33.2	3.3	16.3	0.9
21	7	13.3	65.8	4.7	23.3	33.5
24	7	14.0	69.3	4.0	19.8	37.0
25	7	20.7	102.5	4.0	19.8	70.2
26	8	20.0	99.0	13.3	65.8	66.7
30	8	9.3	46.0	10.0	49.5	13.7
					32.3	Sample LAB Average
					MIN	-16.0
					MAX	70.2
					MEAN	13.6
					SD	24.3
					TRANSURANIC DCGL$_W$	100

PRE QC Measurements

16 QC	9	9.3	44.5	6.1	29.2	15.6
25 QC	9	18.7	89.5	6.0	28.7	60.5
					28.9	QC LAB Average
					QC MIN	15.6
					QC MAX	60.5
					QC MEAN	38.0
					QC SD	31.8
					TRANSURANIC DCGL$_W$	100

1 - Average QC LAB used to subtract from Gross Sample Activity

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SURVEY UNIT 886-A-004
PRE AND POST TSA
DATA SUMMARY

Manufacturer:	NE Electra	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	7	8	9	10
Serial #:	1379	1379	3114	1379
Cal Due Date:	5/6/02	5/6/02	4/25/02	5/6/02
Analysis Date:	1/9/02	1/10/02	1/11/02	1/11/02
Alpha Eff. (c/d):	0.202	0.202	0.209	0.202
Alpha Bkgd (cpm)	3.3	2.7	1.3	3.3
Sample Time (min)	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0

POST TSA MEASURMENTS

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	9	6.7	32.1	5.3	25.4	2.6
2	9	10.0	47.8	2.0	9.6	18.4
3	9	5.3	25.4	4.7	22.5	-4.1
6	9	14.0	67.0	6.0	28.7	37.5
7	9	10.0	47.8	6.0	28.7	18.4
11	9	11.3	54.1	7.3	34.9	24.6
12	9	9.3	44.5	6.7	32.1	15.0
15	9	9.3	44.5	6.0	28.7	15.0
16	9	11.3	54.1	8.7	41.6	24.6
17	9	11.3	54.1	6.0	28.7	24.6
18	9	12.0	57.4	2.7	12.9	28.0
19	9	9.3	44.5	6.0	28.7	15.0
20	9	6.7	32.1	4.7	22.5	2.6
21	9	14.7	70.3	4.0	19.1	40.9
24	9	4.7	22.5	8.7	41.6	-7.0
25	9	10.7	51.2	4.7	22.5	21.7
26	9	11.3	54.1	11.3	54.1	24.6
30	9	7.3	34.9	10.0	47.8	5.5
					29.5	Sample LAB Average
					MIN	-7.0
					MAX	40.9
					MEAN	17.1
					SD	13.2
					TRANSURANIC $DCGL_W$	100

1 - Average LAB used to subtract from Gross Sample Activity

POST QC Measurements

16 QC	10	10.0	49.5	6.0	29.7	19.8
25 QC	10	14.7	72.8	6.0	29.7	43.1
					29.7	QC LAB Average
					QC MIN	19.8
					QC MAX	43.1
					QC MEAN	31.4
					QC SD	16.5
					TRANSURANIC $DCGL_W$	100

1 - Average QC LAB used to subtract from Gross Sample Activity

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SURVEY UNIT 886-A-004
PRE AND POST RSC
DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4	5	6
Serial #:	767	963	830	770	767	963
Cal Due Date:	4/30/02	1/26/02	2/16/02	1/19/02	4/30/02	1/26/02
Analysis Date:	1/9/02	1/9/02	1/9/02	1/9/02	1/10/02	1/10/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.2	0.1	0.0	0.1	0.1	0.0
Sample Time (min)	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10
MDC (dpm/100cm^2)	8.0	7.0	4.5	7.0	7.0	4.5

Manufacturer:	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	13	14	15	16	17	18
Serial #:	830	770	767	963	830	770
Cal Due Date:	2/16/02	1/19/02	4/30/02	1/26/02	2/16/02	1/19/02
Analysis Date:	1/10/02	1/10/02	1/14/02	1/14/02	1/14/02	1/14/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.0	0.1	0.4	0.1	0.0	0.1
Sample Time (min)	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10
MDC (dpm/100cm^2)	8.0	7.0	4.5	7.0	7.0	4.5

PRE RSC MEASUREMENTS

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	5	3.0	8.8
2	6	1.0	3.0
3	13	3.0	9.1
6	6	2.0	6.1
7	5	1.0	2.7
11	5	0.0	-0.3
12	13	1.0	3.0
15	6	1.0	3.0
16	2	0.0	-0.3
17	4	1.0	2.7
18	1	1.0	2.4
19	14	0.0	-0.3
20	5	0.0	-0.3
21	3	0.0	0.0
24	1	0.0	-0.6
25	2	0.0	-0.3
26	14	4.0	11.8
30	13	2.0	6.1
		MIN	-0.6
		MAX	11.8
		MEAN	3.1
		SD	3.8
		Transuranic DCGL$_w$	20

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SURVEY UNIT 886-A-004
PRE AND POST RSC
DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4	5	6
Serial #:	767	963	830	770	767	963
Cal Due Date:	4/30/02	1/26/02	2/16/02	1/19/02	4/30/02	1/26/02
Analysis Date:	1/9/02	1/9/02	1/9/02	1/9/02	1/10/02	1/10/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.2	0.1	0.0	0.1	0.1	0.0
Sample Time (min)	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10
MDC (dpm/100cm^2)	8.0	7.0	4.5	7.0	7.0	4.5

Manufacturer:	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	13	14	15	16	17	18
Serial #:	830	770	767	963	830	770
Cal Due Date:	2/16/02	1/19/02	4/30/02	1/26/02	2/16/02	1/19/02
Analysis Date:	1/10/02	1/10/02	1/14/02	1/14/02	1/14/02	1/14/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.0	0.1	0.4	0.1	0.0	0.1
Sample Time (min)	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10
MDC (dpm/100cm^2)	8.0	7.0	4.5	7.0	7.0	4.5

POST RSC MEASUREMENTS

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	16	0.0	-0.3
2	16	0.0	-0.3
3	17	1.0	3.0
6	15	0.0	-1.2
7	16	0.0	-0.3
11	16	0.0	-0.3
12	17	1.0	3.0
15	15	1.0	1.8
16	17	0.0	0.0
17	16	0.0	-0.3
18	15	0.0	-1.2
19	18	0.0	-0.3
20	17	1.0	3.0
21	15	1.0	1.8
24	18	0.0	-0.3
25	18	1.0	2.7
26	15	1.0	1.8
30	18	1.0	2.7
		MIN	-1.2
		MAX	3.0
		MEAN	0.9
		SD	1.6
		Transuranic $DCGL_W$	20

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886-A-004
Paint and Media Sample Results

LOCATION DESCRIPTION	SAMPLE LOCATION NUMBER	SITE SAMPLE ID	NUCLIDE	pCi/g (2)	MDA (pCi/g)	WEIGHT (g)	SURFACE AREA (in^2)	INDIVIDUAL NUCLIDE ($dpm/100cm^2$) (3)	ESTIMATED MDA ($dpm/100cm^2$) (4)	URANIUM TOTAL ($dpm/100cm^2$)	TRANSURANIC TOTAL ($dpm/100cm^2$)
886, Room 103	1, 2, 3, 6	O2D0595.019.001	U-234	3.560	1.820	326	40	998	59		
	7, 11, 12		U-235	0.997	0.203			280	7		
	15, 16, 17		U-238	3.560	1.820			998	59	**2276.3**	
	18, 19, 20		Pu-239	0.000	2.750			0	90		
	21, 24, 25		Pu-240	0.000	2.750			0	90		
	26, 30		Am-241	0.000	0.393			0	13		**0.0**
									$DCGL_W$ =	**5000**	**100**

(1) All paint samples collected in B886, Room 103, were analyzed as an individual composite using the Canberra ISOCS Gamma Spectroscopy system.

(2) Critical Level test criterion were utilized in this analysis. If the net peak area was less than the L_C (critcal level), then a "not detected" or "zero" decision was made. The L_C value is always less than the applicable MDA, but greater than zero.

(3) Individual nuclide dpm/100 cm^2 conversion is conservatively based on the total sample weight. This assumption presumes that the total sample activity from all samples is located at one, single sample location.

(4) Estimated MDA dpm/100 cm^2 conversion is conservatively based on the heaviest sample weight.

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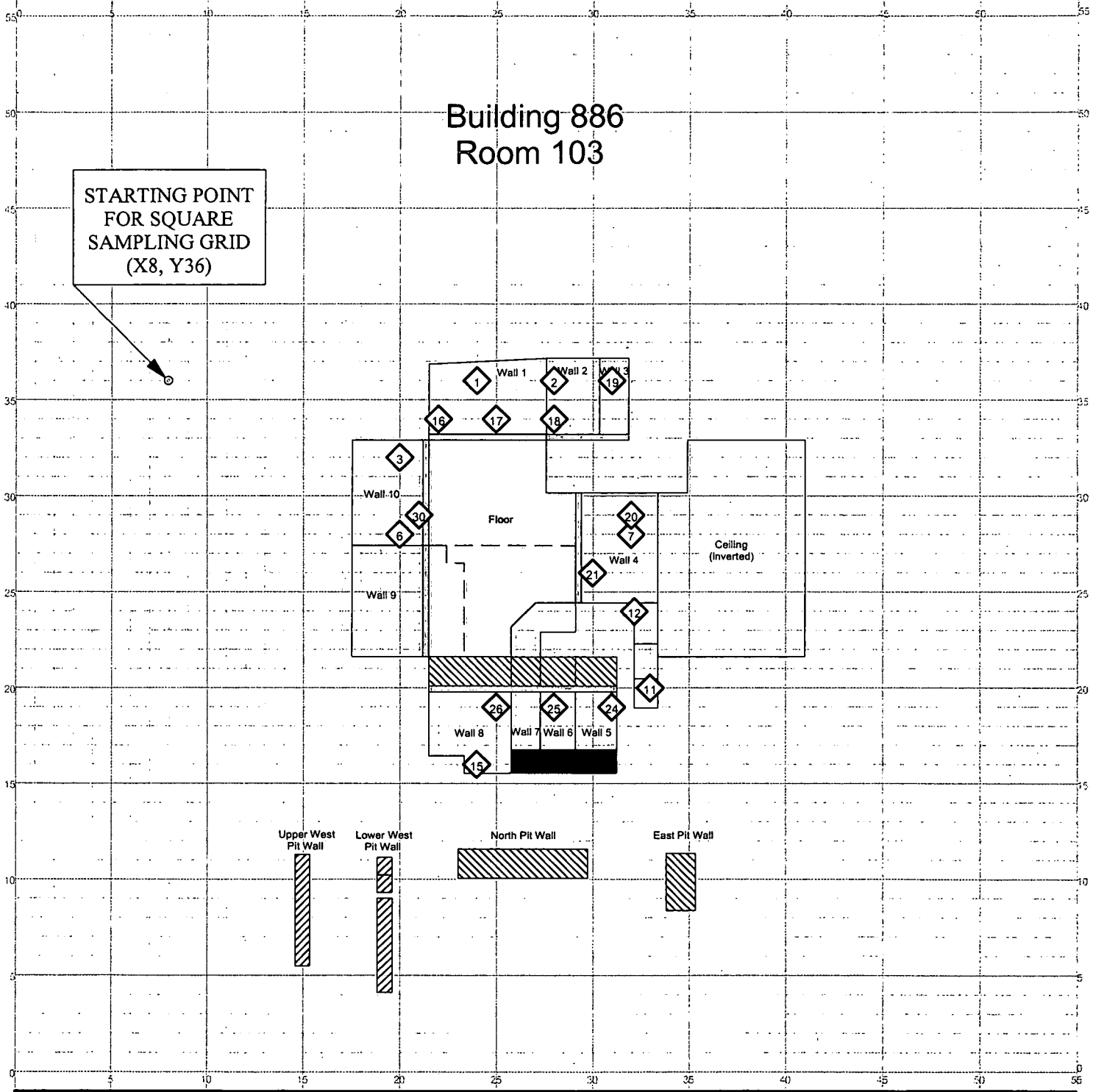
PRE-DEMOLITION SURVEY FOR 886

Survey Area: A **Survey Unit: 886-A-004** **Classification: 1**
Building: 886
Survey Unit Description: Interior walls & ceiling
Total Area: 225.3 sq. m. **Total Ceiling Area: 81.8 sq. m.**
Grid Spacing for Survey Points: 3m. X 3 m.



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): N/A
RCT ID #(s): N/A

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for: KAISER-HILL

MAP ID: 02-0099/RM103-media **January 9, 2002**

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	N/A
Model	SAC-4	Model	SAC-4	Model	N/A
Serial #	767	Serial #	1164	Serial #	N/A
Cal Due	4/30/02	Cal Due	5/13/02	Cal Due	N/A
Bkg	0 cpmα	Bkg	0 cpmα	Bkg	N/A cpmα
Efficiency	33.00 %	Efficiency	33.00 %	Efficiency	N/A %
MDA	20 dpmα	MDA	20 dpmα	MDA	N/A dpmα
Mfg.	Eberline	Mfg.	Eberline	Mfg.	N/A
Model	SAC-4	Model	SAC-4	Model	N/A
Serial #	770	Serial #	959	Serial #	N/A
Cal Due	7/25/02	Cal Due	7/14/02	Cal Due	N/A
Bkg	0 cpmα	Bkg	0 cpmα	Bkg	N/A cpmβ
Efficiency	33.00 %	Efficiency	33.00 %	Efficiency	N/A %
MDA	20 dpmα	MDA	20 dpmα	MDA	N/A dpmβ

Survey Type: Contamination
Building: 886
Location: Rm 103
Purpose: Confirmatory swipe survey

RWP #: N/A

Date: 3/27/02 Time: 1600

[redacted]

PRN/REN # : N/A

Comments: Survey was performed on the walls and the concrete floor. 8 swipes at various heights were performed on each wall and various locations on the floor.

SURVEY RESULTS

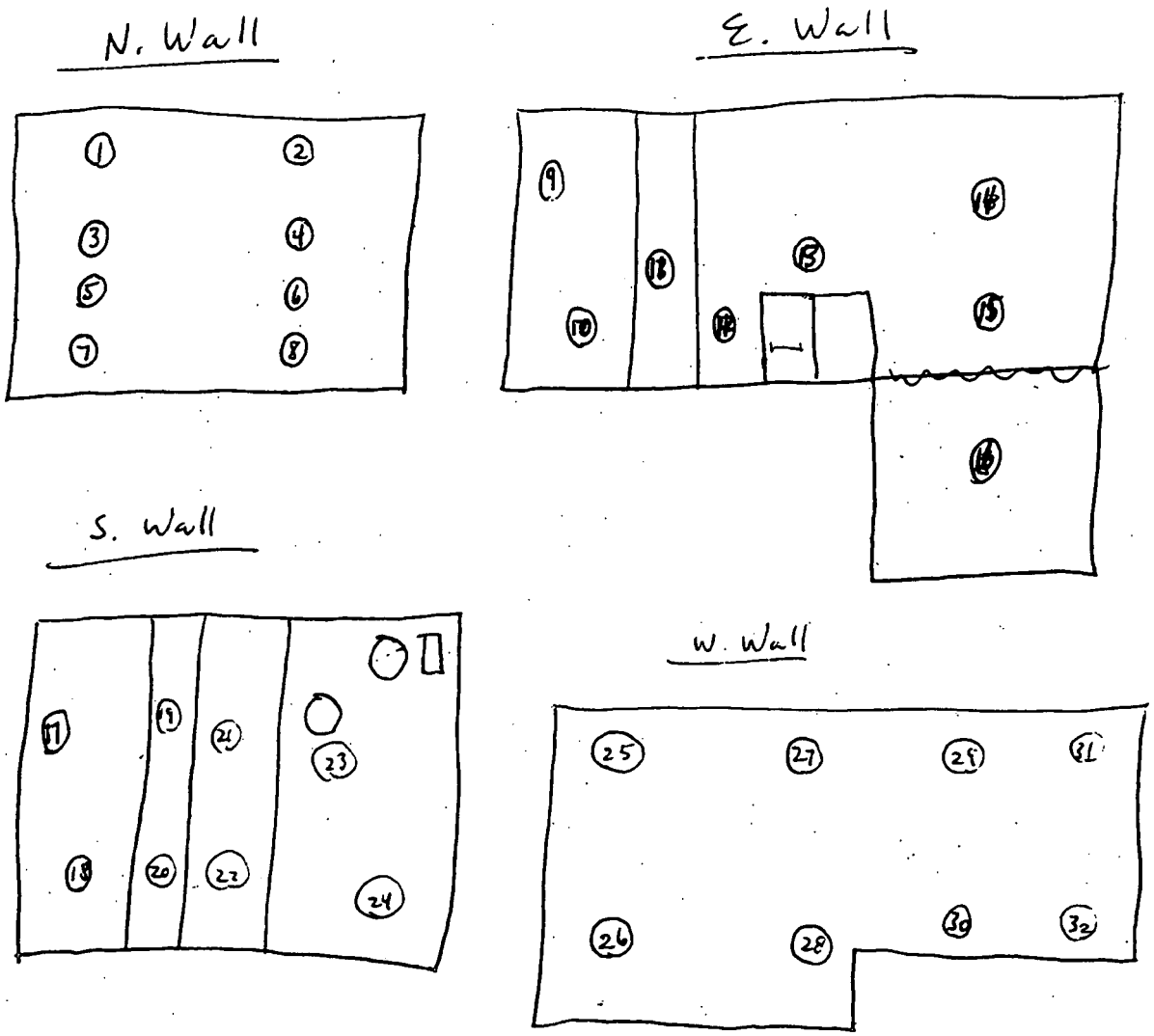
Swipe #	Location / Description Results in DPM/100sq.cm	Removable Alpha	Removable Beta	Total Alpha	Total Beta
1	See map/drawing for location	<20	n/a	n/a	n/a
2	See map/drawing for location	<20	n/a	n/a	n/a
3	See map/drawing for location	<20	n/a	n/a	n/a
4	See map/drawing for location	<20	n/a	n/a	n/a
5	See map/drawing for location	<20	n/a	n/a	n/a
6	See map/drawing for location	<20	n/a	n/a	n/a
7	See map/drawing for location	<20	n/a	n/a	n/a
8	See map/drawing for location	<20	n/a	n/a	n/a
9	See map/drawing for location	<20	n/a	n/a	n/a
10	See map/drawing for location	<20	n/a	n/a	n/a
11	See map/drawing for location	<20	n/a	n/a	n/a
12	See map/drawing for location	<20	n/a	n/a	n/a
13	See map/drawing for location	<20	n/a	n/a	n/a
14	See map/drawing for location	<20	n/a	n/a	n/a
15	See map/drawing for location	<20	n/a	n/a	n/a
16	See map/drawing for location	<20	n/a	n/a	n/a
17	See map/drawing for location	<20	n/a	n/a	n/a
18	See map/drawing for location	<20	n/a	n/a	n/a
19	See map/drawing for location	<20	n/a	n/a	n/a
20	See map/drawing for location	<20	n/a	n/a	n/a
21	See map/drawing for location	<20	n/a	n/a	n/a
22	See map/drawing for location	<20	n/a	n/a	n/a
23	See map/drawing for location	<20	n/a	n/a	n/a
24	See map/drawing for location	<20	n/a	n/a	n/a
25	See map/drawing for location	<20	n/a	n/a	n/a
26	See map/drawing for location	<20	n/a	n/a	n/a
27	See map/drawing for location	<20	n/a	n/a	n/a
28	See map/drawing for location	<20	n/a	n/a	n/a
29	See map/drawing for location	<20	n/a	n/a	n/a
30	See map/drawing for location	<20	n/a	n/a	n/a
31	See map/drawing for location	<20	n/a	n/a	n/a
32	See map/drawing for location	<20	n/a	n/a	n/a
33	See map/drawing for location	<20	n/a	n/a	n/a
34	See map/drawing for location	<20	n/a	n/a	n/a
35	See map/drawing for location	<20	n/a	n/a	n/a
36	See map/drawing for location	<20	n/a	n/a	n/a
37	See map/drawing for location	<20	n/a	n/a	n/a
38	See map/drawing for location	<20	n/a	n/a	n/a
39	See map/drawing for location	<20	n/a	n/a	n/a
40	See map/drawing for location	<20	n/a	n/a	n/a

Date Reviewed: 3-27-02 **RS Supervision:** [redacted]

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SAFETY

Drawing Showing Survey Points

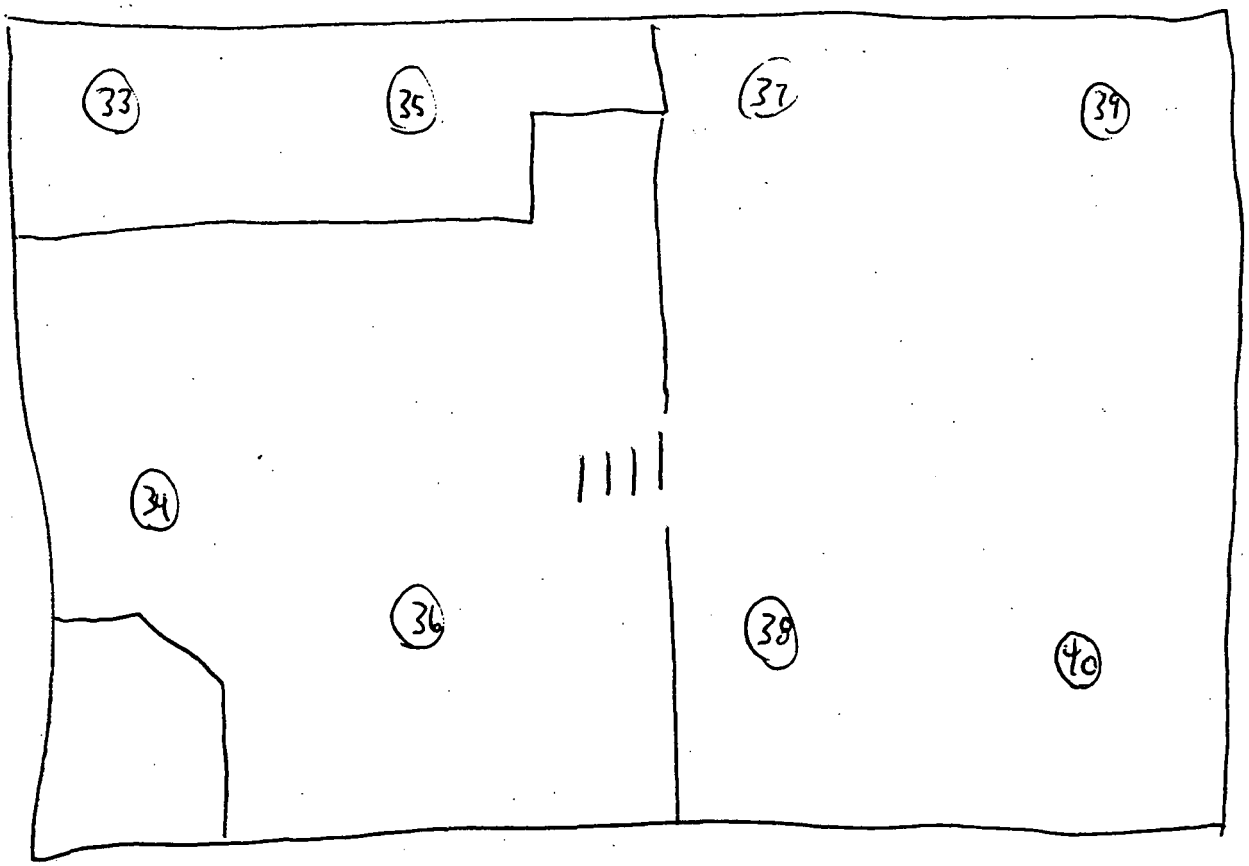


ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SAFETY

Drawing Showing Survey Points

Floor



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B886, ROOM 103 PIT

CONCRETE GAMMA

SPECTROSCOPY RESULTS

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COVER PAGE

RC10B, On-Site Radiological Screening by Gamma Spectrometry

Gamma Spectrometry

PROJECT SAMPLE IDENTIFICATION CROSS-REFERENCE TO CMLS SAMPLE LABORATORY IDs

BATCH 0203144732
Subcontract KH001076OZ

COC NUMBER	PROJECT SAMPLE ID NUMBER	SITE SAMPLE NUMBER(S)	CMLS SAMPLE ID NUMBER(S)	OBJECT NUMBER(S) CMLS	LINE ITEM CODE(S)
02D0988#002	02D0988-005.001	02D0988-001.001, 002.001, 003.001, 004.001	CMLS-1012	G1900013	RC10B019

Calibration Package ID: Object individually modeled using ISOCS.

Comments:

Sample was counted in T130A using BEGe Detector LI012.

Certification Statement:

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature."

Larry Umbaugh
Signature

Date: 3/15/02

Laboratory Director
Title

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CASI5 RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC: 02D0988#002	Page 1 of 1

Sampler(s) (time/date) BOYLE, RANDY	Contact/Requester BRITTEN, JAY / JOHNSEN, SHELLY	Telephone No. 3050/6401
RIN 02D0988	Sampling Origin B886 RM.103 (PIT)	Purchase Order/Charge Code EED60133
Project Title BLDG. 886 RM. 103 (PIT)	Logbook No.	Ice Chest No. Temp.
To (Lab) Canberra Mobile Lab Service	Method of Shipment	Bill of Lading/Air Bill No.
Protocol	Related COC (if any)	PRE

POSSIBLE SAMPLE HAZARDS/REMARKS

Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES NO
Are other known hazardous substances present? YES NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time

COMBINE EVENTS 02D0988.001 THROUGH 02D0988.004 AS ONE 16 HOUR SHOT TO BE REPORTED AS 02D0988.005.

Bottle No.	Customer Number	Matrix	Date/ Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/{Parameter List}	Preservative; Packing
02D0988 -005.001		SOLID	3/14/02 1450	B886, RM 103	1-SAMPLE G	RC10B019 (GS-I-N/S-Lab-Nstd ISOCS-Solid) [24hrR] {AM241, U235, U238}	None None

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
R. Boyle	3/14/02 1415	[illegible]	3/14/02 1415	[illegible]	3/14/02 1420	[illegible]	3-14-02 1420
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 COC printed: 03/14/02 09:16

CANBERRA

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CANBERRA


```
************************************************************************
*****        G A M M A   S P E C T R U M   A N A L Y S I S        *****
** C a n b e r r a  M o b i l e  L a b o r a t o r y  S e r v i c e s **
************************************************************************
```

Report Generated On : 3/15/2002 8:23:06 AM

RIN Number : 02D0988
Analytical Batch ID : 0203144732
Line Item Code : RC10B019

Filename: A:\G1900013.CNF

Sample Number : 02D0988-005.001
Lab Sample Number : CMLS-1012
Sample Receipt Date : 3/14/2002
Sample Volume Received : 1.36E+002 Grams

Result Identifier : N/A

Peak Locate Threshold : 3.50
Peak Locate Range (in channels) : 100 - 8192
Peak Area Range (in channels) : 100 - 8192
Identification Energy Tolerance : 1.500 keV

Sample (Final Aliquot Size) : 1.361E+002 Grams
Sample Quantity Error : 0.000E+000
Systematic Error Applied : 7.680E+000

Sample Taken On : 3/14/2002 11:25:00 AM
Acquisition Started : 3/14/2002 2:45:29 PM

Count Time : 57600.0 seconds
Real Time : 57659.7 seconds
Dead Time : 0.10 %

Energy Calibration Used Done On : 2/07/02
Energy = -0.259 + 0.250*ch + -1.22E-008*ch^2 + 8.54E-013*ch^3

Corrections Applied:
None

Efficiency Calibration Used Done On : 3/15/02
Efficiency Geometry ID : 02D0988-005.001

Analyzed By: Marilyn Umbaugh Date: 3/15/02

Reviewed By: Daniel Remington Date: 3/15/02

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****
***** Sample and QC Sample Results Summary *****
****

Site Sample ID : 02D0988-005.001

Analytical Batch ID : 0203144732

Sample Type (Result Identifier): G19

Lab Sample Number : CMLS-1012

Geometry ID : 02D0988-005.001

Filename: A:\G1900013.CNF

Detector Name: BEGE4732

MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B; Basic Algorithms.

Analyte	Activity (pCi/Grams)	2-Sigma Uncertainty (pCi/Grams)	MDA (pCi/Grams)
K-40	2.72E+001	4.91E+000	6.41E-001
TL-208	9.27E-001	1.85E-001	5.74E-002
PO-210	2.98E+003	1.55E+003	3.11E+003
BI-212	3.51E+000	1.11E+000	8.72E-001
PB-212	2.37E+000	4.28E-001	4.38E-002
BI-214	1.29E+000	2.68E-001	1.10E-001
PB-214	1.88E+000	3.42E-001	9.80E-002
RA-226	0.00E+000	0.00E+000	7.58E-001
AC-228	2.70E+000	5.75E-001	2.29E-001
TH-230	0.00E+000	0.00E+000	6.89E+000
Th-231	2.15E+000	5.35E-001	3.18E-001
PA-234	0.00E+000	0.00E+000	8.06E-002
PA-234M	0.00E+000	0.00E+000	7.03E+000
U-235	1.63E+000	2.95E-001	4.69E-002
U238/234	2.05E+000	7.06E-001	3.95E-001
AM-241	0.00E+000	0.00E+000	6.42E-002

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CANBERRA

COVER PAGE

RC10B, On-Site Radiological Screening by Gamma Spectrometry

Gamma Spectrometry

PROJECT SAMPLE IDENTIFICATION CROSS-REFERENCE TO CMLS SAMPLE LABORATORY IDs

BATCH 0203124732
Subcontract KH001076OZ

COC NUMBER	PROJECT SAMPLE ID NUMBER	SITE SAMPLE NUMBER(S)	CMLS SAMPLE ID NUMBER(S)	OBJECT NUMBER(S) CMLS	LINE ITEM CODE(S)
02S0121#002	02S0121-002.001	02S0121-002.001	CMLS-994	G1900006	RC10B019

Calibration Package ID: Object individually modeled using ISOCS.

Comments:

Sample was counted in T130A using BEGe Detector LI012.

Certification Statement:

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature."

Larry Umbaugh
Signature

Date: 3/13/02

Laboratory Director
Title

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CASIS RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC: 02S0121#002	Page 1 of 1

Sampler(s) (time/date) B. Bartlett / Ray Boyle	Contact/Requester BRITTEN, JAY / NIELSEN, SKIP	Telephone No. 3050/4289
RIN 02S0121	Sampling Origin B886 RM.103 (PIT)	Purchase Order/Charge Code EED60133
Project Title BLDG. 886 RM. 103 (PIT)	Logbook No. 94' Dodge	Ice Chest No. n/a Temp. n/a
To (Lab) Canberra Mobile Lab Service	Method of Shipment Hand Carry	Bill of Lading/Air Bill No.
Protocol CAS-SOP.003 Rev 3	Related COC (if any) n/a	PRE

POSSIBLE SAMPLE HAZARDS/REMARKS

Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES NO
Are other known hazardous substances present? YES NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
PLEASE SHOOT A SINGLE SHOT AND REPORT AS 02S0121-002
177 Grams

Bottle No.	Customer Number	Matrix	Date/ Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/{Parameter List}	Preservative; Packing
02S0121 -002.001	02S0121-002	OBJECT	3/12/02 1400	BLDG. 886 RM.103 (PIT)	1-SAMPLE	RC10B019 (GS-I-N/S-Lab-Nstd ISOCS-Solid) [24hrR] {AM241, U235, U238}	None None

16 hour count requested Per customer Duane Parsons of Bldg 886.
Dal Remington (3/12/2002)

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Ray Boyle	3/12/02 14:50	[illegible]	3/12/02 14:50	[illegible]	3/12/02 14:50	FRG #2	3/12/02 1450
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relg 2	3/12/02 1720	[illegible]	3/12/02 1720	[illegible]	3/12/02 1720	B. P. [illegible]	3/12/02 1720
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 COC printed: 03/12/02 08:48

CANBERRA

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CANBERRA


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************************************************************************
*****        G A M M A   S P E C T R U M   A N A L Y S I S        *****
** C a n b e r r a  M o b i l e  L a b o r a t o r y  S e r v i c e s **
************************************************************************
```

Report Generated On : 3/13/2002 12:14:49 PM

RIN Number : 02S0121
Analytical Batch ID : 0203124732
Line Item Code : RC10B019

Filename: A:\G1900006.CNF

Sample Number : 02S0121-002.001
Lab Sample Number : CMLS 994
Sample Receipt Date : 3/12/2002
Sample Volume Received : 1.92E+002 Grams

Result Identifier : N/A

Peak Locate Threshold : 3.25
Peak Locate Range (in channels) : 100 - 8192
Peak Area Range (in channels) : 100 - 8192
Identification Energy Tolerance : 0.800 keV

Sample (Final Aliquot Size) : 1.920E+002 Grams
Sample Quantity Error : 0.000E+000
Systematic Error Applied : 3.548E+000

Sample Taken On : 3/12/2002 2:00:00 PM
Acquisition Started : 3/12/2002 5:38:56 PM

Count Time : 57600.0 seconds
Real Time : 57670.2 seconds
Dead Time : 0.12 %

Energy Calibration Used Done On : 2/07/02
Energy = -0.259 + 0.250*ch + -1.22E-008*ch^2 + 8.54E-013*ch^3

Corrections Applied:
None

Efficiency Calibration Used Done On : 3/13/02
Efficiency Geometry ID : 02S0121-002.001

Analyzed By: Marilyn Umbaugh Date: 3/13/02

Reviewed By: Daniel Remington Date: 3/13/02

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****
***** Sample and QC Sample Results Summary *****
****

Site Sample ID : 02S0121-002.001

Analytical Batch ID : 0203124732

Sample Type (Result Identifier): G19

Lab Sample Number : CMLS 994

Geometry ID : 02S0121-002.001

Filename: A:\G1900006.CNF

Detector Name: BEGE4732

MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B; Basic Algorithms.

Analyte	Activity (pCi/Grams)	2-Sigma Uncertainty (pCi/Grams)	MDA (pCi/Grams)
K-40	2.26E+001	2.24E+000	5.53E-001
TL-208	8.10E-001	9.26E-002	4.52E-002
PO-210	0.00E+000	0.00E+000	4.06E+003
BI-212	2.88E+000	6.09E-001	5.93E-001
PB-212	2.25E+000	2.00E-001	3.50E-002
BI-214	9.38E-001	1.20E-001	7.88E-002
PB-214	1.01E+000	1.19E-001	7.27E-002
RA-226	9.80E+000	4.34E+000	4.72E-001
AC-228	2.41E+000	2.63E-001	1.06E-001
TH-230	0.00E+000	0.00E+000	8.38E+000
Th-231	8.86E+000	9.57E-001	3.85E-001
PA-234	0.00E+000	0.00E+000	8.56E-002
PA-234M	4.98E+000	2.85E+000	5.55E+000
U-235	8.73E+000	7.67E-001	2.92E-002
U238/234	1.91E+000	5.89E-001	3.24E-001
AM-241	8.92E-002	2.65E-002	8.73E-002

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COVER PAGE

RC10B, On-Site Radiological Screening by Gamma Spectrometry

***In Situ* Gamma Spectrometry**

PROJECT SAMPLE IDENTIFICATION CROSS-REFERENCE TO CMLS SAMPLE LABORATORY IDs

BATCH 0203123968
Subcontract KH001076OZ

COC NUMBER	PROJECT SAMPLE ID NUMBER	SITE SAMPLE NUMBER(S)	CMLS SAMPLE ID NUMBER(S)	OBJECT NUMBER(S) CMLS	LINE ITEM CODE(S)
02S0121#001	02S0121-001.001	02S0121-001.001	CMLS-991	FI00021	RC10B015

Calibration Package ID: Various, each object individually modeled using ISOCS.

Comments:

Measurements were made using Coaxial Detector LI011.

Certification Statement:

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature."

Larry Umbaugh — Date: 03/13/02
Signature

Laboratory Director
Title

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CASI5 RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC: 02S0121#001	Page 1 of 1

Sampler(s) (time/date)	Contact/Requester BRITTEN, JAY / NIELSEN, SKIP	Telephone No. 3050/4289
RIN 02S0121	Sampling Origin B886 RM.103 (PIT)	Purchase Order/Charge Code EED60133
Project Title BLDG. 886 RM. 103 (PIT)	Logbook No.	Ice Chest No. Temp.
To (Lab) Canberra Mobile Lab Service	Method of Shipment	Bill of Lading/Air Bill No.
Protocol	Related COC (if any)	PRE

POSSIBLE SAMPLE HAZARDS/REMARKS	SCREENING REQUIRED	SPECIAL INSTRUCTIONS Hold Time
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES NO Are other known hazardous substances present? YES NO •• •• ••	☐	FIELD SHOT ON 02S0121-001

Bottle No.	Customer Number	Matrix	Date/ Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/(Parameter List)	Preservative; Packing
02S0121 -001.001	02S0121-001	OBJECT		BLDG. 886 RM.103 (PIT)	1-SAMPL E	RC10B015 (Field-Object-Nstd ISOCS-pCi/g) [24hrR] {AM241, U235, U238}	None None

CMLS 991 DLR (3/12/2002)

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
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 COC printed: 03/12/02 08:47

CANBERRA

157

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***********************************************************************
*****        G A M M A   S P E C T R U M   A N A L Y S I S        *****
** C a n b e r r a  M o b i l e  L a b o r a t o r y  S e r v i c e s **
***********************************************************************
```

Report Generated On : 3/13/2002 2:33:53 PM

RIN Number : 02S0121
Analytical Batch ID : 0203123968
Line Item Code : RC10B015

Filename: A:\FI00021.CNF

Sample Number : 02S0121-001.001
Lab Sample Number : CMLS 991 Bldg 886 Rm 103 Pit N. E.
Sample Receipt Date : 3/12/2002
Sample Volume Received : 0.00E+000 Grams

Result Identifier : N/A

Peak Locate Threshold : 3.50
Peak Locate Range (in channels) : 100 - 8192
Peak Area Range (in channels) : 100 - 8192
Identification Energy Tolerance : 0.500 keV

Sample (Final Aliquot Size) : 1.101E+003 Grams
Sample Quantity Error : 0.000E+000
Systematic Error Applied : 1.074E+001

Sample Taken On : 3/12/2002 2:42:24 PM
Acquisition Started : 3/12/2002 2:42:24 PM

Count Time : 69595.9 seconds
Real Time : 69815.7 seconds
Dead Time : 0.31 %

Energy Calibration Used Done On : 12/12/01
Energy = 0.059 + 0.250*ch + -1.36E-008*ch^2 + 1.22E-012*ch^3

Corrections Applied:
None

Efficiency Calibration Used Done On : 3/13/02
Efficiency Geometry ID : 02S0121-001.001

Analyzed By: Marilyn Umbaugh Date: 3/13/02

Reviewed By: Daniel Remington Date: 3/13/02

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CANBERRA

****
***** Sample and QC Sample Results Summary *****
****

Site Sample ID : 02S0121-001.001

Analytical Batch ID : 0203123968

Sample Type (Result Identifier): FI

Lab Sample Number : CMLS 991 Bldg 886 Rm 103 Pit N. E.

Geometry ID : 02S0121-001.001

Filename: A:\FI00021.CNF

Detector Name: DET01

MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B; Basic Algorithms.

Analyte	Activity (pCi/Grams)	2-Sigma Uncertainty (pCi/Grams)	MDA (pCi/Grams)
K-40	1.30E+002	2.98E+001	7.17E-001
TL-208	3.44E+000	8.11E-001	9.56E-002
PO-210	0.00E+000	0.00E+000	7.71E+003
BI-212	1.17E+001	3.45E+000	1.35E+000
PB-212	8.83E+000	2.12E+000	1.34E-001
BI-214	4.01E+000	9.64E-001	1.85E-001
PB-214	2.89E+000	6.97E-001	2.10E-001
RA-226	0.00E+000	0.00E+000	3.12E+000
AC-228	1.05E+001	2.64E+000	2.16E-001
TH-230	0.00E+000	0.00E+000	8.92E+001
Th-231	4.51E+001	1.13E+001	2.20E+000
PA-234	0.00E+000	0.00E+000	3.50E-001
PA-234M	0.00E+000	0.00E+000	9.59E+000
U-235	4.56E+000	1.09E+000	1.58E-001
U238/234	6.94E+000	7.87E+000	2.28E+000
AM-241	0.00E+000	0.00E+000	1.57E+000

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ATTACHMENT C-6

Room 112

(886-B-005)

SURVEY UNIT 886-B-005
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B886, Room 112

161

Total Surface Activity Measurements

	16	16	
	Number Required	Number Obtained	
MIN	-13.9		dpm/100 cm^2
MAX	52.5		dpm/100 cm^2
MEAN	9.8		dpm/100 cm^2
STD DEV	19.8		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	16	16	
	Number Required	Number Obtained	
MIN	0.0		dpm/100 cm^2
MAX	6.1		dpm/100 cm^2
MEAN	1.3		dpm/100 cm^2
STD DEV	1.9		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

162

SURVEY UNIT B886-B-005
TSA - DATA SUMMARY

Manufacturer:	NE Electra	NE Electra
Model:	DP-6	DP-6
Instrument ID#:	7	8
Serial #:	1379	3125
Cal Due Date:	5/6/02	4/1/02
Analysis Date:	3/27/02	3/27/02
Alpha Eff. (c/d):	0.211	0.208
Alpha Bkgd (cpm)	2.7	1.3
Sample Time (min)	1.5	1.5
LAB Time (min)	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	7	4.7	22.3	5.3	25.1	-4.4
2	7	3.3	15.6	5.3	25.1	-11.0
3	7	16.7	79.1	6.7	31.8	52.5
4	7	13.3	63.0	8.0	37.9	36.4
5	7	5.2	24.6	4.7	22.3	-2.0
6	7	5.3	25.1	6.0	28.4	-1.5
7	7	12.7	60.2	6.7	31.8	33.5
8	7	2.7	12.8	2.0	9.5	-13.9
9	7	6.0	28.4	3.3	15.6	1.8
10	7	6.0	28.4	10.0	47.4	1.8
11	7	8.0	37.9	5.3	25.1	11.3
12	7	9.3	44.1	4.7	22.3	17.4
13	7	4.7	22.3	3.3	15.6	-4.4
14	7	3.3	15.6	5.3	25.1	-11.0
15	7	11.3	53.6	4.7	22.3	26.9
16	7	10.7	50.7	8.7	41.2	24.1

1 - Average LAB used to subtract from Gross Sample Activity

26.7	Sample LAB Average
MIN	-13.9
MAX	52.5
MEAN	9.8
SD	19.8
Transuranic $DCGL_w$	100

QC Measurements

12QC	8	5.3	25.5	1.3	6.3	17.5
4QC	8	12.0	57.7	2.0	9.6	49.8

1 - Average QC LAB used to subtract from Gross Sample Activity

7.9	QC LAB Average
QC MIN	17.5
QC MAX	49.8
QC MEAN	33.7
QC SD	22.8
Transuranic $DCGL_w$	100

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SURVEY UNIT B886-B-005
RSC - DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4
Serial #:	767	1164	770	959
Cal Due Date:	4/30/02	5/13/02	7/25/02	7/14/02
Analysis Date:	3/27/02	3/27/02	3/27/02	3/27/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.0	0.0	0.0	0.0
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	4.5	4.5	4.5	4.5

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	0.0	0.0
2	2	0.0	0.0
3	3	0.0	0.0
4	4	1.0	3.0
5	1	1.0	3.0
6	2	0.0	0.0
7	3	2.0	6.1
8	4	1.0	3.0
9	1	0.0	0.0
10	2	0.0	0.0
11	3	0.0	0.0
12	4	1.0	3.0
13	1	0.0	0.0
14	2	1.0	3.0
15	3	0.0	0.0
16	4	0.0	0.0
		MIN	0.0
		MAX	6.1
		MEAN	1.3
		SD	1.9
		Transuranic DCGL$_W$	20

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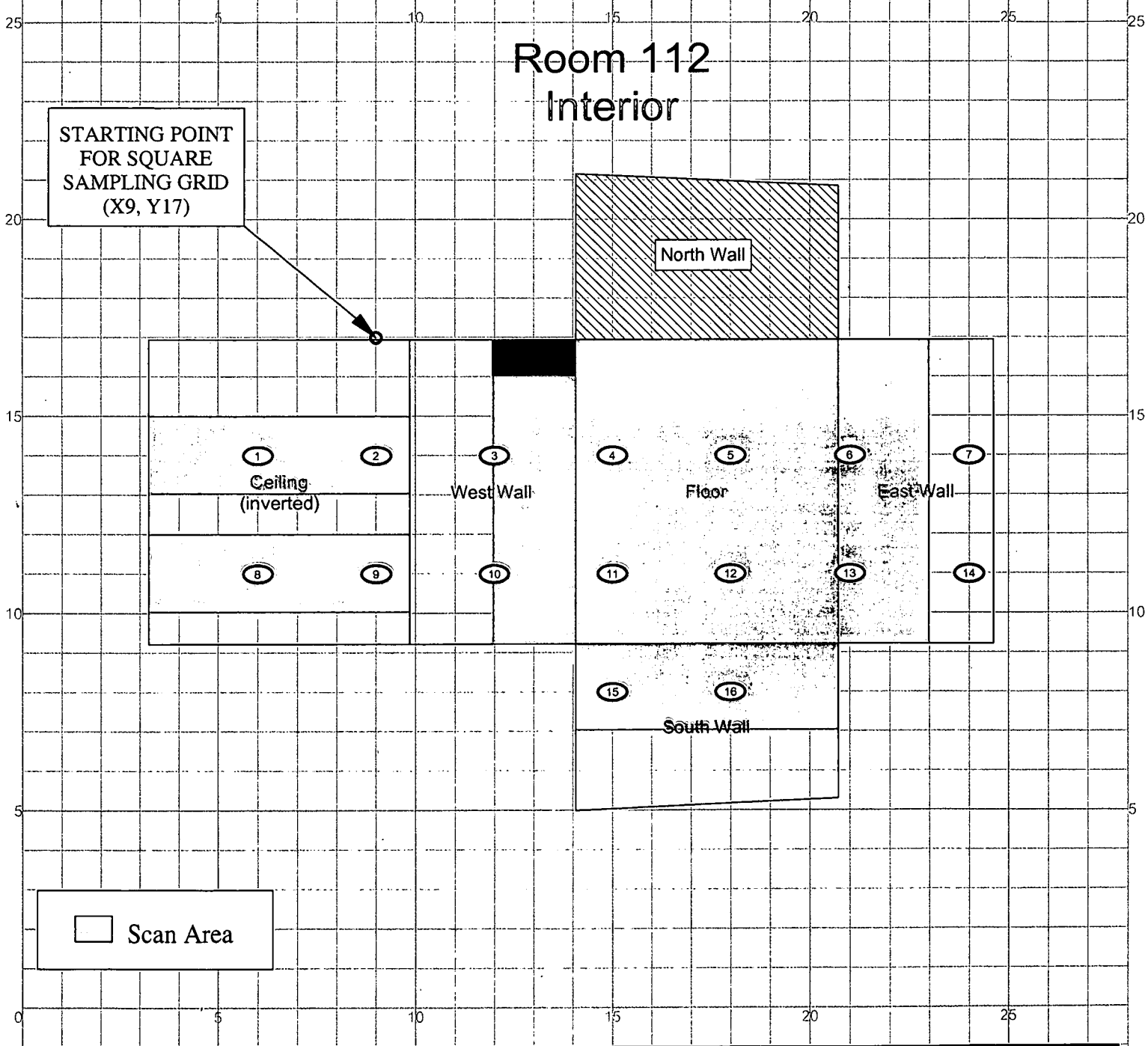
PRE-DEMOLITION SURVEY FOR B886 CLUSTER

Survey Area: B **Survey Unit: 886-B-005** **Classification: 2**
Building: 886
Survey Unit Description: Room 112
Total Area: 190 sq. m. **Total Floor Area: 51 sq. m.**
Grid Spacing for Survey Points: 3xm. X 3xm.



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit
- Previous Existing Walls

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N

0 FEET 15
0 METERS 5

1 inch = 12 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): 9, 10, 11, 12
RCT ID #(s): 1, 2, 3

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707
DynCorp
THE ART OF TECHNOLOGY

Prepared for:
KAISER HILL COMPANY

MAP ID: 02-0099/B112-SC
March 26, 2002

165

ATTACHMENT C-7

Room 114

(886-B-006)

166

SURVEY UNIT 886-B-006
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B886, Room 114

167

Total Surface Activity Measurements

	18	18	
	Number Required	Number Obtained	
MIN	-10.9		dpm/100 cm^2
MAX	37.3		dpm/100 cm^2
MEAN	8.8		dpm/100 cm^2
STD DEV	13.4		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	18	18	
	Number Required	Number Obtained	
MIN	-1.2		dpm/100 cm^2
MAX	6.1		dpm/100 cm^2
MEAN	0.1		dpm/100 cm^2
STD DEV	1.8		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

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SURVEY UNIT B886-B-006
TSA - DATA SUMMARY

Manufacturer:	NE Electra	NE Electra
Model:	DP-6	DP-6
Instrument ID#:	7	8
Serial #:	3114	3125
Cal Due Date:	8/13/02	4/1/02
Analysis Date:	3/12/02	3/12/02
Alpha Eff. (c/d):	0.208	0.211
Alpha Bkgd (cpm)	2.0	2.7
Sample Time (min)	1.5	1.5
LAB Time (min)	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	7	6.0	28.8	5.3	25.5	11.8
2	7	6.7	32.2	2.7	13.0	15.2
3	8	4.0	19.0	2.7	12.8	1.9
4	8	3.3	15.6	2.7	12.8	-1.4
5	8	3.3	15.6	2.0	9.5	-1.4
6	7	11.3	54.3	7.3	35.1	37.3
7	7	6.7	32.2	4.0	19.2	15.2
8	7	4.7	22.6	8.0	38.5	5.6
9	8	1.3	6.2	3.3	15.6	-10.9
10	8	6.0	28.4	4.0	19.0	11.4
11	8	3.3	15.6	2.0	9.5	-1.4
12	7	9.3	44.7	2.7	13.0	27.7
13	7	4.7	22.6	2.7	13.0	5.6
14	7	10.0	48.1	4.0	19.2	31.0
15	8	2.0	9.5	1.3	6.2	-7.6
16	8	2.7	12.8	2.7	12.8	-4.2
17	8	4.7	22.3	2.0	9.5	5.2
18	7	7.3	35.1	4.7	22.6	18.1

1 - Average LAB used to subtract from Gross Sample Activity

17.0	Sample LAB Average
MIN	-10.9
MAX	37.3
MEAN	8.8
SD	13.4
Transuranic $DCGL_W$	100

QC Measurements

10QC	7	3.3	15.9	2.0	9.6	6.3
11QC	7	8.0	38.5	2.0	9.6	28.8

1 - Average QC LAB used to subtract from Gross Sample Activity

9.6	QC LAB Average
QC MIN	6.3
QC MAX	28.8
QC MEAN	17.5
QC SD	16.0
Transuranic $DCGL_W$	100

169

SURVEY UNIT B886-B-006
RSC - DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4
Serial #:	767	1164	770	959
Cal Due Date:	4/30/02	5/13/02	7/25/02	7/14/02
Analysis Date:	3/12/02	3/12/02	3/12/02	3/12/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.2	0.2	0.4	0.0
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	8.0	8.0	9.4	4.5

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	0.0	-0.6
2	1	0.0	-0.6
3	1	0.0	-0.6
4	2	0.0	-0.6
5	1	0.0	-0.6
6	2	0.0	-0.6
7	3	0.0	-1.2
8	2	0.0	-0.6
9	4	0.0	0.0
10	3	1.0	1.8
11	2	0.0	-0.6
12	4	0.0	0.0
13	1	0.0	-0.6
14	4	2.0	6.1
15	3	0.0	-1.2
16	4	1.0	3.0
17	3	0.0	-1.2
18	2	0.0	-0.6
		MIN	-1.2
		MAX	6.1
		MEAN	0.1
		SD	1.8
		Transuranic $DCGL_W$	20

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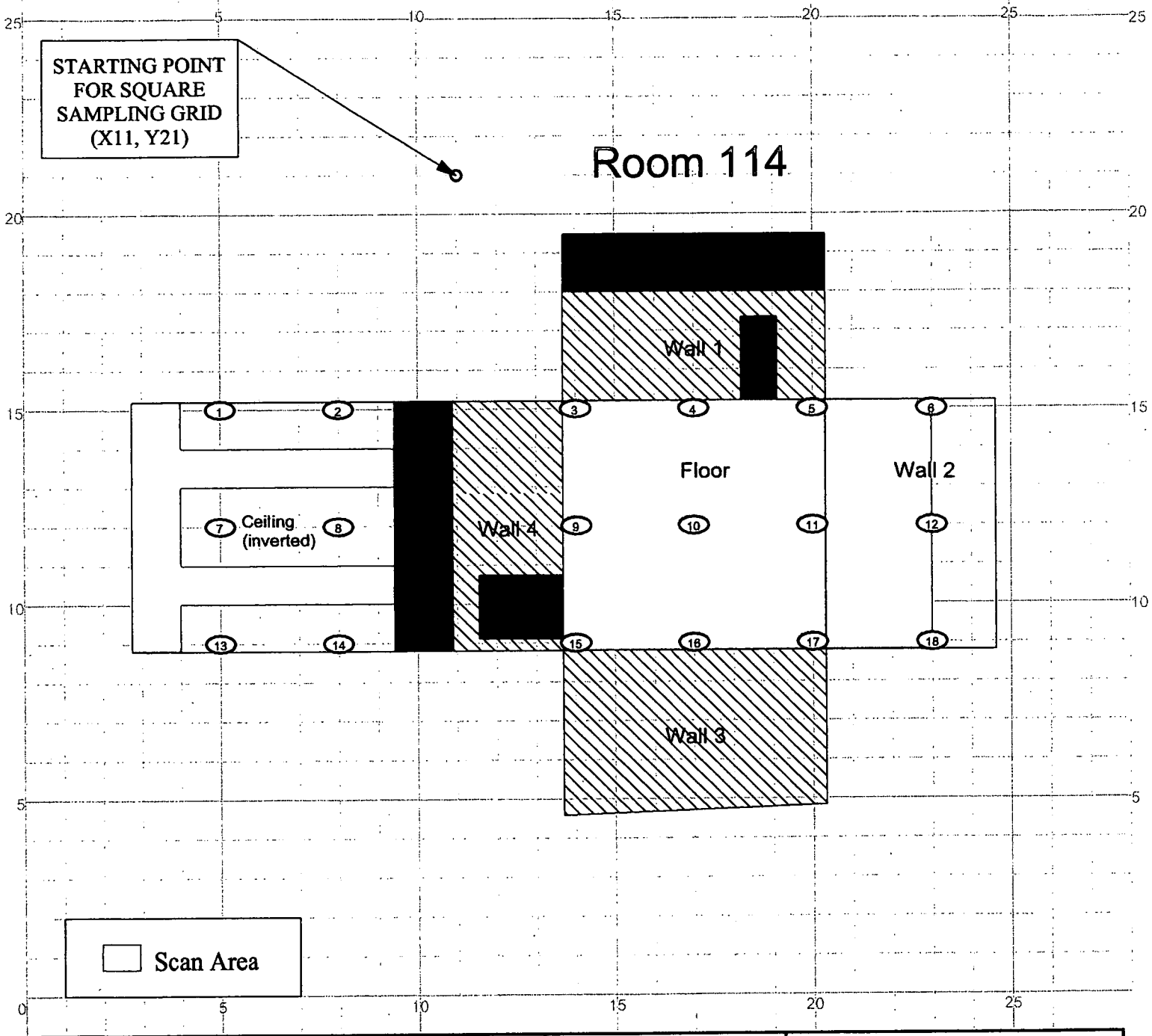
PRE-DEMOLITION SURVEY FOR B886

Survey Area: B **Survey Unit: 886-B-006** **Classification: 2**
Building: 886
Survey Unit Description: Interior Room 114
Total Area: 112.5 sq. m. **Total Floor Area: 42.6 sq. m.**
Grid Spacing for Survey Points: 3 m. X 3 m.



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit
- Previous Existing Walls

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N

Scan Survey Information
Survey Instrument ID #(s): 7,8,9,10
RCT ID #(s): 1,2,3

0 FEET 15
0 METERS 5

1 inch = 12 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707
DynCorp
THE ART OF TECHNOLOGY

Prepared for:
KAISER HILL

MAP ID: 02-0099/R114-SC
March 13, 2002

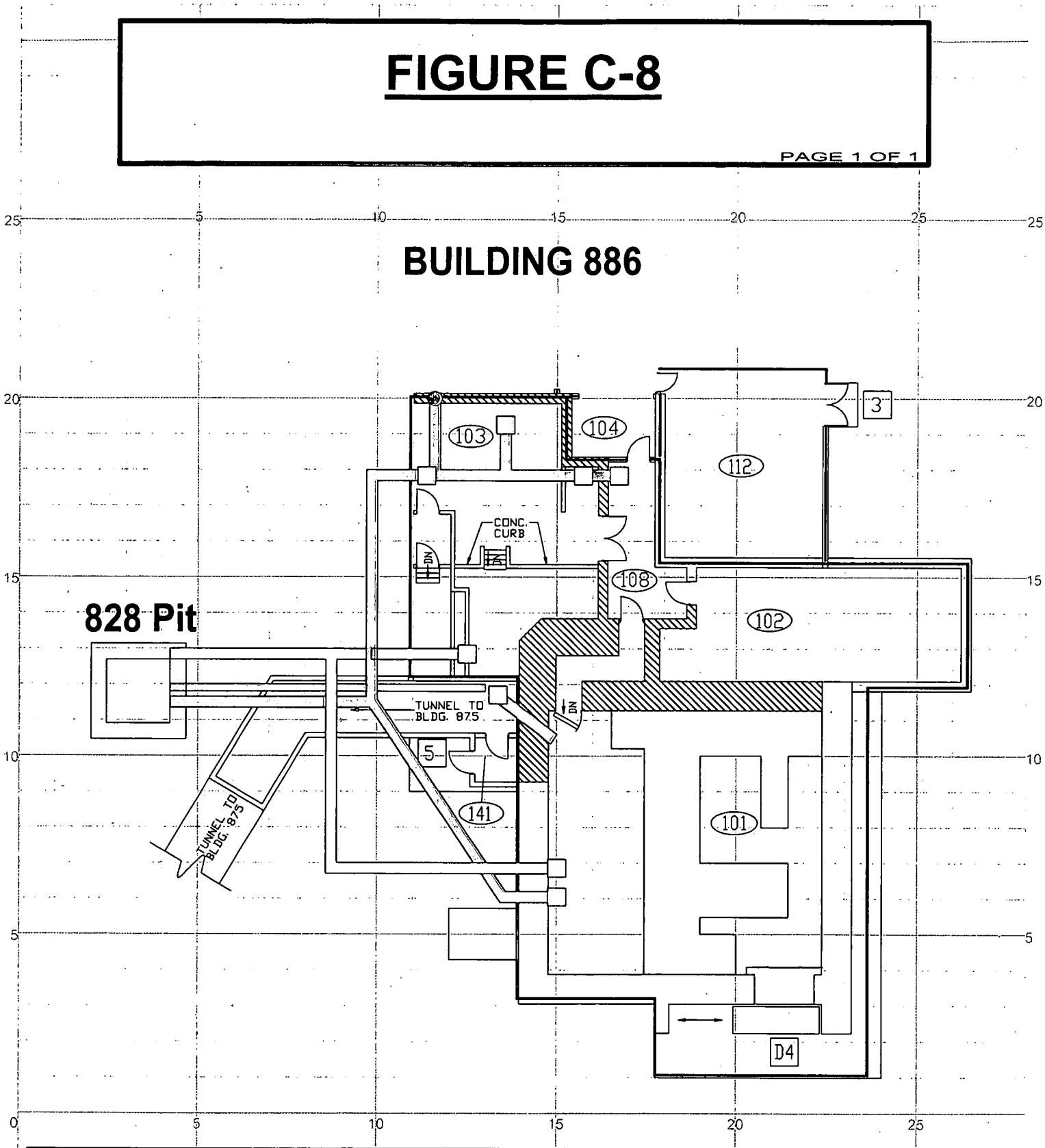
171

ATTACHMENT C-8

Room 141 and Above-Ground Portion of 875 Tunnel

(886-B-008)

FIGURE C-8



SURVEY MAP LEGEND

- Ventilation Duct (8" diameter)
- HUEN Lines (1" diameter)
- Contaminated Drain Piping (2"-3" diameter)
- 2" Vent From Ground thru Roof
- Concrete Block Section
- 3" Hot Plenum Underground

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N

0 FEET 0

0 METERS 0

DRAWING NOT TO SCALE

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for:

KAISER HILL COMPANY

MAP ID: 02-0099/FIGC-8

March 25, 2002

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SURVEY UNIT 886-B-008
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B886, Room 141 & Above Ground Tunnel

174

Total Surface Activity Measurements

	15	15	
	Number Required	Number Obtained	
MIN	-9.7		dpm/100 cm^2
MAX	39.3		dpm/100 cm^2
MEAN	9.1		dpm/100 cm^2
STD DEV	12.7		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	15	15	
	Number Required	Number Obtained	
MIN	-0.9		dpm/100 cm^2
MAX	8.8		dpm/100 cm^2
MEAN	1.0		dpm/100 cm^2
STD DEV	3.3		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

175

SURVEY UNIT B886-B-008
TSA - DATA SUMMARY

Manufacturer:	NE Electra	NE Electra
Model:	DP-6	DP-6
Instrument ID#:	8	10
Serial #:	1379	3110
Cal Due Date:	5/6/02	5/29/02
Analysis Date:	3/28/02	3/28/02
Alpha Eff. (c/d):	0.198	0.205
Alpha Bkgd (cpm)	2.7	3.0
Sample Time (min)	1.5	1.5
LAB Time (min)	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	8	6.0	30.3	4.0	20.2	-1.1
2	8	8.0	40.4	6.7	33.8	9.0
3	8	9.3	47.0	5.3	26.8	15.5
4	8	6.0	30.3	8.7	43.9	-1.1
5	8	8.7	43.9	6.0	30.3	12.5
6	8	5.3	26.8	5.3	26.8	-4.7
7	8	6.0	30.3	8.7	43.9	-1.1
8	8	14.0	70.7	9.3	47.0	39.3
9	8	10.0	50.5	9.3	47.0	19.1
10	8	10.7	54.0	4.7	23.7	22.6
11	8	10.0	50.5	3.4	17.2	19.1
12	8	6.7	33.8	5.3	26.8	2.4
13	8	7.3	36.9	6.7	33.8	5.4
14	8	4.3	21.7	4.0	20.2	-9.7
15	8	8.0	40.4	6.0	30.3	9.0
					31.4	Sample LAB Average
					MIN	-9.7
					MAX	39.3
					MEAN	9.1
					SD	12.7
					Transuranic DCGL$_W$	**100**

1 - Average LAB used to subtract from Gross Sample Activity

QC Measurements

10 QC	10	6.7	32.7	2.0	9.8	21.2
11 QC	10	3.3	16.1	2.7	13.2	4.6
					11.5	QC LAB Average
					QC MIN	4.6
					QC MAX	21.2
					QC MEAN	12.9
					QC SD	11.7
					Transuranic DCGL$_W$	**100**

1 - Average QC LAB used to subtract from Gross Sample Activity

176

SURVEY UNIT B886-B-008
RSC - DATA SUMMARY

Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4
Serial #:	767	1164	770	959
Cal Due Date:	4/30/02	5/13/02	7/25/02	7/14/02
Analysis Date:	3/28/02	3/28/02	3/28/02	3/28/02
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.3	0.1	0.2	0.2
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	8.8	7.0	8.0	8.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	1.0	2.1
2	4	3.0	8.5
3	3	0.0	-0.6
4	2	3.0	8.8
5	4	1.0	2.4
6	4	0.0	-0.6
7	2	0.0	-0.3
8	1	0.0	-0.9
9	3	0.0	-0.6
10	3	0.0	-0.6
11	4	0.0	-0.6
12	2	0.0	-0.3
13	3	0.0	-0.6
14	2	0.0	-0.3
15	1	0.0	-0.9
		MIN	-0.9
		MAX	8.8
		MEAN	1.0
		SD	3.3
		Transuranic $DCGL_W$	20

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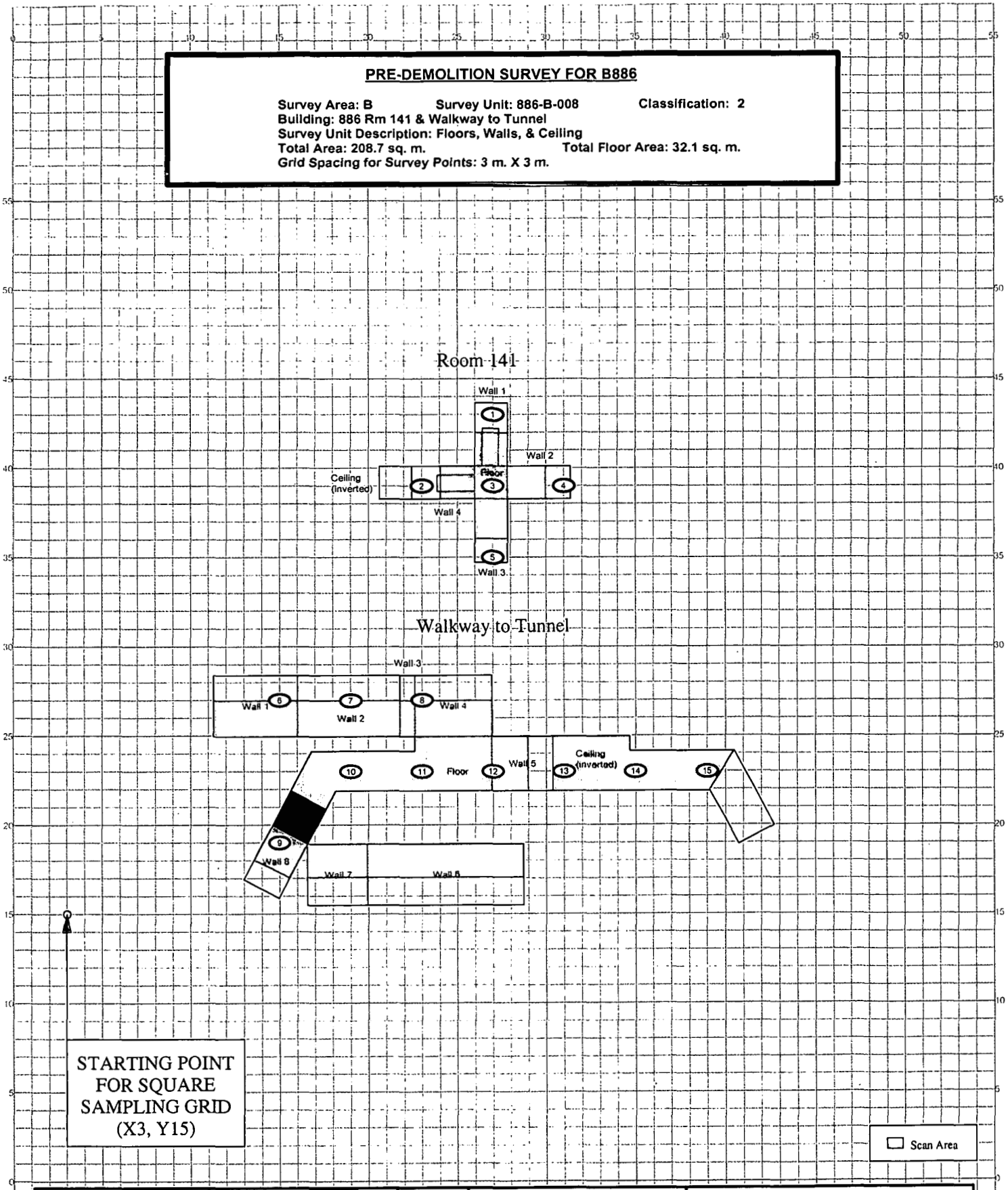
PRE-DEMOLITION SURVEY FOR B886

Survey Area: B **Survey Unit: 886-B-008** **Classification: 2**
Building: 886 Rm 141 & Walkway to Tunnel
Survey Unit Description: Floors, Walls, & Ceiling
Total Area: 208.7 sq. m. **Total Floor Area: 32.1 sq. m.**
Grid Spacing for Survey Points: 3 m. X 3 m.



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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N

0 FEET 30
0 METERS 10
1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): 7, 9, 10
RCT ID #(s): 1, 2, 3

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Rocky Flats Environmental Technology Site

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DynCorp
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Prepared for:
KAISER HILL COMPANY

MAP ID: 02-0099/RM141-SC
March 26, 2002

886-B-008

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ATTACHMENT C-9

886 Exterior – Confirmatory Survey

(Survey Unit 886-B-009, Phase 1)

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	NA	Mfg.	NA
Model	SAC-4	Model	NA	Model	NA
Serial #	767	Serial #	NA	Serial #	NA
Cal Due	4/30/02	Cal Due	NA	Cal Due	NA
Bkg	0.2 cpmα	Bkg	NA cpmα	Bkg	NA cpmα
Efficiency	33.00 %	Efficiency	NA %	Efficiency	NA %
MDA	<20 dpmα	MDA	NA dpmα	MDA	NA dpmα
Mfg.	Eberline	Mfg.	NA	Mfg.	NA
Model	BC-4	Model	NA	Model	NA
Serial #	911	Serial #	NA	Serial #	NA
Cal Due	10/30/02	Cal Due	NA	Cal Due	NA
Bkg	36 cpmβ	Bkg	NA cpmβ	Bkg	NA cpmβ
Efficiency	25.00 %	Efficiency	NA %	Efficiency	NA %
MDA	<200 dpmβ	MDA	NA dpmβ	MDA	NA dpmβ

Survey Type: Contamination
Building: B886 exterior phase one
Location: Outside and roof of building
Purpose: Phase one verification survey

RWP #: NA

Date: 3/12/02 **Time:** 0800

[redacted]

PRN/REN # : NA

415-84-9

Comments: Random swipes taken on exterior of building 886

RCT: W. Finnie William H. Finnie

SURVEY RESULTS

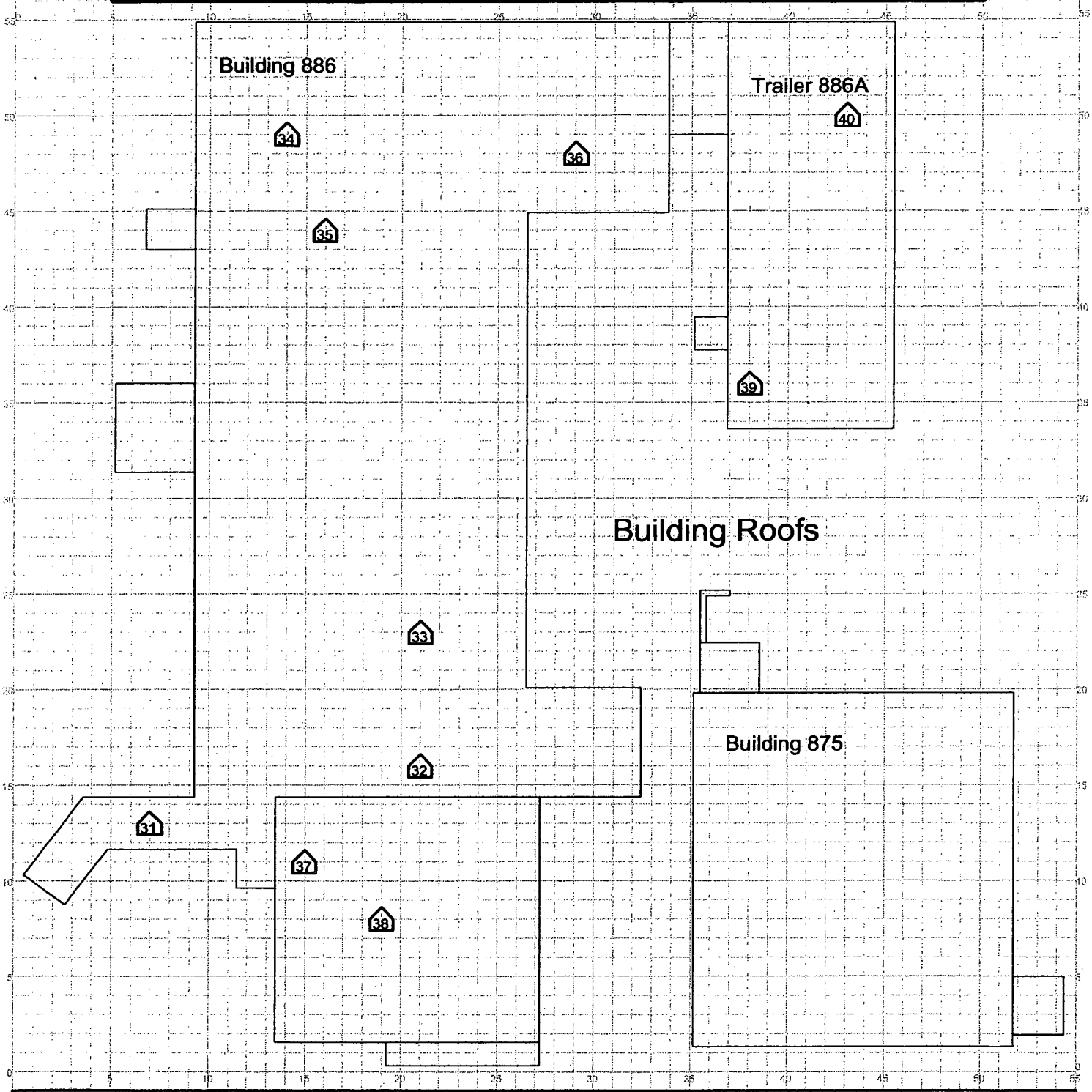
Swipe #	Location / Description Results in DPM/100sq.cm	Removable Alpha	Removable Beta	Total Alpha	Total Beta	Swipe #	Location / Description Results in DPM/100sq.cm	Removable Alpha	Removable Beta	Total Alpha	Total Beta
1	See attached map	<20	<200	NA	NA	26	See attached map	<20	<200	NA	NA
2	See attached map	<20	<200	NA	NA	27	See attached map	<20	<200	NA	NA
3	See attached map	<20	<200	NA	NA	28	See attached map	<20	<200	NA	NA
4	See attached map	<20	<200	NA	NA	29	See attached map	<20	<200	NA	NA
5	See attached map	<20	<200	NA	NA	30	See attached map	<20	<200	NA	NA
6	See attached map	<20	<200	NA	NA	31	See attached map	<20	<200	NA	NA
7	See attached map	<20	<200	NA	NA	32	See attached map	<20	<200	NA	NA
8	See attached map	<20	<200	NA	NA	33	See attached map	<20	<200	NA	NA
9	See attached map	<20	<200	NA	NA	34	See attached map	<20	<200	NA	NA
10	See attached map	<20	<200	NA	NA	35	See attached map	<20	<200	NA	NA
11	See attached map	<20	<200	NA	NA	36	See attached map	<20	<200	NA	NA
12	See attached map	<20	<200	NA	NA	37	See attached map	<20	<200	NA	NA
13	See attached map	<20	<200	NA	NA	38	See attached map	<20	<200	NA	NA
14	See attached map	<20	<200	NA	NA	39	See attached map	<20	<200	NA	NA
15	See attached map	<20	<200	NA	NA	40	See attached map	<20	<200	NA	NA
16	See attached map	<20	<200	NA	NA	NA	NA	NA	NA	NA	NA
17	See attached map	<20	<200	NA	NA	NA	NA	NA	NA	NA	NA
18	See attached map	<20	<200	NA	NA	NA	NA	NA	NA	NA	NA
19	See attached map	<20	<200	NA	NA	NA	NA	NA	NA	NA	NA
20	See attached map	<20	<200	NA	NA	NA	NA	NA	NA	NA	NA
21	See attached map	<20	<200	NA	NA	NA	NA	NA	NA	NA	NA
22	See attached map	<20	<200	NA	NA	NA	NA	NA	NA	NA	NA
23	See attached map	<20	<200	NA	NA	NA	NA	NA	NA	NA	NA
24	See attached map	<20	<200	NA	NA	NA	NA	NA	NA	NA	NA
25	See attached map	<20	<200	NA	NA	NA	NA	NA	NA	NA	NA

Date Reviewed: 3-13-02 **RS Supervision:** [redacted]

180

VERIFICATION SMEAR SURVEY FOR B886 EXTERIOR PHASE 1 AREAS

Survey Area: N/A **Survey Unit: N/A** **Classification: N/A**
Building: 886
Survey Unit Description: B886 Phase 1 Exterior Surfaces
Total Area: N/A **Total Floor Area: N/A**



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Smear Location
- Open/Inaccessible Area

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N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): N/A
RCT ID #(s): N/A

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for:
KAISER HILL

MAP ID: 02-0099/SMEAR-EX1 March 11, 2002

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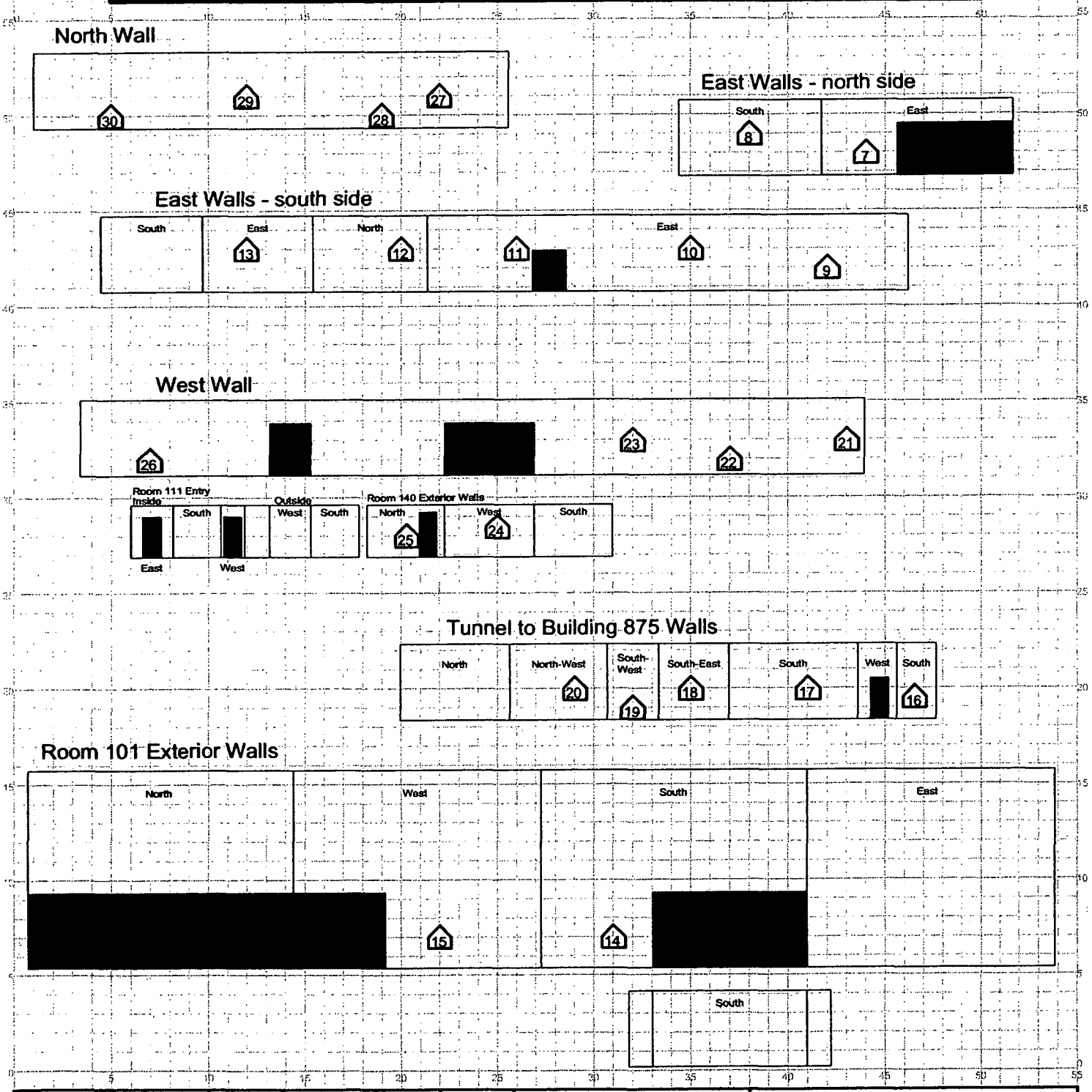
VERIFICATION SMEAR SURVEY FOR B886 EXTERIOR PHASE 1 AREAS

Survey Area: N/A **Survey Unit: N/A** **Classification: N/A**
Building: 886
Survey Unit Description: B886 Phase 1 Exterior Surfaces
Total Area: N/A **Total Floor Area: N/A**



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Smear Location
- Open/Inaccessible Area

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N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): N/A
RCT ID #(s): N/A

U.S. Department of Energy
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MAP ID: 02-0099/SMEAR-EX2 March 11, 2002

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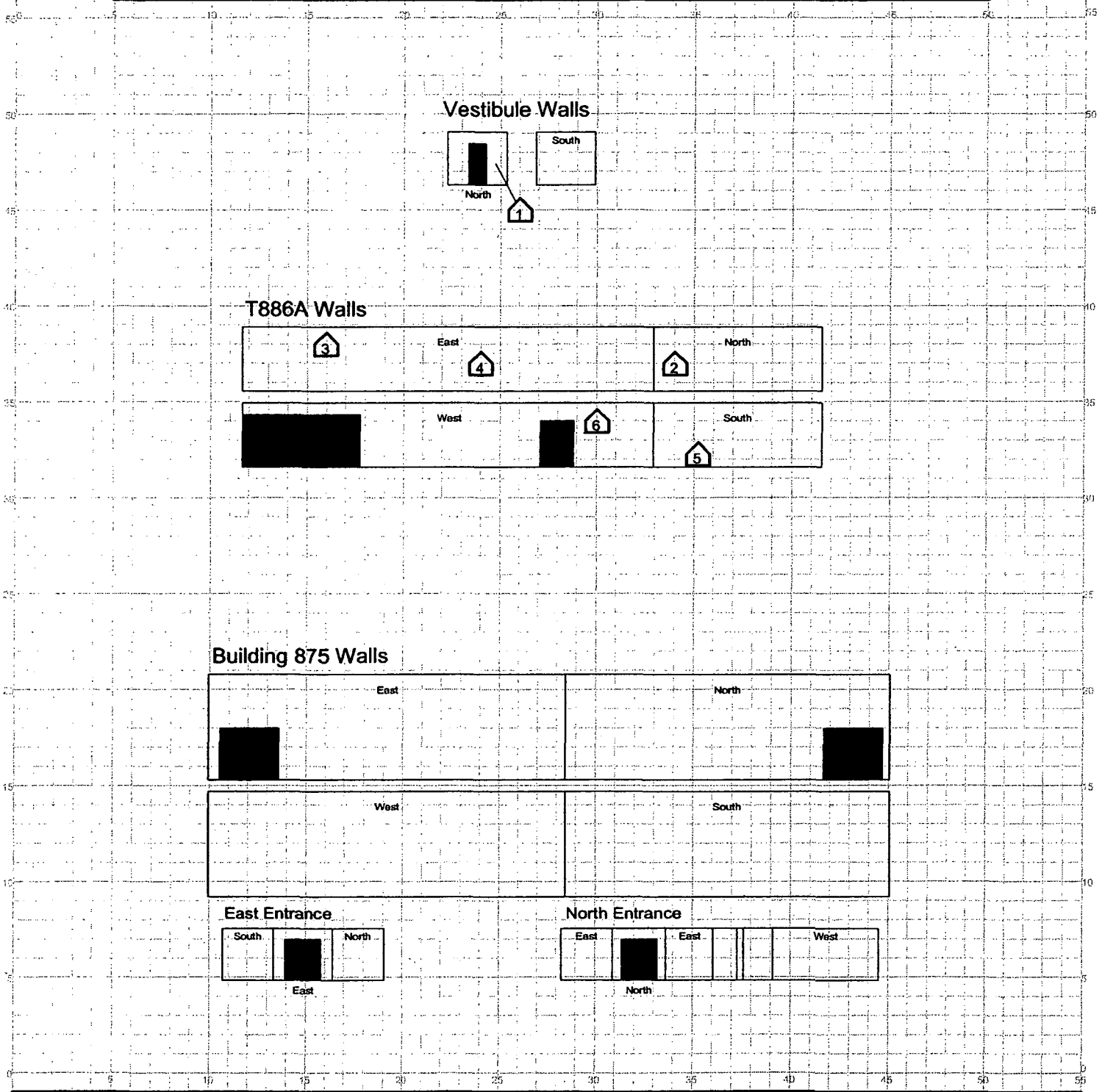
VERIFICATION SMEAR SURVEY FOR B886 EXTERIOR PHASE 1 AREAS

Survey Area: N/A **Survey Unit: N/A** **Classification: N/A**
Building: 886
Survey Unit Description: B886 Phase 1 Exterior Surfaces
Total Area: N/A **Total Floor Area: N/A**



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Smear Location
- Open/Inaccessible Area

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N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): N/A
RCT ID #(s): N/A

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MAP ID: 02-0099/SMEAR-EX3 March 11, 2002

183

ATTACHMENT C-10

886 Interior Phase 1 Rooms and T886A – Confirmatory Survey

(Survey Unit 886-A-001, Phase 1)

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	NA	Mfg.	NA
Model	SAC-4	Model	NA	Model	NA
Serial #	767	Serial #	NA	Serial #	NA
Cal Due	4/30/02	Cal Due	NA	Cal Due	NA
Bkg	0.2 cpmα	Bkg	NA cpmα	Bkg	NA cpmα
Efficiency	33.00 %	Efficiency	NA %	Efficiency	NA %
MDA	<20 dpmα	MDA	NA dpmα	MDA	NA dpmα
Mfg.	Eberline	Mfg.	NA	Mfg.	NA
Model	BC-4	Model	NA	Model	NA
Serial #	911	Serial #	NA	Serial #	NA
Cal Due	10/30/02	Cal Due	NA	Cal Due	NA
Bkg	36 cpmβ	Bkg	NA cpmβ	Bkg	NA cpmβ
Efficiency	25.00 %	Efficiency	NA %	Efficiency	NA %
MDA	<200 dpmβ	MDA	NA dpmβ	MDA	NA dpmβ

Survey Type: Contamination
Building: B886
Location: INTERIOR
Purpose: Phase one verification survey
RWP #: NA
Date: 3/12/02 Time: 0800
[redacted]

PRN/REN # : NA SDW 3-12-02
Comments: Random swipes taken on ~~exterior~~ of building 886 SDW 3/12/02 ~~RCT: W. Plante~~
INTERIOR

SURVEY RESULTS

Swipe #	Location / Description Results in DPM/100sq.cm	Removable Alpha	Removable Beta	Total Alpha	Total Beta
1	See attached map	<20	<200	NA	NA
2	See attached map	<20	<200	NA	NA
3	See attached map	<20	<200	NA	NA
4	See attached map	<20	<200	NA	NA
5	See attached map	<20	<200	NA	NA
6	See attached map	<20	<200	NA	NA
7	See attached map	<20	<200	NA	NA
8	See attached map	<20	<200	NA	NA
9	See attached map	<20	<200	NA	NA
10	See attached map	<20	<200	NA	NA
11	See attached map	<20	<200	NA	NA
12	See attached map	<20	<200	NA	NA
13	See attached map	<20	<200	NA	NA
14	See attached map	<20	<200	NA	NA
15	See attached map	<20	<200	NA	NA
16	See attached map	<20	<200	NA	NA
17	See attached map	<20	<200	NA	NA
18	See attached map	<20	<200	NA	NA
19	See attached map	<20	<200	NA	NA
20	See attached map	<20	<200	NA	NA
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22	See attached map	<20	<200	NA	NA
23	See attached map	<20	<200	NA	NA
24	See attached map	<20	<200	NA	NA
25	See attached map	<20	<200	NA	NA
26	See attached map	<20	<200	NA	NA
27	See attached map	<20	<200	NA	NA
28	See attached map	<20	<200	NA	NA
29	See attached map	<20	<200	NA	NA
30	See attached map	<20	<200	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
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NA	NA	NA	NA	NA	NA
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NA	NA	NA	NA	NA	NA
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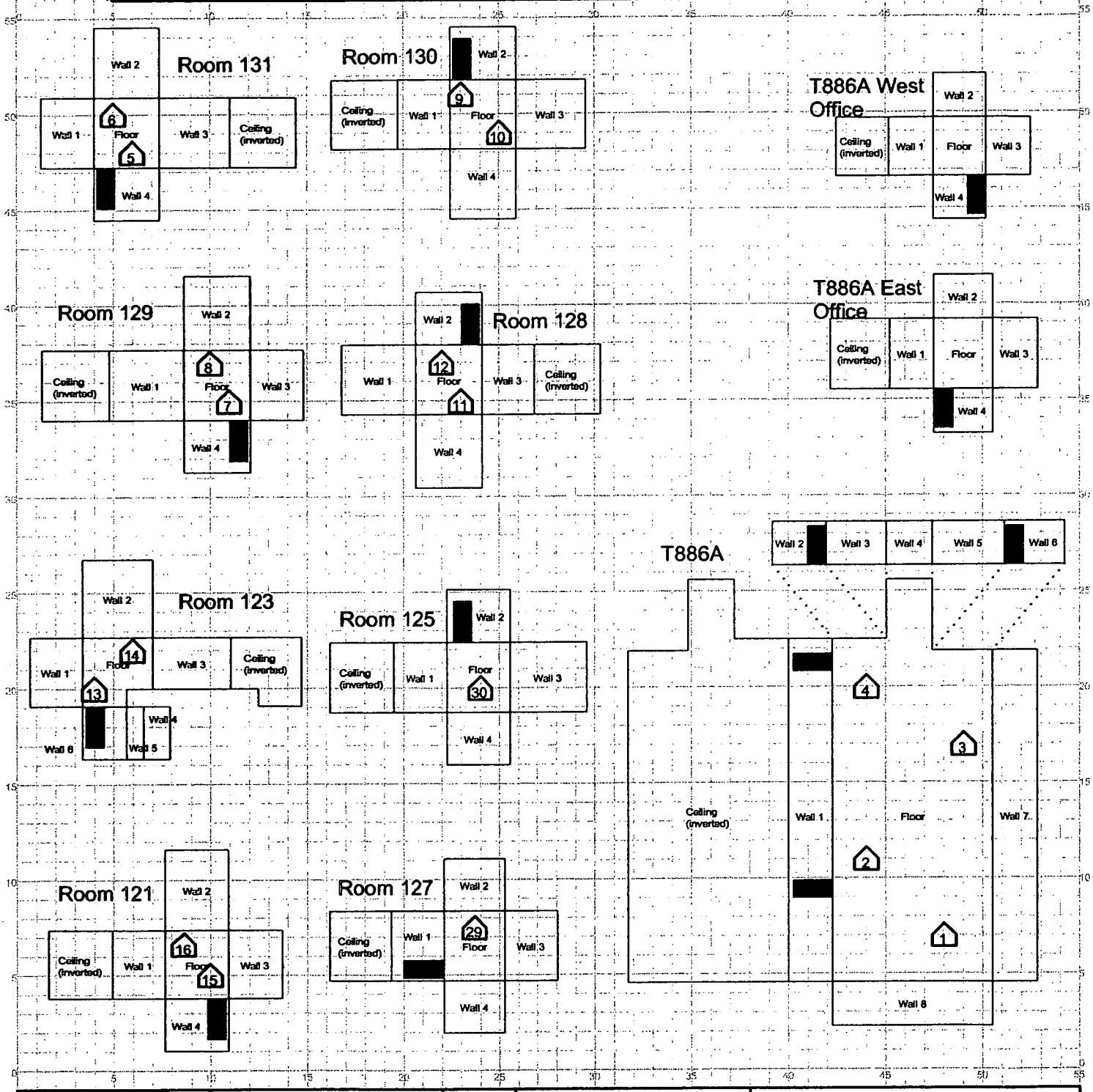
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Date Reviewed: 3-13-02 **RS Supervision:** [redacted]

VERIFICATION SMEAR SURVEY FOR B886 INTERIOR PHASE 1 AREAS

Survey Area: N/A **Survey Unit: N/A** **Classification: N/A**
Building: 886
Survey Unit Description: B886 Phase 1 Interior Surfaces
Total Area: N/A **Total Floor Area: N/A**



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Smear Location
- Open/Inaccessible Area

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N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): N/A
RCT ID #(s): N/A

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for: KAISER HILL

MAP ID: 02-0099/SMEAR-IN1

March 11, 2002

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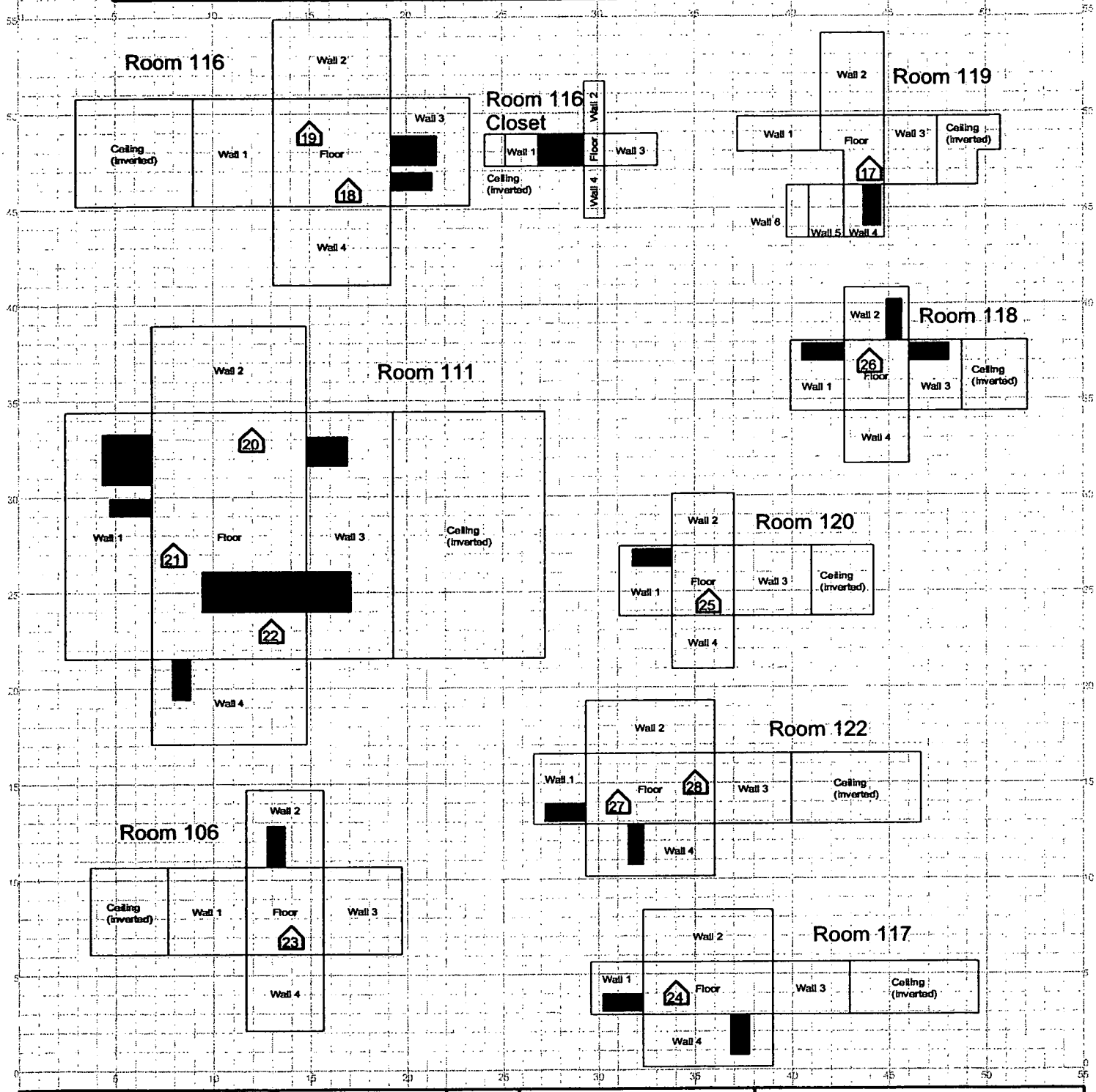
VERIFICATION SMEAR SURVEY FOR B886 INTERIOR PHASE 1 AREAS

Survey Area: N/A **Survey Unit: N/A** **Classification: N/A**
Building: 886
Survey Unit Description: B886 Phase 1 Interior Surfaces
Total Area: N/A **Total Floor Area: N/A**



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Smear Location
- Open/Inaccessible Area

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N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s): N/A
RCT ID #(s): N/A

U.S. Department of Energy
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THE ART OF TECHNOLOGY

Prepared for:
KAISER HILL

MAP ID: 02-0099/SMEAR-IN2

March 11, 2002

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ATTACHMENT D

Chemical Data Summaries and Sample Maps

Beryllium Data Summary

Sample Number	Survey Map Location Point	Sample Location	Result ($\mu g/100\ cm^2$)
Building T452A			
886-03212001-05-001	1	Room 104, floor sample, NE corner	< 0.1
886-03212001-05-002	2	Room 104, floor sample, SE corner	< 0.1
886-03212001-05-003	3	Room 104, floor sample, Center	< 0.1
886-03212001-05-004	4	Room 104, floor sample, NW corner	< 0.1
886-03212001-05-005	5	Room 104, floor sample, beneath desk, SW corner	< 0.1

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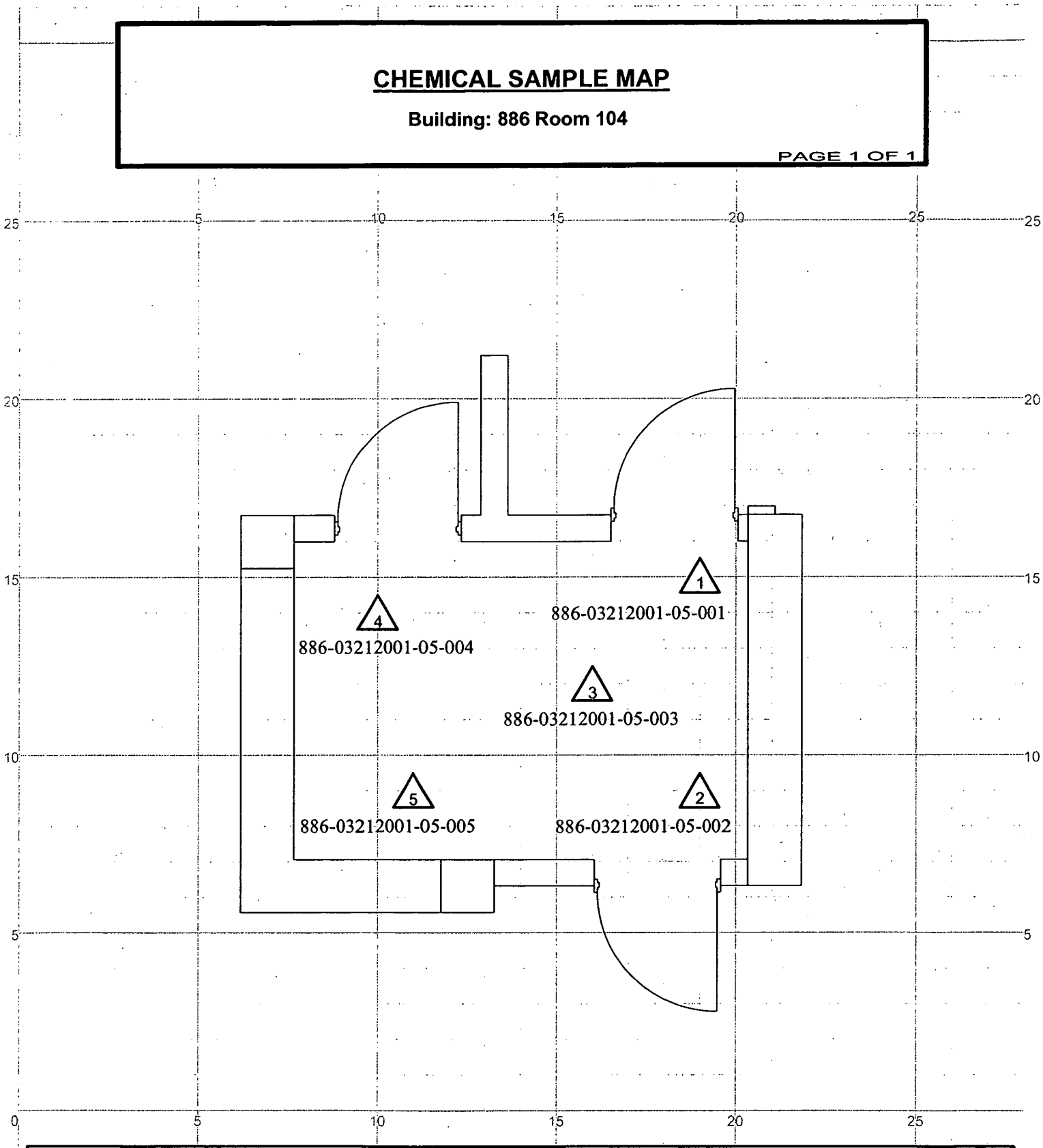
CHEMICAL SAMPLE MAP

Building: 886 Room 104



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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N

0 FEET 15

0 METERS 5

1 inch = 12 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for: KAISER HILL

MAP ID: 02-0099/104-BE

March 12, 2002

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ATTACHMENT E

Data Quality Assessment (DQA) Detail

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION (V&V) OF RESULTS

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

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

All relevant Quality records supporting this report are maintained in the RISS Characterization Project File. The report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators. All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

No beta/gamma survey designs were implemented for 886 Cluster facilities based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process. Stated differently, based on the well-established suite of actinides historically used at the RFETS, all of these actinides would emit alpha radiation in exceedance of the applicable transuranic DCGLs before other DCGLs would be exceeded for their respective Uranium species – Technical Basis Document 00162, Rev. 0, *Technical Justification for Types of Surveys Performed During Reconnaissance Level Characterization Surveys and Pre-Demolition Surveys in RISS Facilities,* corroborates the use of this approach.

Consistent with EPA's G-4 DQO process, the radiological survey design (for survey units performed per PDS requirements) was optimized by checking actual measurement results (acquired during pre-demolition surveys) against model output with original estimates. Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired.

DQA SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs. All data are useable based on the qualifications stated herein and are considered satisfactory without qualification. All media surveyed and sampled per PDS requirements yielded results less than their associated action levels and with acceptable certainties. All radiological and chemical contamination identified during the previous RLC(s) and IPC(s) have been successfully decontaminated, dispositioned and/or abated. Additionally, the following anomalies have been addressed as follows:

- One Post Media TSA (203 $DCGL_w$) contamination location (exposed cement after paint chip removal) identified on the south wall of Room 101. This location was hydrolazed prior to the PDS and PDS survey results showed all radiological results were below both the Uranium and Transuranic unrestricted release levels.

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- An elevated reading in Room 101 (203 $DCGL_w$) resulted in a standard deviation greater than 30 (actual standard deviation of 33.3.). The area was hydrolayzed removing all contamination as confirmed in PDS results. Post hydrolayzing surveys indicated no elevated activity, and the follow-up standard deviation calculation was less than 30% and is acceptable per MARSSIM guidelines.
- Room 104 was used to analyze beryllium samples taken during operational activities. Upon completion of these activities, and in accordance with the 886 Cluster Phase 1 PDS Chemical Characterization Plan, five beryllium samples were taken in room 104 which confirmed no beryllium contamination exists. However, the Phase 1 PDS Chemical Characterization Plan required the five beryllium survey results for Room 104 be reported in the Phase 2, Part 1 PDSR and are reported in Table E-2, *V&V of Beryllium Survey Results For B886 Phase 2 - Part 1.* All beryllium results were less than the associated action levels.

Completion of this PDSR confirmed that PDS contamination release guidelines were met. Level 1 Isolation Control postings are displayed in affected areas to ensure PDSR integrity. In summary, the 886 Cluster PDSR Phase 2, Part 1 facilities meet the unrestricted release criteria with the confidences stated herein.

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Table E-1 V&V of Radiological Surveys For B886 Phase 2 - Part 1

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS				
	Parameters	Measure	frequency	COMMENTS
ACCURACY	initial calibrations	90%<x<110%	≥1	Multi-point calibration through the measurement range encountered in the field; programmatic records.
	daily source checks	80%<x<120%	≥1/day	Performed daily/within range.
	local area background: Field	typically < 10 dpm	≥1/day	All local area backgrounds were within expected ranges (i.e., no elevated anomalies.)
PRECISION	field duplicate measurements for TSA	≥5% of real survey points	≥10% of reals	N/A
REPRESENTATIVENESS	MARSSIM gridding methodology: (Survey Units 886-A-001, 886-A-002, 886-A-003, 886-A-004, 886-B-005, 886-B-006, 886-B-008 & 886-C-009.)	statistical and biased	NA	Random w/ statistical confidence.
	Survey Maps	NA	NA	Random and biased measurement locations controlled/mapped to ±1m.
	Controlling Documents (Characterization Pkg; RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	units of measure	dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual surveys usable results vs. unusable	>95% >95%	NA	See Table E-2 for details.
SENSITIVITY	detection limits	TSA: ≤50 dpm/100cm^2 RA: ≤10 dpm/100cm^2	all measures	MDAs ≤ ½ $DCGL_w$ per MARSSIM guidelines.

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Table E-2 V&V Of Chemical Results-Beryllium For B886 Part 2 – Phase 1

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Johns Manville, Littleton, Co.	
QUALITY REQUIREMENTS		RIN ---->	01D0634	
		Measure	frequency	COMMENTS
ACCURACY	Calibrations Initial	linear calibration	≥1	No qualifications significant enough to change project decisions, i.e., all results were below associated action levels.
	Continuing	80%<%R<120%	≥1	
	LCS/MS	80%<%R<120%	≥1	
	Blanks - lab & field	<MDL	≥1	
	interference check std (ICP)	NA	NA	
PRECISION	LCSD	80%<%R<120% (RPD<20%)	≥1	
	field duplicate	all results < RL	≥1	
REPRESENTATIVENESS	COC	Qualitative	NA	
	hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	measurement units	ug/100cm^2	NA	
COMPLETENESS	Plan vs. Actual samples usable results vs. unusable	>95% >95%	NA	
SENSITIVITY	detection limits	MDL of 0.012 ug/100cm^2	all measures	

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Table E-3 Data Completeness Summary For B886 Phase 2 – Part 1

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Beryllium	Survey Area: B886 Room 104	5 biased (interior)	5 biased (interior)	No contamination found at any location	OSHA ID-125G – RIN01D0634 No results above the action level (0.2 ug/100cm^2) or investigative level (0.1 ug/100cm^2.)
Radiological	Survey Unit: 886-A-001 Room 101 (interior)	19 α TSA and 19 α Smears (systematic) 2 QC TSA 100% scan	38 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release levels	RIN02D0862 – 3 samples analyzed in situ gamma spectroscopy – none detect for Pu, below the $DCGL_w$ for Uranium. No results above $DCGL_W$ or $DCGL_{EMC}$ action level (1,000 dpm/100cm^2 removable, 5,000 dpm/100cm^2 average, and 15,000dpm/100cm^2 maximum). Room 101 survey performed to PDS Uranium release limits (noted above.)
Radiological	Survey Unit: 886-A-001 Room 101 Pre Media (interior)	37 α TSA and 37 α Smears (systematic) 2 QC TSA	74 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (1,000 dpm/100cm^2 removable, 5,000 dpm/100cm^2 average, and 15,000 dpm/100cm^2 maximum). Room 101 survey performed to PDS Uranium release limits (noted above.) Pre Media Samples = painted wall.

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Table E-3 Data Completeness Summary For B886 Phase 2 – Part 1

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Unit: 886-A-001 Room 101 Post Media (interior)	37 α TSA and 37 α Smears (systematic) 2 QC TSA	74 real, 2 QC (interior)	One Post Media TSA survey location (#16) had elevated contamination (203 $DCGL_w$) - area was hydrolazed removing all contamination as confirmed in the PDS results	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (1,000 dpm/100cm^2 removable, 5,000 dpm/100cm^2 average, and 15,000 dpm/100cm^2 maximum). Room 101 survey performed to PDS Uranium release limits (noted above.) Post Media Samples = exposed concrete (wall) after paint chip removal. Elevated activity (203 $DCGL_w$) at sample location #16 resulted in a standard deviation >30 (actual std. deviation of 33.3.) Area was hydrolazed removing all elevated contamination as confirmed in PDS. Therefore, post-decon standard deviation calculation was less than 30% and is acceptable per MARSSIM guidelines.
Radiological	Survey Unit: 886-A-001 Room 101 (Paint and Media) (interior)	37 Samples Uranium/ Transuranic (systematic)	37 real (interior-media and paint samples)	No contamination at any location; all values below unrestricted release levels	RIN02D0592 – analysis performed by gamma spectroscopy – all results were below the Transuranic & Uranium $DCGL_w$. No results above $DCGL_W$ or $DCGL_{EMC}$ action level for either Uranium (1,000 dpm/100cm^2 removable, 5,000 dpm/100cm^2 average, and 15,000 dpm/100cm^2 maximum) or Transuranic (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum).
Radiological	Survey Unit: 886-A-003 Room 102 (interior)	16 α TSA & 16 α Smears (systematic) 2 QC TSA	32 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum).

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Table E-3 Data Completeness Summary For B886 Phase 2 – Part 1

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
		100% scan		levels	Room 102 surveyed to PDS Transuranic release limits (noted above.)
Radiological	Survey Unit: 886-A-003 Room 102 Pre Media (interior)	22 α TSA & 22 α Smears (systematic) 2 QC (TSA)	44 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum). Room 102 surveyed to PDS Transuranic release limits (noted above.) Pre Media Samples = painted wall.
Radiological	Survey Unit: 886-A-003 Room 102 Post Media (interior)	22 α TSA & 22 α Smears (systematic) 2 QC (TSA)	44 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum). Room 102 surveyed to PDS Transuranic release limits (noted above.) Post Media Samples = exposed concrete (wall) after paint chip removal.
Radiological	Survey Unit: 886-A-003 Room 102 Paint/Media - Samples (interior)	22 Samples Uranium/ Transuranic (systematic)	22 real (interior-media and paint samples)	No contamination at any location; all values below unrestricted release levels	RIN02D0597 – analysis performed by gamma spectroscopy – all results were below the Transuranic and Uranium $DCGL_w$. No results above $DCGL_W$ or $DCGL_{EMC}$ action level for either Uranium (1,000 dpm/100cm^2 removable, 5,000 dpm/100cm^2 average, and 15,000 dpm/100cm^2 maximum) or Transuranic (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum).

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Table E-3 Data Completeness Summary For B886 Phase 2 – Part 1

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Unit: 886-B-006 Room 114 (interior)	18 α TSA & 18 α Smears 2 QC (TSA) 100% floor/50% wall & ceiling scan (systematic)	36 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum).
Radiological	Survey Unit: 886-C-009 Rooms 107, 109, 110, 113, 115 126, 126A, 126B and 140 (interior floors, walls and ceiling-int.)	28 α TSA (15 random/13 biased) 28 α Smears (15 random/13 biased) 2 QC (TSA) 5% Scan	56 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum).
Radiological	Survey Unit: 886-B-008 Room 141 and Tunnel Walkway (interior)	15 α TSA and 15 α Smears (systematic) 2 QC TSA 50% scan walls and ceiling/100% scan floor	30 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum). Room 141 and Tunnel walkway surveyed to PDS Transuranic release limits.
Radiological	Survey Unit: 886-B-005 Room 112 (interior)	16 α TSA and 16 α Smears (systematic) 2 QC TSA 50% scan on walls	32 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum). Room 112 surveyed to PDS Transuranic release limits.

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Table E-3 Data Completeness Summary For B886 Phase 2 – Part 1

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
		& ceiling/100% scan on floor			
Radiological	Survey Unit: 886-A-004 Room 103 (interior)	19 α TSA & 19 α Smears 2 QC (TSA) 100% scan of all areas except ceiling* (systematic)	38 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release levels	RIN02S0121.001 (in situ) and RIN02S0121.002 – 1 concrete scrape sample analyzed by gamma spectroscopy. RIN02D0988 – 4 concrete scrape samples analyzed by gamma spectroscopy. Confirmed presence of Uranium, no Transuranic detected (both RIN #s.) Therefore, Room 103 Pit floor and wall surveys performed to PDS Uranium release limits, all remaining Room 103 areas surveyed to PDS Transuranic limits (noted below.) No PDS results above $DCGL_W$ or $DCGL_{EMC}$ action level for either Uranium (1,000 dpm/100cm^2 removable, 5,000 dpm/100cm^2 average, and 15,000 dpm/100cm^2 maximum – as applicable) or Transuranic (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum – as applicable). *ceiling was removed as Low Level Waste during PDS.
Radiological	Survey Unit: 886-A-004 Room 103 Pre Media (interior)	18 α TSA and 18 α Smears (systematic) 2 QC TSA	36 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum). Room 103 survey performed to PDS Uranium release limits (noted above.) Pre Media Samples = painted wall.

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Table E-3 Data Completeness Summary For B886 Phase 2 – Part 1

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Unit: 886-A-004 Room 103 Post Media (interior)	18 α TSA and 18 α Smears (systematic) 2 QC TSA	36 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum). Room 103 survey performed to PDS Uranium and Transuranic release limits (noted above.) Post Media Samples = exposed concrete (wall) after paint chip removal.
Radiological	Survey Unit: 886-A-004 Room 103 (Paint and Media-interior)	18 Samples Uranium/ Transuranic (systematic)	18 real (interior-media/paint samples)	No contamination at any location; all values below unrestricted release levels	RIN02D0595 – analysis performed by gamma spectroscopy – all results were below the Transuranic and Uranium $DCGL_w$. Therefore, Room 103 Pit survey performed to PDS Uranium release limits, the remaining 103 areas surveyed to PDS Transuranic limits (see below.) No results above $DCGL_W$ or $DCGL_{EMC}$ action level for Uranium (1,000 dpm/100cm^2 removable, 5,000 dpm/100cm^2 average, and 15,000 dpm/100cm^2 maximum) or Transuranic (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum).
Radiological	Survey Unit: 886-A-002 Rooms 104 and 108 (interior)	15 α TSA and 15 α Smears (systematic) 2 QC TSA 100% scan	30 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum). Rooms 104 and 108 surveys performed to PDS Transuranic release limits (noted above.)

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Table E-3 Data Completeness Summary For B886 Phase 2 – Part 1

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Unit: 886-A-002 Rooms 104 and 108 Pre Media (interior)	30 ά TSA and 30 ά Smears (systematic) 2 QC TSA	60 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum). Rooms 104 and 108 surveys performed to PDS Transuranic release limits (noted above.) Pre Media Samples = painted wall.
Radiological	Survey Unit: 886-A-002 Rooms 104 and 108 Post Media (interior)	30 ά TSA and 30 ά Smears (systematic) 2 QC TSA	60 real, 2 QC (interior)	No contamination at any location; all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum). Rooms 104 and 108 surveys performed to PDS Transuranic release limits (noted above.) Post Media Samples = exposed concrete (wall) after paint chip removal.
Radiological	Survey Unit: 886-A-002 Rooms 104 and 108 (Paint and Media-interior)	30 Samples Uranium/ Transuranic (systematic)	30 real (interior-media and paint samples)	No contamination at any location; all values below unrestricted release levels	RIN02D0594 – analysis performed by gamma spectroscopy – all samples below the Transuranic $DCGL_w$ No results above $DCGL_W$ or $DCGL_{EMC}$ action level for Transuranic (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum).

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