3001 0406100007

CH2M HILL
Mound, Inc.
1 Mound Road
P.O. Box 3030
Miamisburg, OH
45343-3030

CH2MHILL

SM-039/03
June 26, 2003

Mr. Richard B. Provencher, Director
Miamisburg Closure Project
U. S. Department of Energy
P. O. Box 66
Miamisburg, OH 45343-0066

ATTENTION: Paul Lucas

SUBJECT: Contract No. DE-AC24-03OH20152
BUILDING 34 BUILDING DATA PACKAGE, FINAL
Bldg 34-GFS/I: Planning Documents Complete- Activity ID: EBDEE034BK

REFERENCE: Statement of Work Requirement 055 - Regulator Reports

Dear Mr. Provencher:

Paul Lucas from your office has approved the release of the following final document:

- Building 34, Building Data Package, Final

If you or members of your staff have any questions regarding the document, or if additional support is needed, please contact Bob Ransbottom at extension 4220.

Sincerely,

R.C. Ransbottom for K.L. Kehler

K. L. Kehler
SMPP/TFV Project Manager

KLK/VKD

Enclosures

Approved: Paul Lucas 6/26/03
Paul Lucas Date
CERCLA Program Manager

cc: Dave Seely, USEPA, (1) w/attachments
Brian Nickel, OEPA, (1) w/attachments
Ruth Vandegrift, ODH, (1) w/attachments
Frank Schmaltz, DOE/MCP, (1) w/attachments
Lisa Rawls, DOE/MCP, w/o attachments
Randy Tormey, DOE/MCP, (1) w/attachments
Terry Tracy, DOE/HQ, (1) w/attachments
Dann Bird, MMCIC, (1) w/attachments
Jim Bonfiglio, MESH, (1) w/attachments
Public Reading Room, (4) w/attachments
John Fulton, CH2M Hill, w/o attachments
Bob Ransbottom, CH2M Hill, (1) w/attachments
Val Darnell, CH2M Hill, (1) w/attachments
Kurt Kehler, CH2M Hill, (1) w/attachments
DCC (1) w/attachments
Admin Record (2) w/attachments

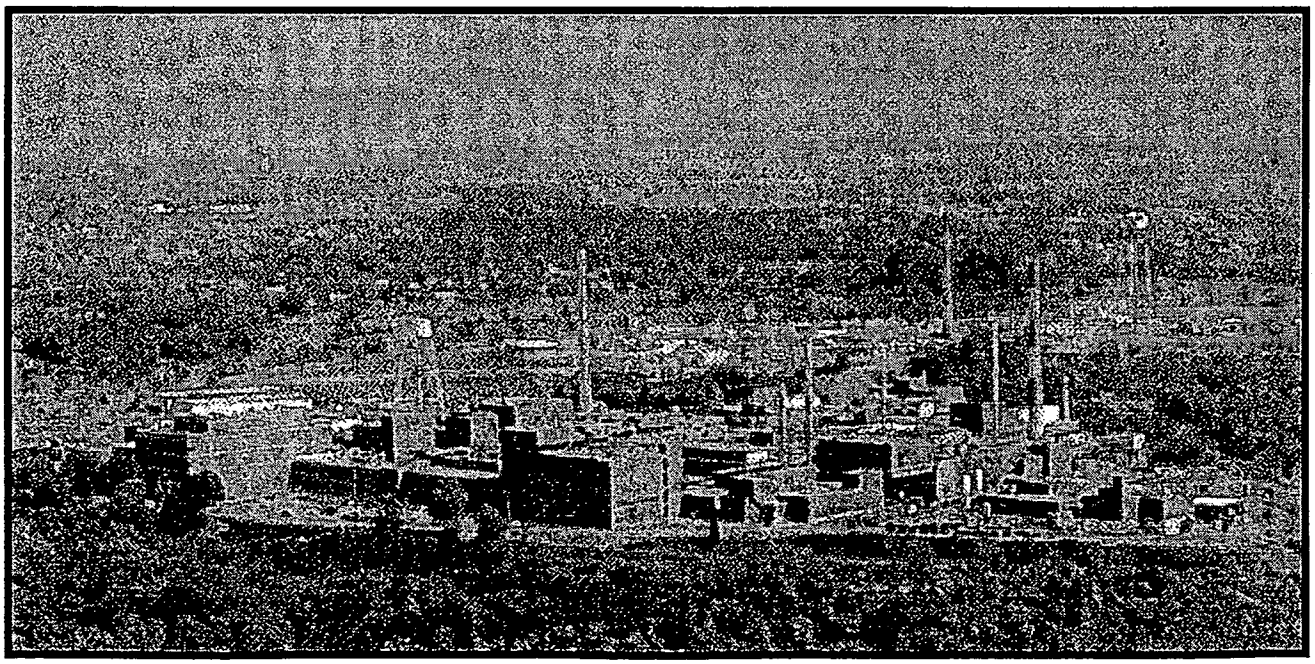
Environmental
Restoration
Program

Miamisburg Closure Project
Building Data Package

Building 34

(Demolition)

Final
June 2003



THE MIAMISBURG/WEST CARROLLTON NEWS

Wednesday, May 21, 2003

Miamisburg Closure Project

MIAMISBURG CLOSURE PROJECT
BUILDING DATA PACKAGE

OhioEPA

The following Building Data Package (BDP) will be available on May 22, 2003 for your information in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio.

BDP Building 34: Emergency Brigade Training Facility

Questions can be referred to Frank Schmaltz at (937) 847-8350, ext. 304.

BDP Building 34

REV	DESCRIPTION	DATE
WORKING DRAFT (to DOE)		**May 2003**
DRAFT (to Core Team)	BDPs for construction demolitions undergo simultaneous review by the Core Team and public.	**N/A**
DRAFT PROPOSED FINAL (incorporates Core Team comments)		**N/A**
PUBLIC REVIEW DRAFT	The public review period will commence on May 22, 2003.	**May 2003**
FINAL	No comments from USEPA, Ohio EPA, or the public were received.	**June 2003**

TABLE OF CONTENTS

Section Page

1.0 General Overview 1
- 1.1 Introduction 1
- 1.2 Scope 1

2.0 Building 34 Overview 2
- 2.1 Past Uses of Building 34 3
- 2.2 Current Uses of Building 34 5
- 2.3 Summary of Environmental Concerns and Findings - Building 34 5
- 2.4 Radiological Summary for Building 34 8

3.0 Site Description 10
- 3.1 Site/Vicinity Location and Characteristics 10
- 3.2 Description of Structures, Roads, and Other Improvements in Proximity to Building 34 11
- 3.3 Current and Past Uses of Buildings in Proximity to Building 34 11

4.0 Records Review 12
- 4.1 General/Historical CERCLA Information 12
- 4.2 Specific Record Sources for Building 34 12
  - 4.2.1 Occurrence Reports 12
  - 4.2.2 Spills and Releases 13
  - 4.2.3 Associated PRS Overview 13
- 4.3 Review of Building Prints 13
- 4.4 Aerial Photographs 14
- 4.5 Interviews 14

Tables

Table 1: Summary of Environmental Concerns and Findings 5

Table 2: Radiological Summary 9

Table 3: PRSs in Proximity to Building 34 13

Appendices

Appendix A General Listing of Acronyms
Appendix B Map of Montgomery County
Appendix C Figures
Appendix D Floor Plans
Appendix E Aerial Photographs
Appendix F Environmental Appraisal Report of the Mound Plant (Excerpt)
Appendix G Radiological Information
Appendix H Radon Information
Appendix I Asbestos Information
Appendix J Lead Information
Appendix K Chemical Information
Appendix L Soil Sampling, Vicinity
Appendix M Occurrence Reports
Appendix N PRS Information
Appendix O Work Plan

1.0 GENERAL OVERVIEW

1.1 Introduction

The purpose of this Building Data Package (BDP) is to prepare for the demolition of Building 34 (Emergency Brigade Training Facility) and to identify, if possible, any recognized environmental conditions (defined below) that may affect the subject property and building.

Recognized Environmental Condition: The presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a likely release, a past release, or a material threat of a release of any hazardous substances or petroleum into structures, or into the air, ground, groundwater, or surface water near the building.

1.2 Scope

This document has been prepared in accordance with the agreements and requirements as specified in the *Work Plan for Environmental Restoration of the DOE Mound Site, The Mound 2000 Approach*. This document is a BDP for Building 34 located at the Department of Energy (DOE) Miamisburg Closure Project (MCP) in Miamisburg, Ohio. The investigation performed to support this BDP models procedures found in *ASTM Standard Practice for Environmental Site Assessments; Phase I Environmental Site Assessment Process* (Designation E 1527-97).

The scope of the investigation included Building 34, the soil beneath, and a 30-foot wide perimeter border around the building. The investigation of Building 34 included the following:

A) A building and perimeter inspection.
B) An examination of historical aerial photographs and maps.
C) A review of federal and state regulatory agency records.
D) Personnel interviews.
E) A review of site records for:

   1) History of spills, releases, and chemical inventories
   2) Past sampling data

      - Radiological survey
      - Soil sampling
      - Lead-based paint
      - Asbestos
      - Radon

In addition to the building investigation conducted by site contractor personnel, documents were reviewed. Information used to compile BDPs includes the following:

- Characterization of Mound's Hazardous, Radioactive, and Mixed Wastes, August 1990
- Operable Unit 9 (OU-9) Site Scoping Report, Volumes 1-12
- Mound Facility Physical Characterization, December 1992
- Active Underground Storage Tank Plan, November 1994
- OU-9 Hydrological Investigation, Bedrock Report, January 1994
- OU-9 Hydrological Investigation, Buried Valley Aquifer Report, March 1994
- Environmental Appraisal Report of the Mound Plant, March 1996
- Title Search
- Lease Information
- EDR Report - Radius Map
- Building Prints
- Potential Release Site (PRS) information
- MD-22153, Mound Site Radionuclides By Location, June 1995 Contaminant Surveys
- MLM-3791, Mound Facility Physical Characterization, December 1993

2.0 BUILDING 34 OVERVIEW

Building 34, a three-building complex, is located in the lower plant valley, on the western edge of the site (Figures 1 and 2). Floor plans are included as Appendix D.

Building 34 (Figure 3) was originally constructed in 1965 as a single-room (now designated as Room 1), 520 square-foot structure with a separate "barrier" wall to the east. In 1973, an addition was made: a metal room was constructed with its west wall being anchored to the east side of the existing barrier wall. This addition was designated as Room 2, and the area between the barrier wall and Room 1 (actually an open corridor) was then designated as Room 3. In 1984, another addition to the complex was made: a free-standing metal modular building (previously located between Building 47 and W Building) was moved and setup to the north of Room 1. It is designated as Room 4. Currently, the Building 34 complex contains approximately 1,100 square feet of floor space.

There had been one additional "room" constructed in 1968, but it was later removed (date unknown). It was a 7-foot by 9-foot steel storage building located to the east-southeast of Room 1.

Construction Materials

The building consisting of Rooms 1 and 3 is constructed of reinforced concrete block (8") set on 3'-6" reinforced concrete footers. The floor is a 6" reinforced concrete slab set on a 4" gravel base. The roof structure on Room 1 is constructed of "Flexicore." The area designated as Room 3 (between Rooms 1 and 2) is an open corridor, having no north and south walls and no roof.

Room 2 is a metal ("Armco Building") structure, anchored to the existing concrete block barrier wall (the east wall of Room 3) and to the 6" reinforced concrete slab, with 36" (minimum) footers. A 4" minimum gravel bed underlies the slab.

Room 4, a metal storage building to the north of Room 1, is anchored to a 4" thick wire mesh reinforced slab, and 10" footers. A 4" minimum gravel bed underlies the slab.

Utilities

Potable water supplied to the Building 34 complex was previously disconnected. Untreated well water used for fire fighting was disconnected from Room 1, but is currently connected to Room 2. Water lines will be disconnected prior to commencement of demolition activities. There are no restrooms, sanitary wastewater collection lines, or stormwater service lines. There are floor drains in Room 1, which appear to drain directly into the spillway to the west of the building. However, no testing was performed to confirm the connection. Roof drains discharge onto the surrounding pavement, and the water flows into the spillway or is absorbed into the adjacent soil. There is electrical service of 240 volts. Heat was provided (in Room 2 only) by electrical resistance units, which will be demolished with the building.

2.1 Past Uses of Building 34

Building 34, Room 1, was constructed and used as a live fire training area for the Mound Emergency Brigade to practice with pyrophoric metal fires. Many years ago uranium tailings were carried to the building from other areas at Mound and burned during fire training exercises. Various fuels and flammable materials, such as depleted uranium (uranium-238) and metal shavings of various types, were also burned in Room 1 to simulate potential emergency situations at the site. Per the 1996 Environmental Appraisal (Appendix F), this practice was discontinued several years ago when depleted uranium contamination was discovered. That report also notes that a low-specific activity (LSA) waste container was located on a concrete pad next to the building; interviews at the time determined that it contained uranium-contaminated materials that had been removed from Room 1 in 1992/93. That container was subsequently removed.

Room 2 was used as an administrative area for the Container Testing Program (which included the drop tower, immersion test tank, and oil burn structure (PRS 17) described in Section 3.2). Process history indicates that the actual container testing activities took place in the areas around Building 34, and the room itself was used as an administrative area.

Room 2 was also used as an office and a storage area for the former Biodegradation Facility (Bug Barn). The Biodegradation Facility was located to the east and was used for biological treatment of hydrocarbon-contaminated soils from the site. Health physics monitoring equipment was repaired in part of Building 34, which is believed to have taken place in Room 2. Room 2 was also used by a site contractor for storage and processing of soil samples collected onsite.

Room 4 was used for storage, however historical documents do not specify what was stored there.

Building 34 Land Area

The land area under and around Building 34 has served a number of purposes in the site's history.

In the mid-1950s, small drums of lithium hydride materials that came from a research project on the Main Hill were reported as being disposed of by burning in the swampy area along the lower reach of the plant drainage ditch, in an area approximately 150 feet in diameter (although its dimensions were irregular) believed to be just northwest of the current location of Building 34. The water in the swampy area assisted and facilitated the reactions. In 1964, the area was filled and re-graded for the construction of Building 34. The lithium disposal area is now identified as PRS 15, Area C, Lithium Burn Area. PRS 15 was evaluated and requires No Further Assessment (NFA).

Correspondence from 1962 indicate that arrangements were being made for the disposal of depleted uranium sludge and sawdust stored under oil or water-soluble oil, contained in three 5-gallon drums, by burning in the dump area. It is not known whether the disposal took place; however, it is suspected that the dump area was in the vicinity of the current location of Building 34.

Sewage sludge from the Old SD (Sewage Disposal) facility was routinely spread around various open field areas of the site. The sludge was dumped in piles in the area around Building 34, as well as over many grassy areas at the site. In the 1960s, it was found that the sludge was slightly radioactive and open disposal was stopped.

In the late-1960s through the early 1970s, depleted uranium apparently was used in fire training exercises inside Building 34, Room 1, as well as in one of the fire training Burn Pits outside of Building 34. During cleanup of the building in early 1993, depleted uranium contaminated sludge was discovered in a trash dumpster (sanitary waste) during a routine survey of a waste hauling vehicle. According to an occurrence report for this event (Appendix M), the sludge had been unknowingly (i.e., not aware of the potential for contamination) removed from Building 34 and discarded in a trash dumpster. Soils associated with both PRS 18 (Fire Fighting Training Pits), located south of Building 34, and PRS 19 (Historical Firefighting Training Pit), located northwest of Building 34, have been evaluated and require No Further Assessment.

2.2 Current Uses of Building 34

Building 34 is unoccupied and is currently being prepared for demolition.

2.3 Summary of Environmental Concerns and Findings - Building 34

Table 1: Summary of Environmental Concerns and Findings

Description	Comment	Resolution
Lead-Based Paint	No previous lead surveys or sampling data were found for Building 34. Observed paint coatings were largely intact. Although untested paint coatings must be assumed to contain lead, the observed condition of the paint indicates that there are currently no lead paint hazards within the structures (Appendix J).	No further action would be necessary to protect occupant or worker health unless any coatings were to be disturbed by close worker contact (sanding, grinding, scraping, torch cutting, etc.). If these types of activities are planned, the affected paint coatings should be tested to verify the absence of lead. Per Waste Management, building debris containing lead-based paint can be disposed of in a sanitary landfill.
Chemicals	There were no chemicals in the building at the time of the April 10, 2003 walk-through. Per the Building Manager's Questionnaire (Appendix F), there was a flammables storage cabinet (that could not be opened) outside of Building 34; the cabinet was not present at the time of the walk-through. Historical documentation indicates that additive/feed for the bioremediation process was stored in Building 34, but the chemical type was not specified. Appendix K contains additional chemical information.	No further action required.
Fluorescent Lamps and PCBs	N/A	N/A

Table 1: Summary of Environmental Concerns and Findings

Description	Comment	Resolution
Air Emissions	Two air vents are present in Room 1.	The vents discharge through the exterior wall on the south side of Room 1. Because the Room 1 slab and surrounding pavement will not be removed during the demolition activities in the scope of this BDP and Work Plan, no further action is indicated at this time. The potential for soil contamination resulting from previous air emissions will be evaluated when the Room 1 slab and foundations, and soil under and around the room are to be addressed (under a separate work activity).
Asbestos	An asbestos survey (Appendix I) was completed in August of 2002 in accordance with EPA NESHAP requirements. No materials were found to contain asbestos that would have to be removed prior to demolition. Material identified in the asbestos survey as "fire doors" that were assumed to contain asbestos, were subsequently verified as not containing material suspected to be asbestos. A copy of the asbestos survey and the memo documenting the inspection of the fire doors are provided in Appendix I. Roofing materials and floor tile are assumed to contain asbestos. Being classified as EPA Nonfriable Category I types of materials, the removal of roofing and floor tile is not necessary prior to demolition by normal heavy-duty means.	All work will be performed in accordance with current state and federal regulations. Per Waste Management, building debris containing EPA Nonfriable Category I asbestos containing material (ACM) can be disposed of in a sanitary landfill.
Drainage Sumps	N/A	N/A
Lead	A small quantity of lead shapes are stored in the building.	The lead shapes will be removed prior to building demolition.
Mercury	N/A	N/A

Table 1: Summary of Environmental Concerns and Findings

Description	Comment	Resolution
Radiological	A summary of the radiological findings is provided in Section 2.4. The Final Status Report is provided in Appendix G.	Rooms 2, 3, and 4 have been surveyed in accordance with the Survey Plan and determined to meet radiological surface release criteria. The walls and roof of Room 1 will be demolished and debris piles radiologically surveyed; end disposition will be based on survey results. This debris will be disposed of per Waste Management POC. The floor of Room 1 is known to be radiologically contaminated; it will be left in place until the soil under and around the room are to be addressed (under a separate work activity). At the conclusion of demolition activities, the area will be posted and controlled per RadCon direction.
Septic System	N/A	N/A
Wastewater	There is no sanitary system.	N/A
Stains & Corrosion/HVAC	N/A	N/A
Storage Tanks	N/A	N/A
Solid Waste Disposal	N/A	N/A
Migratory Hazards	N/A	N/A
Radon	Within acceptable limits (Appendix H).	No further action required.
HVAC	N/A	N/A
Energetic Materials	N/A	N/A

Table 1: Summary of Environmental Concerns and Findings

Description	Comment	Resolution
Soil Contamination	Appendix L contains a graphic showing all soil sample locations within 30 feet of the Building 34 perimeter, and provides tables for all detected compounds (results above laboratory detection limits) and non-detected compounds (results below laboratory detection limits). All results are below applicable screening levels. (Note: a 30-foot radius was used instead of the standard 15-foot radius because no soil sample locations were within the 15-foot radius.) There is no soil data within 30 feet of the Building 34 perimeter that can be used to evaluate whether or not there is soil contamination under or around the building. Only one location (08N25) was tested for plutonium and thorium, with the results being non-detect. The radiological history of Building 34 Room 1 and the soil under and around the building indicate the possibility of soil contamination.	Building 34 superstructure will be demolished along with the slabs and foundation from Rooms 2 and 4, and debris removed. However, the slab and foundation from Rooms 1 and 3 will be left in place. In addition to our standard precaution of radiologically surveying the underside of the slab and foundation (surfaces in contact with soil), following removal of the Rooms 2 and 4 slabs, a Walkover Rad Survey will be performed on the exposed soil. Also, one composite surface soil sample from under each removed slab will be collected and submitted for onsite long-count gamma spec analysis. The results of the Walkover Rad Survey and the gamma spec analyses will be reported in the Closeout Report. If the results indicate radiological contamination in excess of cleanup objectives, additional measures will be taken to ensure the protection of human health and the environment. The removal of the Rooms 1 and 3 slab and foundation, and the evaluation and remediation (if necessary) of the soil in the vicinity will be addressed (under a separate work activity). At the conclusion of demolition activities, the area will be posted and controlled per RadCon direction.

N/A: Not applicable

2.4 Radiological Summary for Building 34

A radiological assessment of Building 34 was performed by reviewing the historical, operational, and radiological survey information. Building 34 was initially designated as the "Emergency Brigade Training Facility." The Building 34 complex-of-buildings has also been associated with other processes and/or operations, including the Container Testing

Program and the Biodegradation Facility. Building 34 was classified as impacted because of its history of radioactive material use.

The floor of Room 1 is known to be contaminated and will be left in place and not included in the demolition activities associated with this BDP. The Rooms 1 and 3 slab and foundation will be removed under a separate work activity and disposed of as LSA waste. The Room 1 walls and ceiling are slightly contaminated with uranium-238 (24 pCi/sample) and will be demolished, radiological surveyed, and disposed of per Waste Management direction. The surface and subsurface soils, piping, etc. associated with Building 34 will be evaluated separately under a separate work activity covering the Rooms 1 and 3 slab removal.

This survey plan assessed the structural surfaces of Rooms 2, 3, and 4 only. Surveys were performed throughout the building in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). Several areas of elevated activity were identified on the floors. Even though these survey units passed the statistical test for release, all of the areas with elevated readings were remediated. The Final Status surveys document completion of remediation and no additional elevated areas were found. The review team has concluded that the building (Rooms 2, 3, and 4 superstructures) meets radiological surface release criteria established by DOE Order 5400.5 (see Table 2), and no further radiological surveys are required. Supporting documentation for the information summarized in the following table is contained in Appendix G.

Table 2: Radiological Summary

TYPE	RSDS (Radiological Survey Data Sheet)	LOCATION	SURVEY RESULTS (dpm/100 cm^2) (Note 1)	SURFACE CONTAMINATION GUIDELINES (dpm/100 cm^2) (Note 2)
Highest Alpha Smearable Activity	03-TF-0032	Floor Room 2	15.3	20
Highest Alpha Fixed Activity (Group 1 Nuclides)	03-TF-0032	Floor Room 4	90	100
Highest Alpha Fixed Activity (Group 3 Nuclides)	03-TF-0043	Roof Room 4	321	5,000
Highest Beta Smearable Activity	03-TF-0027	Beam Room 2	16.29	1,000
Highest Beta Fixed Activity	03-TF-0032	Floor Room 2	772	5,000
Highest Tritium Smearable Activity	03-TF-0028	Ceiling Room 4	70.3	10,000

Note 1: Residual radiological activity may be present and not be a concern (within applicable limits). This may result from or be a function of counting statistics, instrument variances, the randomness of decay, radon presence, and/or natural fluctuations in background levels.

Note 2: Guideline values per DOE Order 5400.5, Radiation Protection of the Public and the Environment.

There is no historic soil data within 30 feet of the Building 34 perimeter that can be used to evaluate whether or not there is soil contamination under or around the building. Because the radiological history of Building 34 Room 1 and the soil under and around the building indicate the possibility of soil contamination, additional precautions will be taken to ensure the protection of human health and the environment.

In addition to our standard precaution (always done) of radiologically surveying the underside of the slab and foundation (concrete surfaces in contact with soil), following removal of the Rooms 2 and 4 slabs, a Walkover Rad Survey will be performed on the exposed soil, and one composite surface soil sample from under each removed slab will be collected. The collected samples will be submitted for onsite long-count gamma spec analysis, and the results of the Walkover Rad Survey and the gamma spec analyses will be reported in the Closeout Report. If the results of the walkover survey or soil analysis indicate radiological contamination in excess of cleanup objectives, additional measures will be taken to ensure the protection of human health and the environment.

Removal of Rooms 1 and 3 slabs and foundations and the evaluation and remediation (if necessary) of the soil in the vicinity will be addressed under a separate work activity. At the conclusion of demolition activities, the area will be posted and controlled per RadCon direction.

3.0 SITE DESCRIPTION

3.1 Site/Vicinity Location and Characteristics

Building 34 is located at the DOE MCP site, formerly known as Mound Plant. The MCP site is situated in the City of Miamisburg, Miami Township, Montgomery County, State of Ohio as shown in Appendix B.

The Mound Plant at one time was situated on approximately 300 acres of land and contained approximately 130 buildings with a total of approximately 1.4 million square feet of floor space (the number of buildings is constantly diminishing as buildings are decommissioned and either sold or demolished). The original 182-acre site, purchased by the Manhattan Engineering District in 1946, consisted of two hills and an intervening valley that runs approximately east and west. The 124-acre tract acquired in 1981 was an undeveloped mixture of fields and woods that undulates and slopes downward to the west, away from the main site. This area was acquired to serve as a buffer and has been used as a staging area and parking area for contractors working onsite.

To the west lies a railroad line and the north south trending Miami-Erie Canal. The northern boundaries of the site abut the residential area of Miamisburg, Ohio. Mound Road marks the northern half of the eastern perimeter of the facility then veers east, away from the southern half of the eastern boundary. A public golf course (belonging to the City of Miamisburg), the Miamisburg Mound Memorial Park, old agricultural fields, residential lots, and vacant wooded lots border the facility along Mound Road. Benner Road formed the

southern property line of the Mound Plant (at the 300-acre stage), with agricultural fields and farms occupying the lands beyond.

3.2 Description of Structures, Roads, and Other Improvements in Proximity to Building 34

Building 34 is bordered on all sides by asphalt pavement. Surrounding the pavement is dirt with sparse ground cover. To the north of the building is a stormwater drainage ditch and beyond the ditch is Building 112. A roadway passes to the south of Building 34; across the roadway is the site overflow pond. On the east side of the building are the concrete foundation piers where the steel tower of the drop impact tester (Drop Tower) once stood; further upgradient from the foundation piers is an asphalt parking lot. Immediately west of Building 34 is the concrete stormwater spillway that leads into the site overflow pond. Just west of the spillway is the Oil Burn Structure (PRS 17), which is binned as a Removal Action.

3.3 Current and Past Uses of Buildings in Proximity to Building 34

Building 112 (located north of Building 34) is one of three numbered buildings that form the Mound Wastewater Treatment Plant. Building 112 is a 547 square-foot commercial "Butler" building constructed of a steel frame with metal sides and roof on a concrete pad. The building contains a sand filter, chlorinator, and wastewater sampler.

The former Biodegradation Barn was located east of Building 34, at the present location of the asphalt parking lot. The Biodegradation Barn, built in 1994, was a structural steel frame with a steel deck roof, with no floor and no sides. Before it was demolished in August 2001, the Biodegradation Barn served as a covered bed for the biologic treatment of petroleum-contaminated soils.

Several structures (Drop Tower, Immersion Test Tank, and Oil Burn Structure) in the vicinity of Building 34 were used to support the Shipping Container Testing Program. Building 34, Room 2, was used as an administrative office for the program. The Drop Tower was located east of Building 34. It was a 50-foot tall, 30-foot wide (at the base) steel structure. Built in 1970, the Drop Tower was designed and used to test shipping containers via a "free drop" from a 30-foot elevation. The Drop Tower was demolished in August 2001, although the two foundation piers and possibly the concrete drop pad (which may be hidden under gravel) are still in place. The concrete and brick Oil Burn Structure (PRS 17), located west of Building 34, which was used for thermal testing, remain in place, although it is not in use. The Immersion Test Tank, removed in the late 1990s, was located northeast of Building 34 and was used for leak testing. The foundations for the Test Tank and the associated hoist structure may be covered with soil. No radioactive materials were actually involved in the testing program.

Building 112, the Biodegradation Barn, and the shipping container testing structures in the vicinity, are believed to have had no environmental impact on Building 34.

4.0 RECORDS REVIEW

4.1 General/Historical CERCLA Information

In compliance with permit requirements under Resource Conservation and Recovery Act (RCRA), the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), and the Clean Air Act (CAA), the site has applied for or has received permits for its surface water discharges, air emissions, and hazardous waste program. The site is currently operating a hazardous waste storage facility under a RCRA Part B Permit dated October 18, 1996. The site also maintains a National Pollutant Discharge Elimination System (NPDES) surface water discharge permit with Facility I.D. number OH 0009857. Operations that produce particulate or vaporous emissions are either permitted or registered with RAPCA and the Ohio Environmental Protection Agency (OEPA). The site also submits annual Emergency and Hazardous Chemical Inventory forms to OEPA, pursuant to the Superfund Amendment and Reauthorization Act (SARA), Title III, the Emergency Planning and Community Right-to-Know Act. The March 2002 version of this report indicated that no reportable chemicals are stored in Building 34.

The Mound Plant was identified as a contaminated site on the National Priorities List under CERCLA (Superfund) in 1989. The Mound Plant was originally listed due to volatile organic compound (VOC) contamination in the western end of the lower valley area. The cleanup of the site was originally to be accomplished under the CERCLA mandated procedures for regulating Superfund Sites using the operable unit (OU) system to define and characterize cleanup areas. As the cleanup effort went forward, it became apparent that the site did not fit the profile for a cleanup strategy based on the operable units. The DOE, the United States Environmental Protection Agency (USEPA), and OEPA designed a new decision making process for the cleanup of the site. The new process is known formally as a "removal site evaluation process" and informally as the "Mound 2000 Process." The Mound 2000 Process system divided the site into geographical parcels containing over 400 PRSs with approximately equal numbers of PRSs concerned with potentially contaminated soil and with potential contamination in or associated primarily with building operations. A PRS is an area where knowledge of historic or current use indicates that the site may have had releases of radioactive and/or hazardous materials. For a more detailed description, refer to the *Work Plan for Environmental Restoration of the DOE Mound Site, the Mound 2000 Approach*.

4.2 Specific Record Sources for Building 34

4.2.1 Occurrence Reports

A search of the occurrence reporting system revealed one report, which was minor and without environmental impact. A copy of the occurrence report is provided in Appendix M.

- Sludge containing depleted uranium found onsite in sanitary waste.

4.2.2 Spills and Releases

- None.

4.2.3 Associated PRS Overview

As a result of the investigations and documentation accomplished to comply with the CERCLA cleanup process via the Federal Facilities Agreement (FFA)/DOE Environmental Restoration (ER) Program, DOE and the site contractor tabulated all the PRSs identified under the various regulatory programs in effect at the site. Of these 440 PRSs, nine are at or near Building 34, as identified in Table 3, and shown on Figure 2. The two PRSs directly associated with Building 34 (PRSs 18 and 19) have already been binned NFA by the Core Team. Additional information is included in Appendix N.

Table 3: PRSs in Proximity to Building 34

PRS	CERCLA or Bldg. Related	Binning Status	Comments
15	CERCLA	NFA	Area C, Lithium Burn Area (AKA Lithium Carbonate Disposal)
17*	CERCLA	Removal Action (RA)	Oil Burn Structure
18	CERCLA	NFA	Building 34, Fire Fighting Training Facility Pits
19	CERCLA	NFA	Building 34, Historical Firefighting Training Pit
56**	Building	Unbinned (UB)	Building 57 Chlorine Contact Chamber (Tank 112)
67*	CERCLA	Further Assessment (FA)	Plant Drainage Ditch
69*	CERCLA	FA	Overflow Pond
70*	CERCLA	FA	Retention Basins and Weir Basins
354	CERCLA	NFA	Elevated Soil Gas Location

* *PRSs 17, 67, 69, and 70 will be handled by the ER project.*
** *PRS 56, Building 57 Chlorine Contact Chamber, will be addressed in the Building 57 BDP.*

4.3 Review of Building Prints

Building prints were reviewed and no significant items were identified. Floor plans are included in Appendix D.

4.4 Aerial Photographs

Aerial photographs from 1965 (prior to construction), 1968 (following construction), and 1996 (most recent aerial photo) were reviewed and no significant items were identified. Aerial photographs are presented in Appendix E.

4.5 Interviews

The current Building Manager, Gary Weidenbach, was interviewed regarding past facility operations and current conditions. No significant items related to the building were identified based on the questionnaire or interviews.

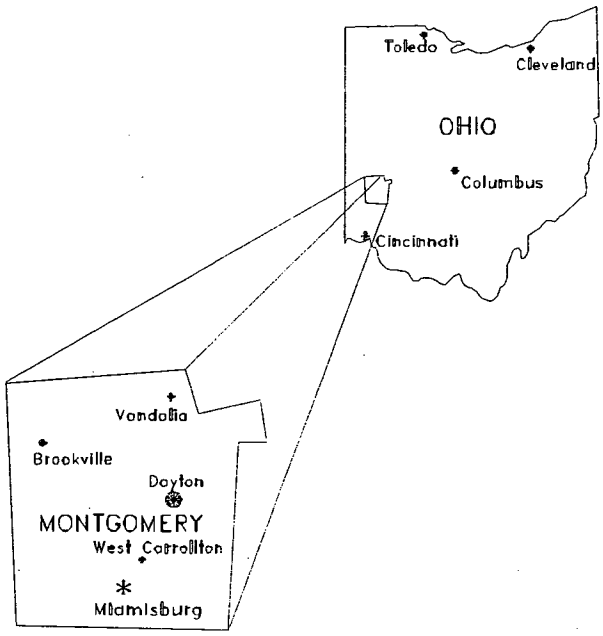
Appendix A

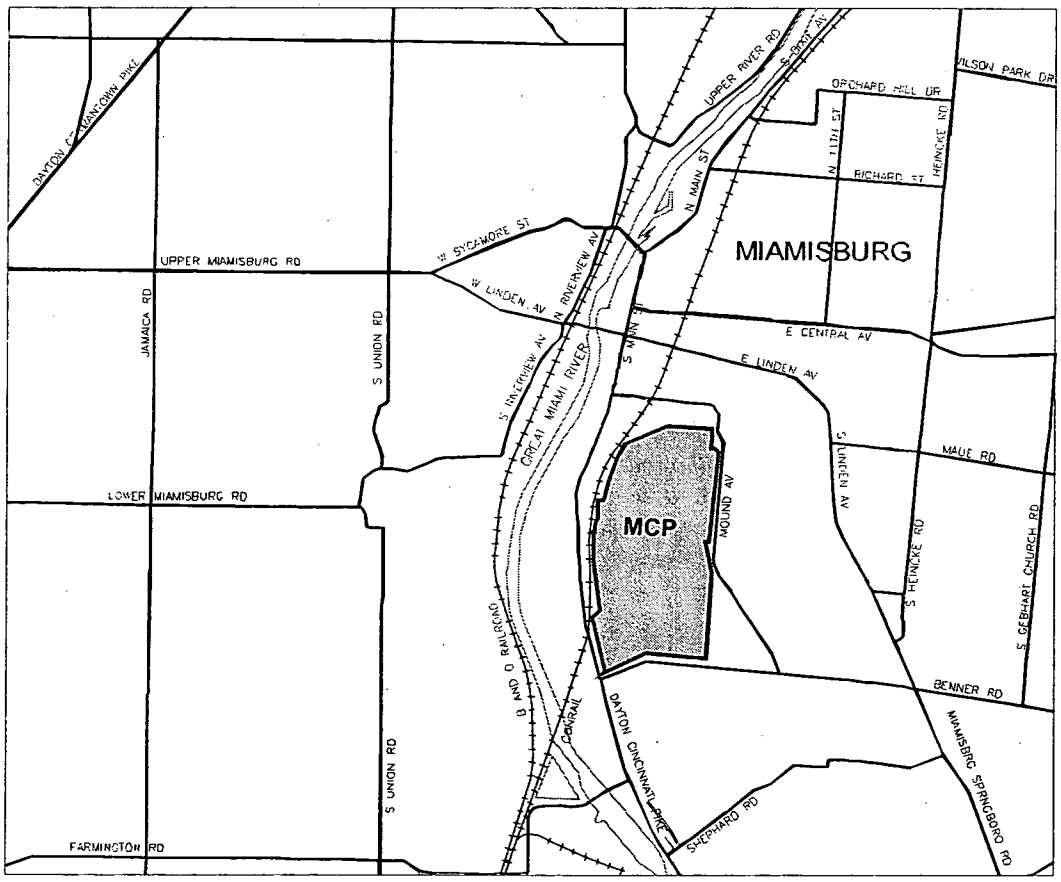
General Listing of Acronyms

ASTM	American Society for Testing and Materials
BDP	Building Data Package
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act
cm^2	centimeters squared
CWA	Clean Water Act
DOE	United States Department of Energy
DPM	disintegrations per minute
EPA	United States Environmental Protection Agency
ER	Environmental Restoration (Program)
FFA	Federal Facility Agreement
HAZMAT	hazardous materials
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MCP	Miamisburg Closure Project
N/A	not applicable
NPDES	National Pollutant Discharge Elimination System
OEPA	Ohio Environmental Protection Agency
OU	Operable Unit
PCB	polychlorinated biphenyl
pCi/L	picoCuries per liter
PRS	Potential Release Site
RI/FS	Remedial Investigation/Feasibility Study
RAPCA	Regional Air Pollution Control Agency
RCRA	Resource Conservation and Recovery Act
RSDS	Radiological Survey Data Sheet
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

Appendix B

Map of Montgomery County


Toledo
Cleveland
OHIO
Columbus
Cincinnati
Vandalia
Brookville
Dayton
MONTGOMERY
West Carrollton
Miamisburg


MIAMISBURG
MCP
UPPER MIAMISBURG RD
LOWER MIAMISBURG RD
FARMINGTON RD
JAMAICA RD
S UNION RD
W SYCAMORE ST
W LINDEN AV
N RIVERVIEW AV
S RIVERVIEW AV
GREAT MIAMI RIVER
S MAIN ST
N MAIN ST
UPPER RIVER RD
S SCOTT AV
ORCHARD HILL DR
WILSON PARK DR
N 11TH ST
RICHARD ST
HEINCKE RD
E CENTRAL AV
E LINDEN AV
S LINDEN AV
MAUE RD
S HEINCKE RD
S GEBHART CHURCH RD
MOUND AV
BENNER RD
MIAMISBRG SPRINGBORO RD
SHEPHARD RD
DAYTON CINCINNATI PIKE
CONRAIL
B AND O RAILROAD

B 1 of 1

Appendix C

Figures

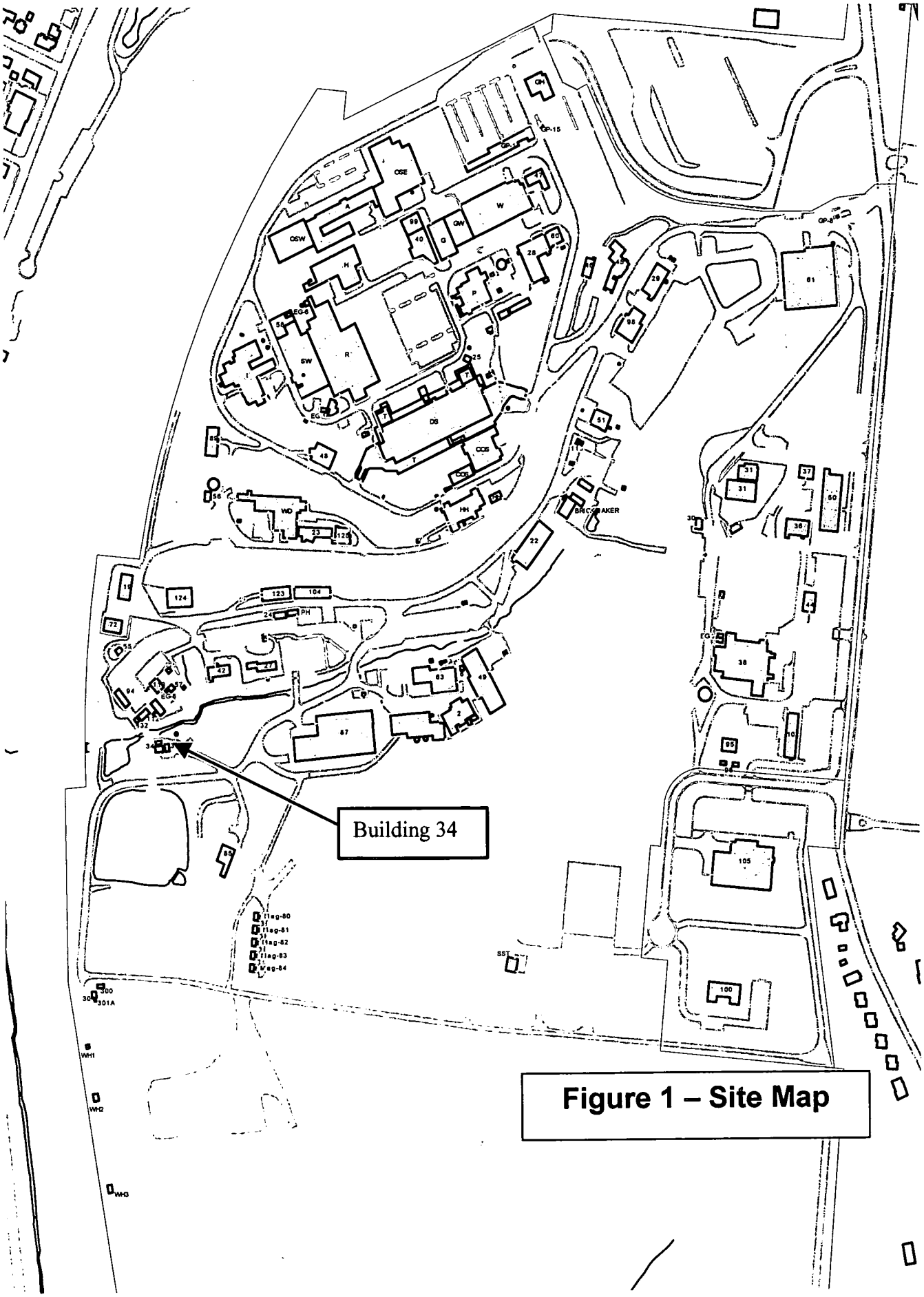
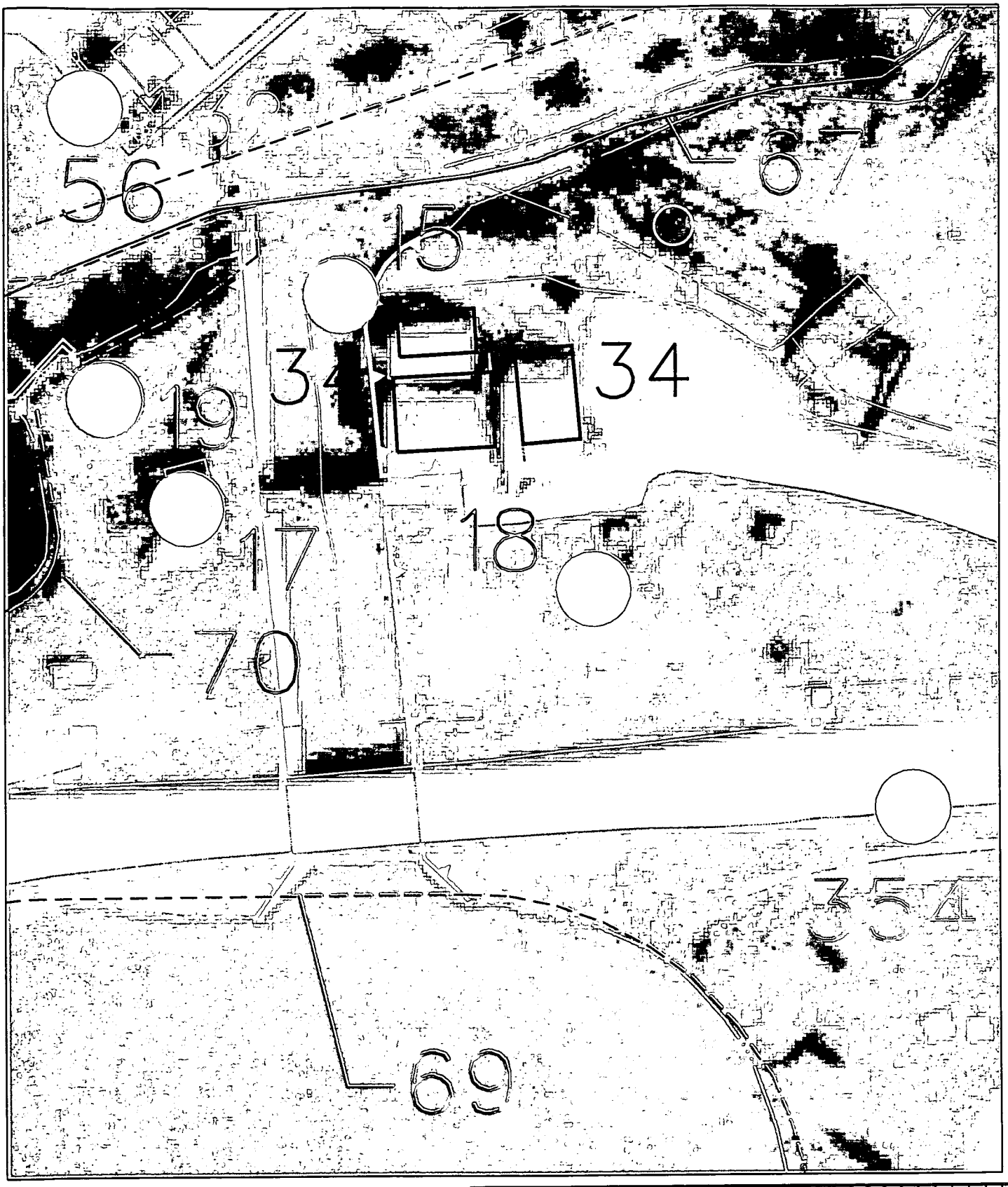


Figure 1 – Site Map



PRS Point

PRS Area

PRS Line

MOUND

Environmental Restoration Geographic Information System

SHEET	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
ISSUE																					

SHEET	1	2	3	4	5	6
ISSUE	*					

PART CLASSIFICATION

Figure 2
Building 34
and Vicinity

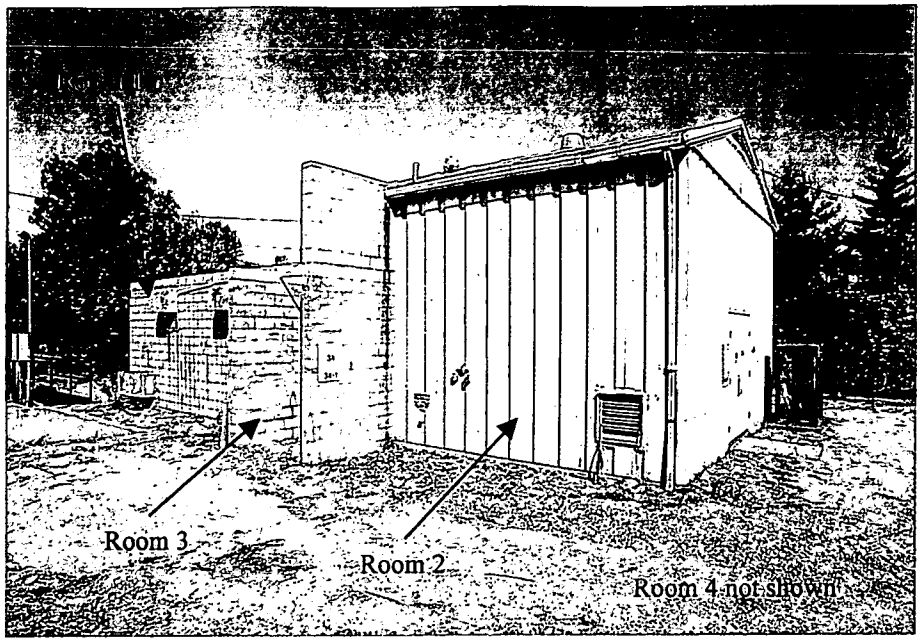
DRAWING CLASSIFICATION: UNCLASSIFIED

SIZE | DRAWING NUMBER: vicinity.dgn | JOB NUMBER

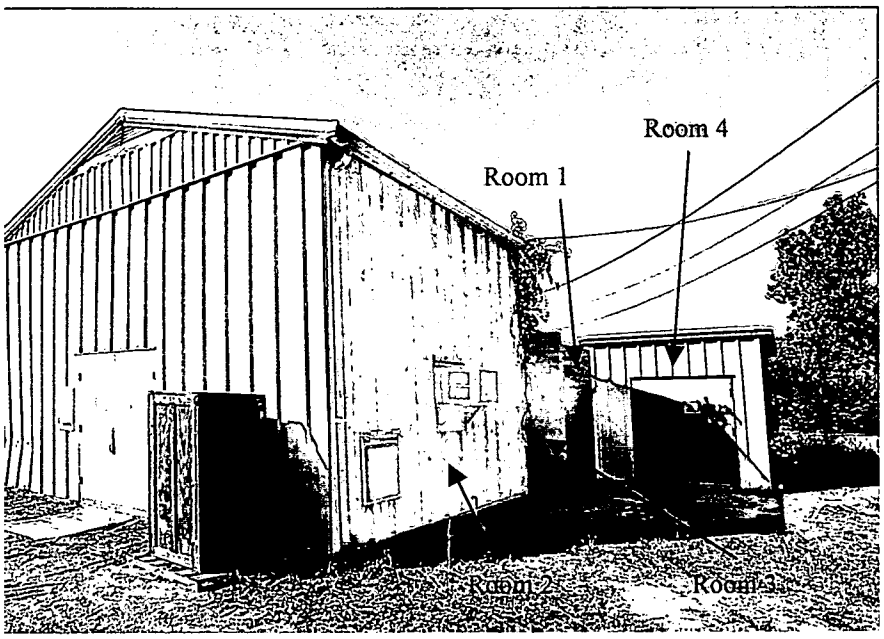
DGN TYPE: STE | PRNG: ER-GIS | CADD: | SCALE: | SHEET 1 OF

STATUS: MD-REL-**/**/** | ORIGIN: MSTATION / J

ISS	DATE	REVISION	BY	CHKR	DNG	LPREC	APVD	M
	09/12/02		SSF					

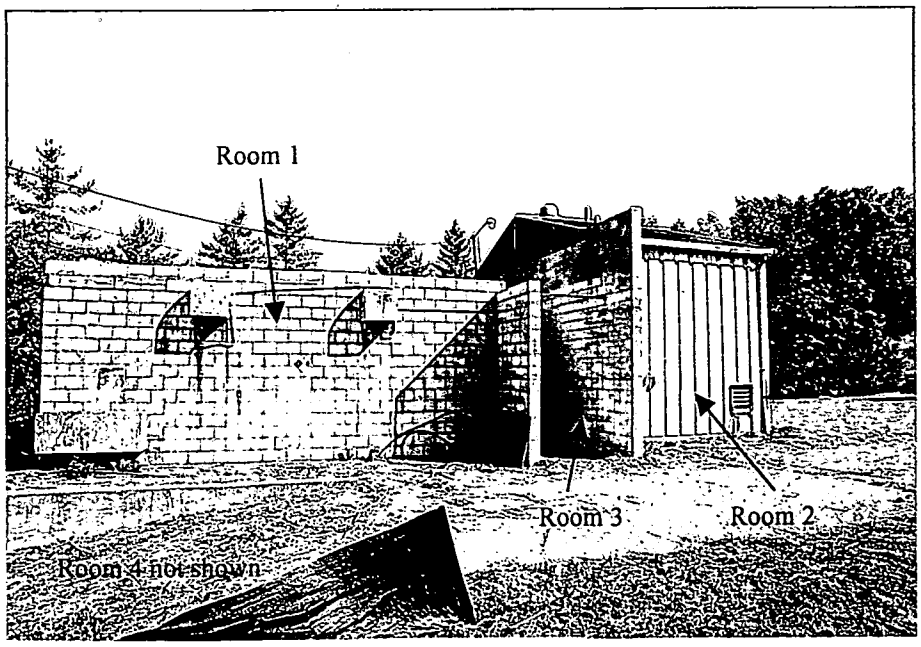


Southeast Side



Northeast Side

Figure 3
Building 34

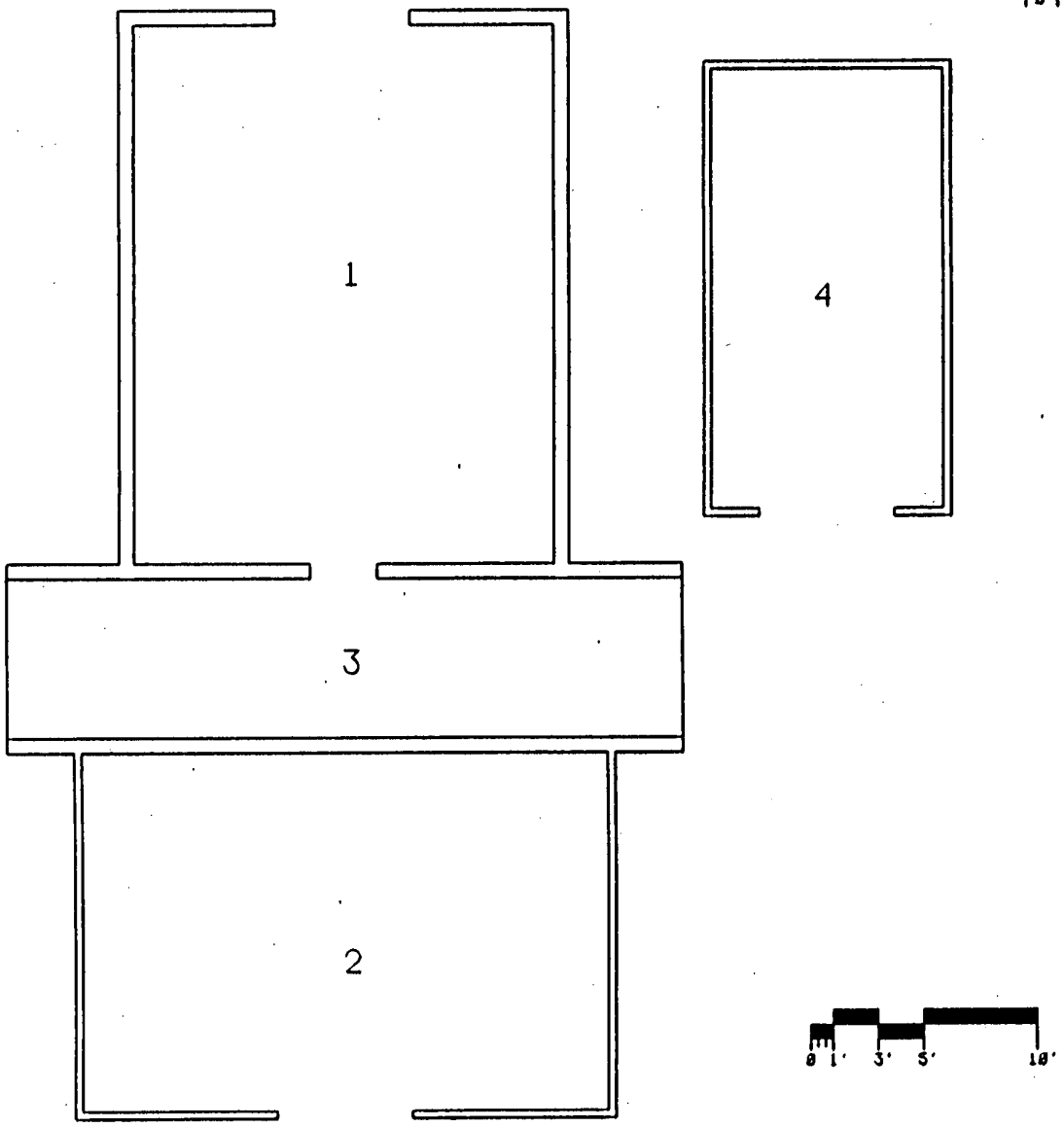


South Side

Appendix D

Floor Plans

ISS	DATE	REVISION	BY	CHKD	CKD	APVD	APVD	B
0	12/12/91	ASBUILT ISSUE	DCB				DVD	



BLDG #34
FIRST FLOOR
BLDG CODE:3034

APPROVALS: DATE:
SAFETY COMMITTEE REQUIRED:
___ NONE ___ TRLEDOC ___ TEDOC ___ CHDOC
TECH. REP. _____ _____
BR. MGR. _____ _____
TRLEDOC _____ _____
TEDOC _____ _____
CHDOC _____ _____

DESIGN CHF	PROJ MGR
BRCHD	CHF SUPV
S.P. & QC	PEER REV
CHF MGR	
APVD	DATE

SHEET	1	2	3	4	5	6
ISSUE	0					

TITLE (U) TITLE CLASSIFICATION
BLDG #34
FLOOR PLANS

PART CLASSIFICATION

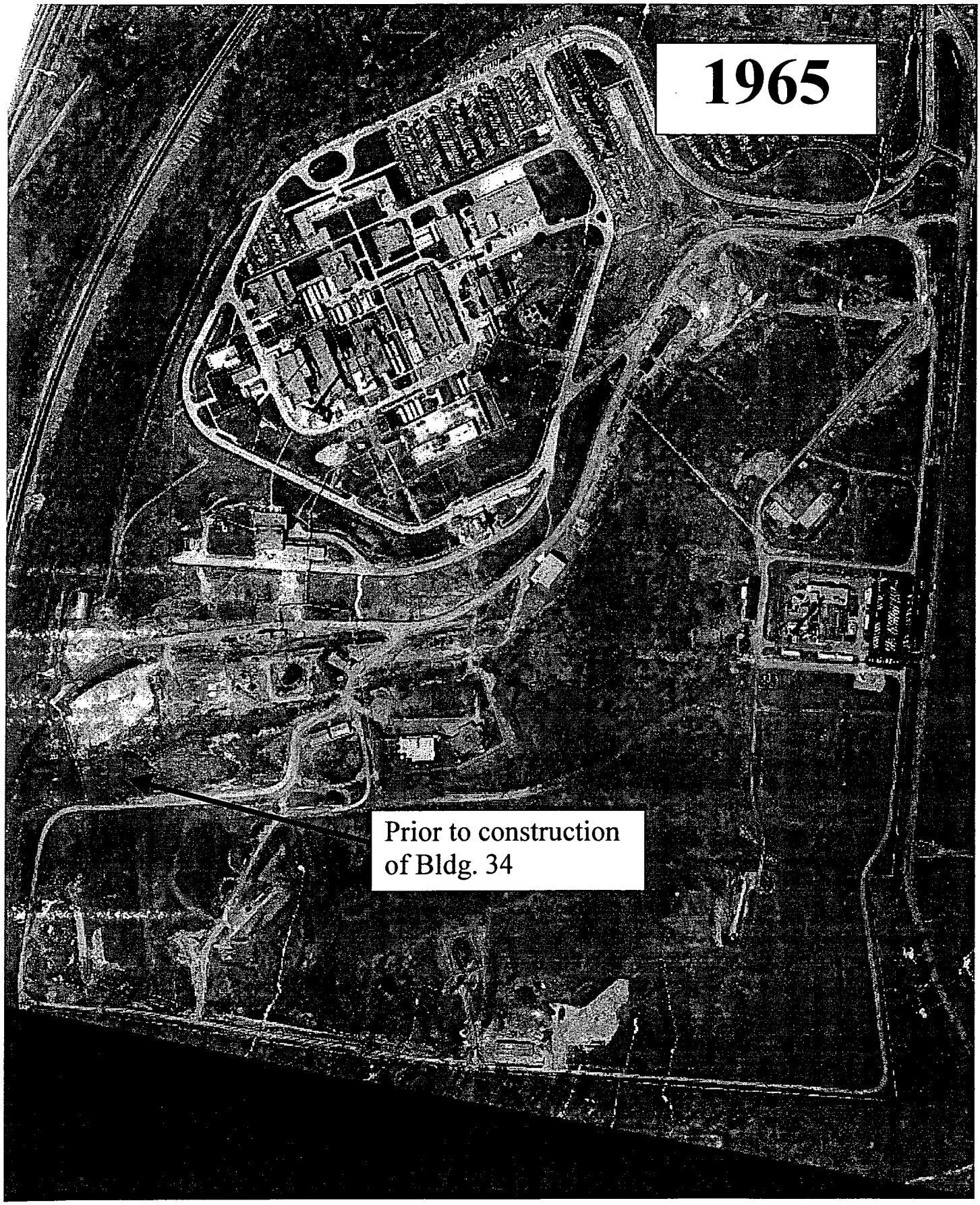
DRAWING CLASSIFICATION: UNCLASSIFIED
SIZE: C
DRAWING NUMBER: FSC911245
JOB NUMBER: 12335
DWG TYPE: SFP
FROM: BLDG #34
CODE: 14865
SCALE AS NOTED
SHEET 1 OF 1
STATUS: MD-REL-12/12/91
DRAWN: MD-BRJ-V3.3

Page 1

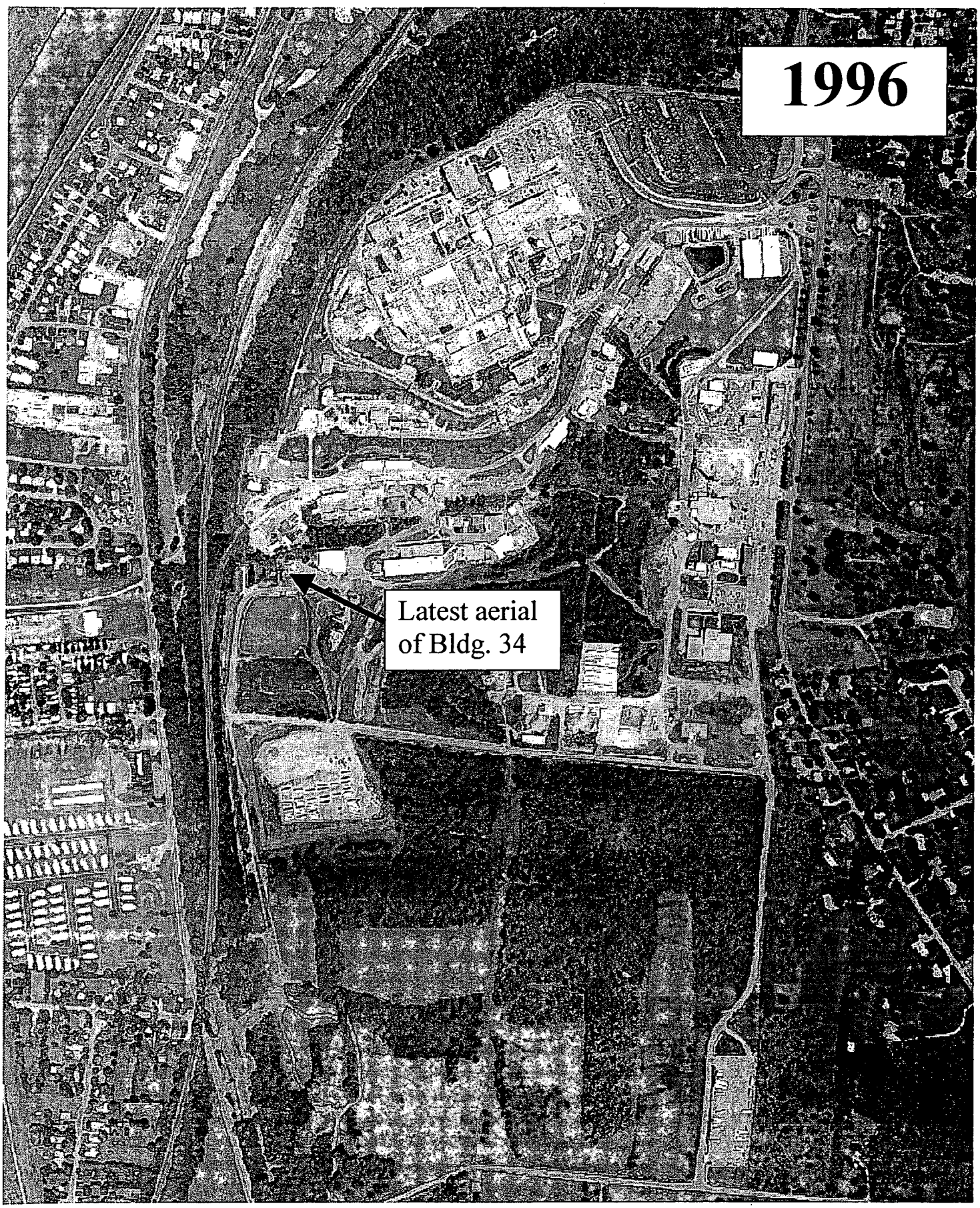
9.57-59

Appendix E

Aerial Photographs


1965
Prior to construction
of Bldg. 34

1968
Bldg. 34 recently constructed (1966)


1996
Latest aerial of Bldg. 34

Appendix F

Environmental Appraisal Report of the Mound Plant (excerpt)

9.57 BUILDING 34

9.57.1 Scope of Building 34 Report

In late 1995 and the early months of 1996, EG&G MAT performed a review of environmental conditions at the Mound Plant. The purpose was to develop a performance baseline, and to identify areas for improvement on a building and a sitewide basis. EG&G MAT did not perform a "due diligence" or Phase I Environmental Site Assessment as specified by ASTM 1527 or ASTM 1528. The scope of the appraisal effort and a discussion of the appraisal methodology are detailed in Sections 2.0 and 5.0, found in Volume 1 of this report.

The appraisal team performed a walk-through of Building 34 on the morning of February 6, 1996. The Environmental Appraisal Checklist (EAC) (Attachment 1—Section 9.57.6.1) was used to record findings. The appraisers were accompanied by the process manager. He has been process manager and a Mound firefighter for many years and has extensive historical knowledge about activities and the building. The building manager was not present. Other information was supplied by the building manager and recorded on the Building Manager's Questionnaire (BMQ), included as Attachment 2 (Section 9.57.6.2).

9..2 Description of Building

Building 34 is the old "burn building," an area formerly used for training of Mound firefighters. It is located close to the sewage treatment plant, separated from the plant by a drainage ditch. A burn pit and burn areas are at the south side of the building. A rectangular in-ground chamber is located on the north side. It is a drop impact tester used to test nuclear materials shipping containers for integrity. Two fuel tanks, one aboveground and one below ground, were removed several years ago. A bioremediation activity located to the east of the building treats soil contamination which resulted from those tanks, as well as from soils contaminated with oil from around the site. Location is shown in Attachment 3 (Section 9.57.6.3).

The building is a 1,110-square-foot concrete block and metal structure with a concrete and metal roof. It was constructed in 1966. There is electrical service of 240V. The building is supplied with service water only; the potable water has been disconnected. Room 1 is a block concrete facility formerly used for live fire training; it is contaminated by depleted uranium and is now roped off and the floor is painted with yellow lines. The uranium tailings were carried to the building from other areas at Mound and burned during fire training exercises many years ago. Room 2 is used as office space, and Room 4 is used for storage. Neither room 2 nor Room 4 are known to be contaminated by radioactive materials. A floor plan is presented as Attachment 4 (Section 9.57.6.4). Note that the area designated as Room 3 on the floor plan is actually an open corridor that runs between sections of the building.

Building 34 was historically used as a firefighter training facility. Various fuels and flammable materials were burned to simulate potential emergency situations at Mound. This practice was discontinued several years ago, when depleted uranium contamination was discovered.

According to the process manager, the building has been scheduled for decontamination and decommissioning (D&D) since 1993. Due to funding limitations, D&D has not begun. At the time of the walk-through, Room 2 was not in use . In the recent past it was used by environmental restoration program contractors as a sample processing and staging area. On the day of the walk-through the ambient temperature was 15°F. The building was heated but not in use.

9.57.3 Summary of findings

There were several findings of environmental concern identified during the walk-through and subsequent review of reference materials. Of most concern were issues related to handling of low level waste (LLW). Problems identified at Building 34 are not specific to this building only.

9.57.4 Observations

9.57.4.1 Air Emissions

Since the firefighters' practice area is no longer in use, there are no processes or fuel burning activities in the building. Heat is provided by electric resistance units. There are no sources of emissions, and the building is not included in the Mound Air Emissions Database (11-30-95). There is no fugitive dust. No air permits have been submitted for activities in this building.

9.57.4.2 Wastewater Emissions

The Mound Facility has three wastewater collection systems: a sanitary wastewater system; a storm water system; and a radioactively contaminated process wastewater system. Sanitary wastewater is treated at an onsite tertiary treatment plant and subsequently discharged by hard pipe to the Great Miami River. Storm water and any non-process wastewater, single pass cooling water, and softener backwash may be discharged directly to the Great Miami River, via the Miami-Erie Canal, or may be diverted to a 3.1-million-gallon holding pond for settling prior to discharge. Radioactively contaminated wastewater is treated in Building WD by physical-chemical treatment. If appropriate, wastewater may be discharged by hard pipe to the Great Miami River. If concentrations of radioactive contaminants cannot be reduced to acceptable levels, wastewater is solidified and shipped to the Nevada Test Site or Envirocare for disposal. All outfalls are permitted under an active NPDES permit. Routine monitoring activities are in place. Based on NPDES monitoring report data reviewed, it appears that the facility is in compliance with qualitative and quantitative conditions of the permit.

9.57.4.2.1 Sanitary Wastewater

According to a diagram of underground utility lines, presented as Attachment 5 (Section 9.57.6.5), the building is not serviced by a sanitary wastewater collection line. There is no restroom, but there are drains in the building. It appears that wastewater from the building sink may drain to the spillway behind the building.

9.57.4.2.2 Storm Wastewater

The building is not serviced by storm drains according to drawings presented in Attachment 5 (Section 9.57.6.5). There is a floor drain in Room 2. It appears that the floor drain is tied to a line which drains into the spillway behind the building. It was outside the scope of this appraisal to perform tests to confirm drainage patterns.

Roof drains discharge onto the ground, and the water drains into the spillway or is absorbed into the soil. No exterior grates and drains were observed in the area around the building.

9.57.4.2.4 Chemicals

There were no liquid or solid chemicals containing Clean Water Act (CWA) pollutants in evidence. There was no visual evidence that chemicals had entered the drainage system.

There are no records of the chemicals burned behind the building in the burn pit and burn areas, but according to the process manager, they included aviation fuel and other flammables. The burn pit is a concrete pad with concrete sides, recessed less than a foot into the ground. Its shape and construction resemble the lid of a shoe box. Because the burn pit has a concrete floor, contamination of soil by residual materials left behind when the chemicals were burned may be limited. Surrounding soils in burn areas could have been contaminated.

D&D and Environmental Restoration program records were not reviewed as a part of the walk-through. The building manager and the process manager could not verify, and had no information in the building record, that all areas around the building were sampled to determine levels and types of contamination and that appropriate remediation occurred. Clearly, some areas around the building had been tested, and contamination found, as evidenced by the D&D activities underway on the east side of the building. This is important as the spillway is behind the burn pit, and runoff is uncontrolled.

9.57.4.3 Potable and Service Water

Potable water was supplied to the building, according to information presented in the site utility drawing, shown as Attachment 5 (Section 9.57.6.5). It has been disconnected, according to the process manager. Service water is still supplied to the building. Additionally, Room 2 has untreated well water available for fire fighting. Water sources are not marked. There is no water cooler.

9.57.4.4 Chemical Storage and Hazardous Materials

There were no janitorial supplies or chemicals stored in Building 34, however, there was a flammables cabinet that could not be opened for inspection. If there are no chemicals there are no requirements for Material Safety Data Sheets (MSDSs). There were no MSDSs.

At the time of the walk-through there were no aqueous or soil samples stored in the environmental restoration sample processing area in Room 2. Building 34 is not designated as a

storage unit for regulated waste, under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) program, and samples should not be stored in the building.

There were several file cabinets of records and assorted pieces of equipment, ranging from sample equipment to a fire hose, strewn in Room 2 and Room 4. The process manager planned to request that past users remove unnecessary equipment.

The building is equipped with emergency response equipment such as a portable eyewash and a fire extinguisher. The extinguisher tag was not current, and it needed to be charged in accordance with 29 CFR 1910. The process manager volunteered to have it charged. There is no evidence of information about an Emergency Evacuation Plan, and no signs were posted in work areas as required in 29 CFR 1910. This is especially important as contractor personnel working in Building 34 might not be aware of Mound procedures.

There are no aboveground storage tanks in or around the building. An aboveground fuel tank located next to the building was removed several years ago; it was not clear if the tank was on a concrete pad with containment berms. No such pad was in evidence. According to information provided in the BMQ, surrounding soil was tested and did contain fuel oil, and an environmental restoration activity has been completed.

There are no sumps, separators, or catch basins in the building. An underground storage tank was removed in the early 1990s and associated environmental remediation activities commenced.

North of the building is a rectangular in-ground impact tester used to certify shipping containers. It was covered with a locked screen and full of a frozen liquid, assumed to be ice. The process manager had no records regarding its use or management. The test chamber was not considered to be a part of Building 34 by the process manager as the function was not associated with the burn building. It is not considered within the scope of this report on Building 34, but is mentioned as it was near to the building.

There are no capacitors or transformers in the building. According to the 1995 PCB Annual Document Log, the building does not contain polychlorinated biphenyls (PCBs). However, according to the BMQ, drums of "PCB Decon Water" were removed from Building 34. It is not clear if the drums came from Building 34 or were stored at Building 34 or if the area was merely a collection point for drums from other areas. There is no record to indicate if the building is contaminated.

The building was tested and does not contain asbestos, based on screening recorded in the *Asbestos Program Manual*, MD 10391 (9-14-95).

Three gas cylinders are located in the storage area in Room 4. Labelling was not in conformance with 29 CFR 1910.151. The process manager planned to label them properly and those which have not been used for over two years will be returned to Building 71.

9.57.4.5 Solid, Hazardous, and Radioactive Wastes

According to information provided in the BMQ, hazardous wastes are generated in Building 34. It should be noted that some of the materials listed are related to environmental restoration activities. There is a specific exemption for CERCLA samples but it applies only until analysis is completed. In Building 34, samples which are being prepared for analysis do not fall within the scope of the Resource Conservation and Recovery Act (RCRA). For lab samples which have been returned following analysis, the generator must make a hazardous waste determination and document it. There was no evidence of returned lab samples in Building 34 on the day of the walk-through.

At the time of the walk-though, there was no activity in the building, and there was no solid, hazardous, or radioactive waste pickup from Building ~~94~~. 34 VKM 5/6/03

At the time of the inspection, there was a white low specific activity (LSA) waste storage box located on a concrete pad beside the building. It was locked, but the process manager indicated that it contained LSA waste that was generated in cleanup of Room 1 over two years ago. The process manager had no characterization documents, although he indicated that in the past the waste had been characterized. It contained materials that he had removed from Room 1 that had been contaminated by burning of uranium tailings. Waste characterization, handling, and storage did not conform to Mound Procedure MD 81240, Issue 7, *Low Level Waste Management Procedures*. (Issue 7 was operable two years ago; Issue 8 is now in place.)

The process manager indicated that he would contact Waste Management. During a follow up visit to Building 34 two weeks after the initial walk-through, pick up had not occurred. The issue was addressed with the EG&G MAT manager of low-level waste programs. He indicated that until waste is properly characterized in accordance with Mound procedures, and his organization is notified for pickup, he has no knowledge of improperly handled waste. There is no routine field surveillance or inspection of LSA storage containers or other storage areas to identify improperly characterized or stored waste.

9.57.4.6 Waste Minimization and Pollution Prevention

At Mound there is an active program to minimize waste streams in accordance with state and federal requirements and Executive Order 12856.

9.57.5 Findings and Recommendations

Photographs were taken to document the environmental appraisal. They are included as Attachment 6 (Section 9.57.6.6).

Findings related to the environmental appraisal of Building 34 indicates that the following action items, in priority order, should be planned and scheduled.

34-1 Characterization, handling, storage, and disposal of LSA waste stored at Building 34 does not conform to guidelines established in Mound procedure MD-81240, or DOE Order 5820. There is no evidence that characterization was completed.

34-2 EG&G MAT did not perform routine field surveillance to identify potential waste characterization, storage, handling, or assure that the Building 34 generator/process manager was properly managing waste streams. Field surveillance activities by those knowledgeable about technical issues are critical, as quality assurance and verification are a necessary part of an environmental protection program, as discussed in DOE Order 5400.

34-3 Training requirements and records of the process manager were not verified to confirm that he had completed LSA waste generator training in accordance with NVO 325 Training Matrix. If training was up-to-date, and the process manager was aware of the generator's responsibilities for characterization, the process should be reviewed to determine why it failed.

34-4 D&D and Environmental Restoration Program records were not reviewed as a part of the walk-through. It is assumed that all areas around the building were sampled to determine levels and types of contamination and that appropriate remediation occurred. The building manager and the process manager should review and verify that this assumption is correct, and add information to the building record. If the assumption is incorrect, action should be taken to confirm that runoff from contaminated soils is not entering the spillway.

34-5 Since it appears that drains in Building 34 may be connected to the spillway, all drains should be posted and management controls instituted to assure that only appropriate materials enter the drains. This is especially important as contractors use the building, as they may be unfamiliar with Mound systems.

34-6 Water sources should be posted.

34-7 Since hazardous waste records indicate that PCB-contaminated water was stored in or around the building several years ago, records should be checked to confirm that the building is not contaminated.

34-8 Several issues related to hazardous materials and emergency response discussed in the report should be corrected: the fire extinguisher, emergency response posting, and gas cylinders. The process manager has a high level of knowledge related to these issues.

34-9 The building is used by contractors for environmental sample processing. If CERCLA program samples are stored in Building 34, it should be a designated area. It should be noted that samples returned by laboratories following characterization are a waste and must be handled as such. Building 34 is not a designated storage area.

ENVIRONMENTAL APPRAISAL CHECKLIST

Building Name 341

Appraisers:

Vogas
Name Discipline

Hausfeld
Name Discipline

Merke
Name Discipline

Name Discipline

Building Manager: Kathy Kochel

Process Manager: [redacted] 4322

Date: 2-6-96 am

F 7 of 47

9.57-9

[redacted]

ENVIRONMENTAL APPRAISAL CHECKLIST

Table of Contents

Checklist	Page
Clean Water Act	1
Clean Air Act	2
Hazardous Materials	4
Safe Drinking Water Act	7
RCRA Hazardous Waste	8
TSCA and NESHAP Requirements for Asbestos	13
TSCA—PCB	14
Low-level and Transuranic Waste	17
Waste Minimization/Pollution Prevention Activities	22

South of building is burn pit - recessed concrete pit.
Oil tank - removed & area remediated. Tank contained aviation fuel & other flammable

Test cell in ground North side of building. covered/locked/full of ice.
Potable water disconnected.

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Vyas/Hausfeld/Merker Date: 2-6-96am

Clean Water Act (CWA) Screening Checklist

Question	Response	Comments
Does the outside drain spouting of the building discharge directly to a storm sewer/sanitary system?	Y / N	~~may go to spillway~~ If the answer to any of these questions is yes, proceed with the following checklist.
Are there sinks, toilets and floor drains in the building?	Y / N	
Are chemicals being used in the building?	Y / N	Stored
Is there a process which discharges to the storm or sanitary system?	Y / N	fire training program inactive

CWA Checklist

Regulatory Guideline	Question	Response	Comments
40 CFR 122 Appendix D Table V	If chemicals are used/stored in the building, are they on the attached list? Are they properly contained?	Y / N Y / N	Storage of chemicals & matls used by ~~contractor~~ env remediation contractor (closed)
	Is the building in operation? What are the processes and where do they discharge to?	Y / N _____ _____	fire safety program inactive
	Do the floor drains, sinks & toilets appear to be draining properly?	Y / N	
OAC 3745-33	Do the floor drains and sinks drain to a sanitary or storm sewer?	Sanitary Storm	may drain to spillway Floor drain in Rm 2.
	Is there a sump/pit in the building? If so, what does it contain? How often is it pumped out? Does water collect in sump? Does sump have secondary containment?	Y / N _____ _____ Y / N Y / N	outside sump. NO sump INSIDE
	Are there any manholes, catch basins, drains, or fill pipes in or around the building? If so, are there any unusual appearances, colors, and/or odors? Describe in comment section. Can chemicals flow into the drain?	Y / N Y / N Y / N	

Building no longer used for fire training. Used for contractor staging area.

Page 47

9.57-11

9.57-12

Environmental Appraisal Checklist

Building Name: 34 Appraisers: V/Hemsfield/Meeker Date: 2-6-96 am

Clean Air Act (CAA) Screening Checklist

Regulatory Guideline	Question	Response	Comments
	Are there any rooms that have air emissions sources that vent to the outside of the building, e.g., fumehoods, equipment? If so, note the rooms.	Y / N	
OAC 3745-35	Using the air emissions inventory reference for this building, are there any sources in the building that are not documented?	Y / N	
	Is there evidence of fugitive dust emissions inside or outside of the building	Y / N	

CAA Checklist

Regulatory Guideline	Question	Response	Comments
	Are there existing air permits or applications applicable to the building?	Y / N	
OAC 3745-31,35	If yes, are the terms and conditions of the permit or the information included on the application (see air emissions database) being followed? Note any differences and update the air emissions database.	Y / N	
OAC 3745-31	Are there any sources that are not included in the air emissions database? If so, note the room, hood number, active or not, POC, and applicable air emission database information on Table B.	Y / N	
OAC 3745-31-03	Are there sources which are lab equipment of lab fumeheads used exclusively for chemical or physical analyses and bench scale lab equipment? These sources do not require a permit. However, the air emissions database should be updated.	Y / N	
	Has there been any release of air contaminants from this building?	Y / N	

F10 of 47

Building Name: 34 Appraisers: Vyas/Hausfeld/Merker Date: 2-6-96am

Not completed

CAA Checklist

Comments: Note the number of sources/hoods per room, the number that are active, and the POC on the reference document.

TABLE A									
Process Source	Room Number	Hood Number	In Database	Active	Chemicals Used	Quantity Used	Quantity to Waste Management	Hours/Yr. Operation	Air Emissions
			Y / N	Y / N					
			Y / N	Y / N					
			Y / N	Y / N					
			Y / N	Y / N					
			Y / N	Y / N					

Source:_____

Filed 47

9.57-13

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Vigas/Hausfeld/Merker Date: 2-6-96 am.

Hazardous Materials (HM) Screening Checklist

Question	Response	Comments
Are any chemicals used or stored in this building, now or in the past?	(Y) / N	If the answer is yes, proceed with the following checklist.

HM Checklist

Regulatory Guideline	Question	Response	Comments
29 CFR 1910.1200(b,f)	All containers of hazardous chemicals shall be labeled as to the identity of the chemical and the appropriate hazard warnings.	Y / N NA	No haz chems
29 CFR 1910.1200(g)	MSDS shall be available to the employees in close proximity to the work area.	Y / N NA	Not req.
29 CFR 1910.22, 1910.106, 1910.176	All places of employment, passageways, storerooms and service areas shall be kept clean and orderly and in a sanitary manner. Aisles shall be unobstructed. Drums and containers are not leaking and are tightly sealed.	Y / N	Storage bag contractors need to remove unused recycled materials.
29 CFR 1910.106	Storage cabinets for flammable materials are constantly kept closed, are fire resistant and are labeled "FLAMMABLE - Keep Fire Away". Containers inside should be labeled and closed. No spills inside cabinet.	Y / N NOT INSPECTED	flamm cabinet cont. closed could not be inspected
29 CFR 1910.106(d)(7)	Incompatible chemicals are not stored together.	Y (N)	
29 CFR 1910.106(d)(4)	Inside Flammable/combustible storage rooms must meet the following: 4 in. raised sill or trench that drains to a safe area, liquid tight wall/floor joints, self-closing doors, gravity or mechanical exhaust providing 6 room changes/hr., exhaust switch located outside room, at least one 3 ft. aisle; no cracks in secondary containment.	Y / N NA.	

Storage bag contractors

Environmental A[illegible]raisal Checklist

Building Name: 34 Appraisers: Hausfeld/Merker/Vyas Date: 2-6-96am

HM Checklist

Regulatory Guideline	Question	Response	Comments
29 CFR 1910.106(d)(7)	All flammable/combustible storage locations have at least one 12-B portable fire extinguisher located outside and within 10 ft. of a door opening into any room for storage. No smoking signs are posted.	Y / N	may not be req'd [illegible] left in cont. area not charged. Etter to contact fire dept
29 CFR 1910.151	Eyewashes/showers shall be provided within the work area. Ensure unit is operational.	Y / N	portable eyewash
CGA P-1 3.3 & 3.3.10	All gas cylinders (full or empty) shall carry a legible label or marking identifying the contents.	Y / N	get rid of cyl. not in use.
CGA P-1 3.5.3	Full and empty containers should be stored separately with the storage layout planned so that containers comprising of old stock can be removed first with a minimum handling of other containers.	Y / N	
CGA P-1 3.5.8	All compressed gas containers in service or in storage shall be stored standing upright and the container shall be secured.	Y / N	cylinder not in use to be returned.
CGA P-1 4.2.2	Oxygen cylinders shall be separated from flammable gas containers or combustible materials a minimum of 20 ft. or a noncombustible barrier 5 ft. high.	Y / N NA	
29 CFR 1910.104(2)(10)	Oxygen stored as a liquid shall be on a noncombustible surface. Asphalt is considered combustible. Wood and long dry grass shall be cut back 15 ft. from the container.	Y / N NA	
29 CFR 1910.104	Bulk oxygen storage shall be permanently placarded "OXYGEN - NO SMOKING - NO OPEN FLAMES".	Y / N NA	
	Is there a sign posted in each work area regarding emergency egress and emergency response action?	Y / N	sign needed in cont area
	Is there an emergency response plan available?	Y / N	

- Etter will get fire extinguisher charged
- Cylinders will be sent to B-71.

Page 47

9.57-15

9.57-16

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Hausfeld/Merker/Vyas Date: 2-6-96am

HM Checklist

Regulatory Guideline	Question	Response	Comments
	Is there a process area?	Y / N	
	Does it have proper containment?	Y / N	
	Is there a liquid bulk transfer area?	Y / N	
	Is there proper containment?	Y / N	
	Is there an above ground storage tank? If so, complete Table B.	Y / N	

Above Ground Storage Tanks Inventory

TABLE B—Above Ground Storage Tanks Inventory

Building	Capacity (Gal.)	Contents	Estimated Volume	In Service	Containment	Visual Stains/ Contamination	If Empty, Flushed
	NONE			Y / N	Y / N	Y / N	Y / N
				Y / N	Y / N	Y / N	Y / N
				Y / N	Y / N	Y / N	Y / N
				Y / N	Y / N	Y / N	Y / N
				Y / N	Y / N	Y / N	Y / N
				Y / N	Y / N	Y / N	Y / N
				Y / N	Y / N	Y / N	Y / N

Page 47

Source: _____

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Hausfeld/Mercer/Vyas Date: 2-6-96 am

Safe Drinking Water Act (SDWA) Screening Checklist

Does this facility have potable water?	Y / N	If yes, conduct the following survey.

potable disconnected; service water only

SDWA Checklist

Regulatory Guideline	Question	Response	Comments
OAC 3745 95-02 (A)	Do actual or potential cross-connections exist between potable (light green) and service water (dark green)?	Y / N	
OAC 3745 95-04 (B)(C)	Are backflow prevention devices installed where cross connections (hoses connected to faucets, hot water tank vented directly to a drain) exist?	Y / N NA	
	Are sources of service water (janitorial and laboratory faucets, or outdoor spigots) posted as non-potable water sources?	Y / N N	
	Does the facility contain any water coolers or fountains that are not lead free? Complete Table C.	Y / N	

Fisc 47

TABLE C—Water Fountain Survey

Building	Location	Model #	Comments / Date of Analysis for Lead
	NONE		

9.57-17

Source: _____

9.57-18

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Vyas/Hausfeld/Merker Date: 2-6-96am

RCRA Screening Checklist

Does this facility generate waste or use chemicals?	Y / N	If yes, conduct the following survey.

RCRA Checklist

Regulatory Guideline	Question	Response	Comments
OAC 3745 52-11	Has any material generated been characterized RCRA hazardous? Was charactarization by analysis or by process knowledge? Are lab results or documentation of process knowledge readily available? Note any uncharacterized material in comment section. Is it waste? If yes, proceed with next section.	Y / N analysis / process Y / N Y / N	
OAC 3745 52-11	Are any of the materials noted RCRA hazardous waste? If no, note and stop here. If yes, note the location of the management unit, and the method of management, and proceed with the appropriate section below.	Y / N	

Fig 4.7

Environmental . ,praisal Checklist

Building Name: 34 Appraisers: Haufeed/Merker/Vyas Date: 2-6-96am

RCRA Checklist

Regulatory Guideline	Question	Response	Comments
I. HAZARDOUS WASTE STORED IN CONTAINERS			
	Is there an area in the building that could qualify as a Satellite Accumulation Area? Is it treated as such?	Y / N Y / N	
OAC 3475-52-34 (C)	Has any of the RCRA hazardous waste in this building been managed in Satellite Accumulation Areas? If no, proceed to the next section. If yes, answer the following.	Y / N	
	Are the containers marked with the words hazardous waste, or other words denoting the hazard?	Y / N	
	Are the containers in good condition?	Y / N	
	Are the waste compatible with the containers?	Y / N	
	Are containers managing ignitable hazardous waste stored at least 50 feet from the plant site boundary?	Y / N	
	Are containers kept closed and locked except during filling?	Y / N	
	Are containers moved within 3 days of being filled?	Y / N	

F17 of 47

9.57-19

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Vyas/Haufeld/Merker Date: 2-6-96am

not completed

RCRA Checklist

Regulatory Guideline	Question	Response	Comments
OAC 3745-52-11 (A)	If a Satellite accumulation area has been abandoned and/or if waste left in place, and the containers may be subject to the 90-day-storage exclusion. If this exclusion does not apply, go to the next section. If the containers have been in storage under this exclusion, answer the following:		
	Are the containers in good condition?	Y / N	
	Are the waste compatible with the containers?	Y / N	
	Are the containers kept closed except during filling?	Y / N	
	Are the containers managed in such a way, that they are not ruptured, or leaks caused?	Y / N	
	Is the area inspected at least once weekly?	Y / N	
	Is the inspection recorded? Where is the log? Is it properly completed, dated, and signed?	Y / N Y / N	
	Are containers managing ignitable hazardous waste stored at least 50 feet from the facility boundary?	Y / N	
	Are incompatible wastes managed in such a way that they will not react with another incompatible waste?	Y / N	
OAC 3745-52-34(B)	Has any of the waste (except in Building 23, Building 72 and the Burn Area) been managed in excess of 90-days?	Y / N	
	If no go to next section.		
	If yes, note.		
	For Building 23, Building 72 & Burn Area use special checklist.		

F18 of 47

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Hausfeld/Vyas/Merker Date: 2-6-96 am

RCRA Checklist

Regulatory Guideline	Question	Response	Comments
II. HAZARDOUS WASTE STORED IN TANKS			
OAC 3745-52-32 (B)	Has any chemical waste stored in a tank, piece of process equipment or ancillary equipment been in storage in excess of 90-days?	Y / N	
	If the answer was no, then proceed with the following:	Y / N	
	Has the tank or piece of equipment had an integrity assessment?	Y / N	
	Is there a sump?	Y / N	
	Is it dry?	Y / N	
	Does the tank or equipment have secondary containment?	Y / N	
	Does the tank or equipment have leak detection device(s)?	Y / N	
	Has spill control prevention been enacted?	Y / N	
	Has any hazardous waste stored in a tank, piece of process equipment or ancillary equipment been in storage in excess of 90-days?	Y / N	
	If the answer was no, then proceed with the following:		
	Has the tank or piece of equipment had an integrity assessment?	Y / N	
	Does the tank or equipment have secondary containment?	Y / N	
	Does the tank or equipment have leak detection device(s)?	Y / N	
	Has spill control prevention been enacted?	Y / N	
	Is there a closure plan?	Y / N	
	If yes, then note.		
OAC 3745-67	Has any of the waste been managed in a surface impoundment? If yes, then note. Go to the next section.	Y / N	

Fig 8 47

9.57-21

9.57-22

Environmental Appraisal Checklist

Building Name: 34

Appraisers: Vyas/Hamdeed/Merker Date: 2-6-96am

RCRA Checklist

Regulatory Guideline	Question	Response	Comments
OAC 3745-68	Has any of the waste been managed in a Landfill? If yes, then note. Go to the next section.	Y / N	
OAC 3745-68	Has any of the waste been managed in an Incinerator (other than Burn area units)? If yes, then note. Go to the next section.	Y / N	
OAC 3745-68	Has any of the waste been managed in a Thermal treatment Unit (other than Burn area units)? If yes, then note. Go to the next section	Y / N	
OAC 3745-69	Has any of the waste been managed in a Miscellaneous Treatment Unit (other than Burn area units)? If yes, then not. Go to the next section.	Y / N	
OAC 3745-56	Has any of the waste been managed in a Waste Pile? If yes, then note. Go to the next section.	Y / N	

F 208 47

General Comments:

Building Name: 34 Appraisers: Vyas/Haufeld/Merker Date: 2 6-96am

Asbestos Screening Checklist

Does this facility contain ACBM?	Y / N	If yes, conduct the following survey.

Asbestos Checklist tested + none found - Asbestos Program Manual

Note: Routinely, the asbestos standard for ACBM in schools has been applied to facilities for purpose of cleanup. In addition to AEHERA, there are additional standards in the NESHAPS that may be of importance.

Regulatory Guideline	Question	Response	Comments
ADAPTED FROM TSCA ACBM IN SCHOOLS:			
	Has this building been characterized either through process knowledge, by analyses, or by inspection to determine if it contains asbestos? If no for this building or area note this conclusion in the comment section.	Y / N	
	Is there any evidence of friable asbestos?	Y / N	
	Is the asbestos removal properly managed? (See questions listed below)	Y / N	If there is no asbestos removal, do not complete the following section.
NESHAPS FOR ASBESTOS FOR ANY ONGOING ASBESTOS REMOVAL:			
40 CFR 61.156	There are no discharges of visible emissions to the outside air from collection, processing, packaging, transporting, or deposition of ACBM during the removal.	Y / N	
40 CFR 61.152(b) (1)	ACBM is treated with water in accordance with 40 CFR 152(b)?	Y / N	
40 CFR 61.154	Is friable asbestos adequately wetted during stripping? Or, has an adequate ventilation and collection system been installed?	Y / N	
40 CFR 61.152	Is wetting continued until the waste friable asbestos is collected for disposal?	Y / N	

F21 of 47

9.57-23

9.57-24

F22 of 47

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Merker/Hausfeld/Vigs Date: 2-6-96am

Toxic Substances and Control Act (TSCA) PCB's Screening Checklist

Does this facility potentially contain any PCB's or PCB contaminated equipment?	Y / N	If yes, are transformers labeled (Blue or Yellow stickers)? If yes, conduct the following survey.

TSCA Checklist

Regulatory Guideline	Question	Response	Comments
40 CFR 761	Has any waste generated in, or from, this building been characterized either through process knowledge or by analyses to determine if it contains PCB's ? If the answer is no, note . If the answer is yes, proceed with next section.	Y / N	
	Based on an inspection, are any of the materials or equipment potentially PCB contaminated? If no, note and stop here. If yes, note the location of the management unit, and the method of management, and proceed.	Y / N	
40 CFR 761.65 (c) (5)	Are PCB articles or containers stored in this building checked for leaks at least once every 30 days?	Y / N	
	If yes, are auditable records maintained.	Y / N	
40 CFR.30 (a) (1) (ix)	Are any PCB transformers in use, or stored for possible reuse, that contain PCB's at concentrations of 500 ppm or greater?	Y / N	
	Are they visually inspected quarterly? If yes, are auditable records maintained?	Y / N	

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Vyas/Hausfeld/Merker Date: 2-6-96am

not completed

TSCA Checklist

Regulatory Guideline	Question	Response	Comments
40 CFR 761.30 (a) 1,viii	Are all combustible materials (i.e., paints, solvents, plastics, paper, sawn wood, etc.) cleared from areas containing PCB transformers to a distance of five meters?	Y / N	
40 CFR 761.65 (b) (8)	Are all PCB articles and containers labeled with the date they were placed in storage?	Y / N	
	Are labeled PCB articles and containers stored so that the labels can be referenced?	Y / N	
40 CFR 761.65 (a)	Are all PCB's and PCB contaminated items at concentrations above 50 PPM, that are stored for disposal, stored no longer than one year from the date they were placed in storage?	Y / N	
40 CFR 761.62 (b) (1) (i)	Do all PCB storage areas have an adequate roof and walls to prevent rainwater from reaching the stored items?	Y / N	
40 CFR 761.62 (b) (1) (iv)	Are storage are floors curbed and constructed of continuous smooth and impervious materials?	Y / N	
40 CFR 761.62 (b) (1) (i)	Are the curbs at least 6 inches high?	Y / N	
40 CFR 761.62 (b) (1) (iii)	No drains are allowed in storage areas. Are there drains in the storage areas?	Y / N	

F23 of 47

9.57-25

9.57-26

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Vigno/Hausfeld/Merker Date: 2-6-96am

not completed

TSCA Checklist

Regulatory Guideline	Question	Response	Comments
40 CFR 761.65 (c) (2)	Only non-leaking and undamaged large high voltage PCB's capacitators and PCB-containing electrical equipment are allowed to be stored outside of PCB storage areas, on pallets if stored outside, with containment for 10 percent of the volume of the equipment. Do all PCB's stored in this configuration conform with this requirement?	Y / N	
40 CFR 761.45 and .65	Are all PCB storage areas marked with a large PCB mark as described in 40 CFR 761.45 (a)?	Y / N	
40 CFR 761.65 (c) (5)	Have all leaking PCB articles and containers been transferred to non-leaking containers?	Y / N	
40 CFR 761.65 (c) (6)	Do all PCB storage containers for the storage of liquid and non-liquid PCB's comply with DOT shipping container specifications?	Y / N	

F24 of 47

GENERAL COMMENTS:

Environmenta. .ppraisal Checklist

Building Name: 34 Appraisers: Vryas Hansfeld Merker Date: 2/6/96 am

Low-Level Waste and Transuranic Waste Screening Checklist

Does this facility contain radioactive waste ?	(Y) / N	If yes, conduct the following survey.

Low-Level Waste and Transuranic Waste Checklist

Regulatory Guideline	Question	Response	Comments
Low-Level Waste			
DOE Order 5820.2A Chapter III	Can any waste generated in, or from, this building be characterized either through process knowledge or by analyses to determine if it is LLW ? If the answer is no, note. If the answer is yes, proceed with next section.	(Y) / N	
DOE Order 5820.2A Chapter III.	Are any of the materials noted by inspection LLW? If no, The audit would stop here, because there are no LLW. If yes, note the location of the management unit, and the method of management, and proceed with the section below.	(Y) / N	locked - not inspected white LSA storage box
DOE Order 5820.2A Chapter III, 3.a.	Have the storage configurations in use in this area been taken into account for keeping external exposures to the general public below 25 mrem/yr?	Y / (N)	
	Is the waste stored in a configuration that protects ground-water resources?	(Y) / N	on pad.
DOE Order 5820.2A Chapter III, 3.b.	Has monitoring been conducted in this area in accordance with DOE Order 5820.2A in order to evaluate the area against the performance standard?	Y / (N)	NO sign of such
	Based on field data, does the monitoring conducted in this area conform to the performance standard?	Y / (N)	

Rm 3 - roped off. Contaminated by uranium tailings burned during fire training exercises. Either cleaned up area. Deposited LSA waste in white box 1992/93. Not collected by LSA waste management. No characterization documents

9.57-28

F 26 of 47

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Vyas Hansfeld Merker Date: 2/6/96

Low-Level Waste and Transuranic Waste Checklist

Regulatory Guideline	Question	Response	Comments
DOE Order 5820.2A Chapter III, 3.d.	Based on field data, is the characterization of the materials in this area sufficient to assure proper segregation to assure proper segregation, treatment, storage, and disposal?	Y / N	
	Based on field data does the characterization as documented at the time of generation of the waste ensure that the actual physical and chemical characteristics, and major radionuclide content of this material are recorded and known at all stages of the waste management process?	Y / N	
	Do characterization data include the following:		
	Physical and chemical characteristics of the waste?	Y / N	
	Volume of the waste (including solidification and absorbent material)?	Y / N	
	Weight of the waste (including solidification and absorbent material)?	Y / N	
	Major radionuclides and their concentrations?	Y / N	
	Packaging date, package weight, external volume?	Y / N	
	How were the concentration of radionuclides determined? Direct methods?		
	How were the concentrations of radionuclides determined? Indirect methods?		
DOE Order 5820.2A Chapter III, 3.h	Is the storage configuration in long term storage sufficient to meet the performance standard?	Y / N	N/A
	Are records maintained at the facility enabling this waste to be traced from its origin?	Y / N	N/A

Building Name: 34 Appraisers: Vyas / Hausfeld, Meier Date: 2/6/96

Low-Level Waste and Transuranic Waste Checklist

Regulatory Guideline	Question	Response	Comments
TRU WASTE			
	Can any waste generated in, or from this building be characterized either through process knowledge or by analyses to determine if it is TRU waste? If no, note and stop. If yes, proceed with the next section.	Y / N	
	Are any of the materials noted as being TRU waste during an inspection? If no, note and stop. If the answer is yes, note the location of the management unit, and the method of management and proceed with the appropriate section below.	Y / N	
DOE Order 5820.2A, Chapter II, 3.a	Was this material evaluated as soon as possible in the generating process, to determine if it is TRU (>100nCi/g), if it is recoverable, or if it is waste? (Note if the activity level is less than 100nCi/g, the waste is not TRU, and can be managed as LLW.)	Y / N	
	Did the determination of TRU radionuclide concentration include the mass of the container, including shielding? These should be included in calculating the specific activity of the waste.	Y / N	

F 27 of 47

9.57-29

9.57-30

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Vyas Stanfield Marker Date: 2/6/96

Not completed

Low-Level Waste and Transuranic Waste Checklist

Regulatory Guideline	Question	Response	Comments
DOE Order 5820.2A, Chapter II, 3.b	Has the TRU waste been assayed or otherwise evaluated to determine its radioactive content prior to storage?	Y / N	
	Has the TRU waste been characterized or otherwise evaluated to determine if hazardous waste is present?	Y / N	
	Has classified TRU waste been treated to destroy the classified characteristics?	Y / N	
DOE Order 5820.2A, Chapter II 3.d	Has all newly generated TRU waste been packaged in non-combustible packaging that meets DOT requirements?	Y / N	
	Have all Type A TRU waste packages been equipped with a method to prevent pressure buildup?	Y / N	
	Have all TRU packages been marked, labeled and sealed in accordance with 40 CFR 261 Subpart C and 49 CFR 172 Subparts D, E and 49 CFR 173 Subpart I?	Y / N	

F 28 of 47

Page 21 of 27 of the Environmental Appraisal Checklist was not provided.

9.57-32

F30 of 47

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Vigas/Hausfeld/Merker Date: 2-6-96 am

Waste Minimization/Pollution Prevention Activities Screening Checklist

Does this facility generate waste or use chemicals?	Y / N	If yes, conduct the following survey.

Waste Minimiaztion/Pollution Prevention Activities Checklist

Regulatory Guideline	Question	Response	Comments
	Based on available information and a walk through, are there any apparent opportunities to curtail the consumption of raw materials (including but not limited to paper, chemicals, electricity, and etc.). If yes, list candidate areas in the comment section.	Y / N	
	Are there solvent wastes?	Y / N	
	Is vehicle maintenance performed?	Y / N	
	Are oils used ?	Y / N	
	Are these corrosive wastes?	Y / N	
	Are there sludges?	Y / N	
	Are there halogenated organic (nonsolvent) wastes?	Y / N	
	Are metals recovered from wastewater?	Y / N	
	Is waste sludge generated?	Y / N	
	Are any waste minimization practices used that reduce the generation of sludge?	Y / N	
	Ion exchange process?	Y / N	
	Lead in gasoline lowered to reduce tank sludge toxicity?	Y / N	
	Storage tank agitators installed?	Y / N	
	Corrosive resistant materials used?	Y / N	
	Prevention of crude oil oxidation ?	Y / N	
	Drying?	Y / N	

Building Name: 34 Appraisers: Vyas/Hausfeld/Merker Date: 2-6-96 am

Waste Minimization/Pollution Prevention Activities Checklist

Regulatory Guideline	Question	Response	Comments
HALOGENATED ORGANIC (NONSOLVENT) WASTES		NA	
	Are halogenated organic wastes used as fuel in cement kilns?	Y / N	
	Are baghouse filters used to collect pesticides and pesticide intermediates?	Y / N	
	Are solid wastes generated from the collection of baghouse dust?	Y / N	
	Wet instead of dry grinding used?	Y / N	
	The output spray dried?	Y / N	
	Has baghouse emptying and recycling of baghouse fines been scheduled?	Y / N	
	Have operations been evaluated to improve procedures such as handling, storage and spill prevention for increased efficiency?	Y / N	
METAL WASTES		NA	
	Are any technologies for the recovering of metals from waste rinsewater used?	Y / N	
	Evaporation of waste rinsewater?	Y / N	
	Reverse osmosis?	Y / N	
	Ion exchange?	Y / N	
	Electrolysis?	Y / N	
	Agglomeration?	Y / N	
CORROSIVE WASTES		NA	
	Are acidic or basic cleaning solutions used as treatment for pH adjustment chemicals?	Y / N	

F31 of 47

9.57-33

9.57-34

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Merker/Hausfeld/Vyas Date: 2-6-96 am

Waste Minimization/Pollution Prevention Activities Checklist

Regulatory Guideline	Question	Response	Comments
	Are ion exchange resins used to remove heavy metals and cyanides from acid and base solutions?	Y / N	
	Is crystallization used to remove corrosives from solution by cooling?	Y / N	
	Is the process of evaporation of liquid wastes by heating used to leave behind a more concentrated solution?	Y / N	
CYANIDE AND REACTIVE WASTES		NA	
	Has non-cyanide or low concentration of cyanide process replaced zinc cyanide bath ?	Y / N	
	Are any of these processes used to recycle cyanide wastes?	Y / N	
	Refrigeration/crystallization?	Y / N	
	Evaporation?	Y / N	
	Ion exchange?	Y / N	
	Membrane separation which includes reverse osmosis or electrodialysis?	Y / N	
VEHICLE MAINTENANCE		NA	
	How are auto parts cleaned?	Y / N	
	Solvent sink?	Y / N	
	Solvent dunk bucket?	Y / N	
	Solvent dip tank?	Y / N	
	Are parts cleaning solvents used for anything else besides cleaning parts?	Y / N	
	Are spills reduced by locating sinks or dunk buckets near auto service bays?	Y / N	

F 32 of 47

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Vyas/Hauefeld/Merker Date: 2-6-96am

Waste Minimization/Pollution Prevention Activities Checklist

Regulatory Guideline	Question	Response	Comments
	Are cleaned parts drained on the sink to minimize solvent spills?	Y / N	
	Are drip tanks used to capture losses?	Y / N	
	Is a solvent sink used for mineral solvents rather than a dunk bucket or dip tank?	Y / N	
	Does a waste hauler collect solvent waste for recycling or treatment?	Y / N	
OILS		NA	
	What kind of oils are used?		
	Hydraulic oil?	Y / N	
	Transformer oil?	Y / N	
	Metal working fluids?	Y / N	
	Spent lubricating oils?	Y / N	
	Can the process be modified or changed to use water-based fluids?	Y / N	
	Are these good housekeeping and operation practices used to minimize oil waste production?		
	Use oils not contaminated with other liquids?	Y / N	
	Oil spills prevented?	Y / N	
	Drip pans installed?	Y / N	
	Oil soaked rags laundered?	Y / N	
	Rags and absorbants used to their limit?	Y / N	

F33 of 47

9.57-35

9.57-36

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Vyas/Hausfeld/Meiner Date: 2-6-96 am

Waste Minimization/Pollution Prevention Activities Checklist

Regulatory Guideline	Question	Response	Comments
	Are these treatment techniques used to promote separation of oil/water wastes?		
	Reclaiming process to remove water and solvents by heat?	Y / N	
	Gravity setting?	Y / N	
	Screening?	Y / N	
	Centrifugation?	Y / N	
	Filtration?	Y / N	
SOLVENT WASTES		NA	
	Has there been an attempt to reduce volume or toxicity by:		
	Eliminating solvents?	Y / N	
	Reducing the use of solvents?	Y / N	
	Reducing the loss of solvents?	Y / N	
	Increasing recyclability?	Y / N	
	Are solvents segregated?	Y / N	
	Are waste solvents free from water and garbage?	Y / N	
	Are recycled solvent containers labeled as such?	Y / N	
	Are containers kept closed?	Y / N	
	Free and sheltered from the elements?	Y / N	
	Are solvent tanks kept as free from contaminations as possible so that the waste can be recycled?	Y / N	
	Is a method used to minimize the use of new materials such as a countercurrent process?	Y / N	

F34 of 47

Environmental Appraisal Checklist

Building Name: 34 Appraisers: Vyas/Hausfeld/Merker Date: 2-6-96am

Waste Minimization/Pollution Prevention Activities Checklist

Regulatory Guideline	Question	Response	Comments
	If there is a recycling program, what technique is used?	Y / N	NA
	Distillation?	Y / N	
	Solids removal?	Y / N	
	Dispersion breaking?	Y / N	
	Dissolved and emulsified organics recovery?	Y / N	
	Are any of these housekeeping procedures used to minimize the production of solvent wastes?		
	Separators cleaned and checked?	Y / N	
	Parts not allowed to enter the degreaser while wet?	Y / N	
	Sludge from the bottom of the tank not allowed to accumulate?	Y / N	
	Lids kept on tanks?	Y / N	
	Freeboard space on tanks increased?	Y / N	
	Are better operating practices used to reduce waste?	Y / N	
	How long is solvent waste stored and where?	_____ _____	

F35 of 47

9.57-37

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COMPLETED BY STEVE ETTER - BLDG MGR DID NOT CONFIRM.

Building Manager's Questionnaire

Building Name: 34 Building Manager: K.G. Koehler Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

Post-it® Fax Note 7671	Date 12/13/95	# of pages ▶ 11
To DAVE HEITZ	From KATHY KOEHLER	
Co./Dept. STEVE ETTER	Co.	
Phone #	Phone #	
Fax # 5077	Fax # 3724	

1. What are the access requirements(training, clearance, etc.)?

SEE: BURN BUILDING IS HP CONTROLLED - REQUIREMENTS POSTED
ALL OTHER BLDGS NO REQUIREMENT

2. What protective equipment is required to enter the building?

SEE: BURN BLDG IS HP CONTROLLED - REQUIREMENTS POSTED
ALL OTHERS - NO REQUIREMENTS

3. Are there any restricted areas? (Yes) No
Where are they? BURN BLDG UNDER H.P. CONTROL

ENVIRONMENTAL RESTORATION SAMPLE PROCESSING AREA

4. Provide a physical description of the building.

Building is 1,110-ft² building complex used for emergency brigade training. Section 1 is a block concrete facility used for live fire training. Section 2 is used as office space or ~~a classroom. Section 3 is an equipment~~. It is a one-story concrete facility with a concrete and metal roof.

ENVIRONMENTAL RESTORATION CONTRACTORS CHEMICAL INVENTORIES NOT INCLUDED IN THIS REPORT, (USED PERIODICALL

Source: Mound Facility Physical Characterization, 12-1-93

5. Provide a drawing of the building.

Attached.

6. What is the current building use?

HAS NOT BEEN PRACTICED IN YEARS.

Brigade and fire training with live fire, ~~offices and storage space.~~ Deconditioning and Decontamination (D & D) ~~was removing depleted~~ of uranium ~~from it in November of 1993. They were supposed to be finished by early 1994.~~ WAS SCHEDULED IN 1993 BUT FUNDING WAS NOT AVAILABLE. IN FY93, FY94, FY95 or FY96. ENVIRONMENTAL RESTORATION CONTRACTORS PRESENTL USE ROOM 2 FOR PROCESSING (SAMPLES

Source: Mound Building, 5-9-95

7. What is the history of building use other than that described in #6?

Building has ~~always~~ HISTORICALLY been used for live fire training, office bldg and storage building added later.

Source: Mounds Building, 5-9-95

F37 of 47

9.57-41

Building Manager's Questionnaire

Building Name: 34 Building Manager: K.G. Koehler Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

3. What are ongoing operations or processes? What are the raw materials and waste streams from each process? Who is the best contact for each process?

Process(es) Housed: Emergency brigade training, equipment repair

How Wastes Are Generated: ENVIRONMENTAL RESTORATION CONTRACTOR (SPORADICALLY)

~~No wastes generated.~~ UNKNOWN, CONTRACTORS WASTES, EVENTUALLY D&D WASTES WILL BE GENERATED

Contact:
Phone #:

Source: Characterization of Mound's Hazardous, Radioactive, and Mixed Wastes, (8-15-90).

9.57-42

F38 of 47

Building Manager's Questionnaire

Building Name: 3 Building Manager: K.G. Koehler Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

9. In the last six months, have any modifications been made to the building or to processes in the building? Yes ~~No~~ PAINT URANIUM CONTAMINATED AREAS

10. Does the building have air emission sources? ~~No~~ UNKNOWN

Process Source	Room Number	Hood Number	Active	Chemicals Used	Quantity Used	Quantity to Waste Management	Lbs./Yr. Operation	Air Emissions
			Y / N					
			Y / N					
			Y / N					
			Y / N					
			Y / N					

Source: Mound Air Emissions Database 11/30/95

The facility was historically used as a Fire fighter practice burn facility. They burned various types of fuels & flammable materials for practice

F39 of 47

9.57-43

Building Manager's Questionnaire

Building Name: 34 Building Manager: K.G. Koehler Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

11. Describe air pollution control equipment used to reduce emissions for each source. None Listed

Process Source	Emissions	Control Equipment	Functioning
			Y / N
			Y / N
			Y / N
			Y / N
			Y / N

Source: Air Permits 2/4/95

12. For existing permits are emissions monitored? At what frequency? Where are the records maintained?

UNKNOWN → ASK JOHN PUCKET

Process Source	Permit	Log	Permit Conditions & Frequency of Monitoring
		Y / N	
		Y / N	
		Y / N	
		Y / N	
		Y / N	

Source: Air Permits 2/4/95

13. Does the building have domestic water service? Yes No
Is there bottled water? Yes No

SEC 2 HAS RAW WATER - ALL OTHERS NO

RAW WATER DIRECT FR WELL (AQUIF UNTREI

14. Does the building discharge to the storm sewer? Yes No
Where? BURN BLDG. SEC 1 DISCHARGES TO THE POND

15. Does the building discharge to the sanitary sewer? Yes No
Where?

16. Has an asbestos survey been conducted? Yes
What are the results? No

UNKNOWN

Source Technical Manual MD-10391, Issue 3 Asbestos Program Manual 9/6/95

F 40 of 47

9.57-44

Building Manager's Questionnaire

Building Name: 36 Building Manager: K.G. Koehler Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

17. Does the building contain transformers or capacitors? NO

Source: PCB ANNUAL DOCUMNET LOG

18. Has the building been identified as containing PCBs? NO

Source: PCB ANNUAL DOCUMENT LOG

19. What chemicals are used or stored inside or outside of the building? Include compressed gasses not in large tanks.

Chemical Name	State	Amount (MAX)
NON: CO_2 in STORAGE SEC. 7	COMPRESSED GAS CYLINDERS	2-150 lb. CYLINDERS

Source: Chemical Inventory 1994

NEED TO CHECK CONTRACTORS CHEMICALS!

F4108 47

9.57-46

Building Manager's Questionnaire

Building Name: 34 Building Manager: K.G. Koehler Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

20. Has there been a reported spill, leak, or other release of any chemical? Yes (No)
What, how much, and what clean-up measures were followed?

Chemical	Amount	Clean-up Measures

Source: SURROUNDING SOILS CONTAIN FUEL OIL CONTAMINATION – CERCLA REMOVAL ACTION

21. Where do waste chemicals go? NONE USED

CONTRACTORS CHEMICALS – UNKNOWN

22. What janitorial supplies are stored inside or outside of the building?
SOME CLEANING PRODUCTS – NO CHEMICALS IN SEC. 2

23. Where do excess janitorial supplies go? NONE

Source: _____

24. Are pesticides or herbicides stored or used in or around the building? Yes (No)

Chemical	Amount	Chemical	Amount

Source: _____

F42 of 47

9 57 45

Page 7 of 11 of the Building Manager's Questionnaire is not available

Building Manager's Questionnaire

Building Name: 34 Building Manager: K.G. Koehler Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

28. Does the building have abandoned process equipment such as tanks, piping, containers, etc.? Yes (No)

29. Is waste material stored in or around the building for more than 90 days?
YES, FUEL OIL CONTAM SOIL PILES (Yes) No THERE IS A BIOREMEDIATION FACILITY ADJACENT TO BLDG 34

30. Has the building been identified as a 90 day waste accumulation area?
Yes ~~No~~ UNKNOWN - CERCLA ACTIVI

31. Has the building been identified as a satellite accumulation area?
Yes ~~No~~ UNKNOWN - CERCLA ACTIV

32. Is mixed waste generated, stored, or disposed of from the building? Yes (No)
Where are logs found? UNKNOWN (CERCLA & HEALTH PHYSICS)

Process	Waste	Stored	Disposed	Logs
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N

Source: _____

9.57-48

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Building Manager's Questionnaire

Building Name: 34 Building Manager: K.G. Koehler Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

33. Is TRU radioactive waste generated, stored, or disposed of from the building?
Yes (No)
Where are logs found?

Process	Waste	Stored	Disposed	Logs
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N

Source: _____

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9.57-49

Building Manager's Questionnaire

Building Name: 34 Building Manager: K.G. Koehler Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

34. Is low-level radioactive waste generated, stored, or disposed of from the building? Yes ~~No~~
Where are logs found? SURFACE CONTAMINATION IN WALLS & FLOOR

Process	Waste	Stored	Disposed	Logs
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N

Source: _____

35. Identify all administrative orders, temporary or permanent injunctions, civil administrative penalties, or criminal activities issued against the building.

UNKNOWN

Building Manager's Questionnaire

Building Name: 3 Building Manager: K.G. Koehler Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

36. Is there a waste minimization program in the building? Yes No
Discuss your ideas about how to minimize waste.

37. Has a pollution prevention program been developed for the building? Yes No

TOTAL P.012

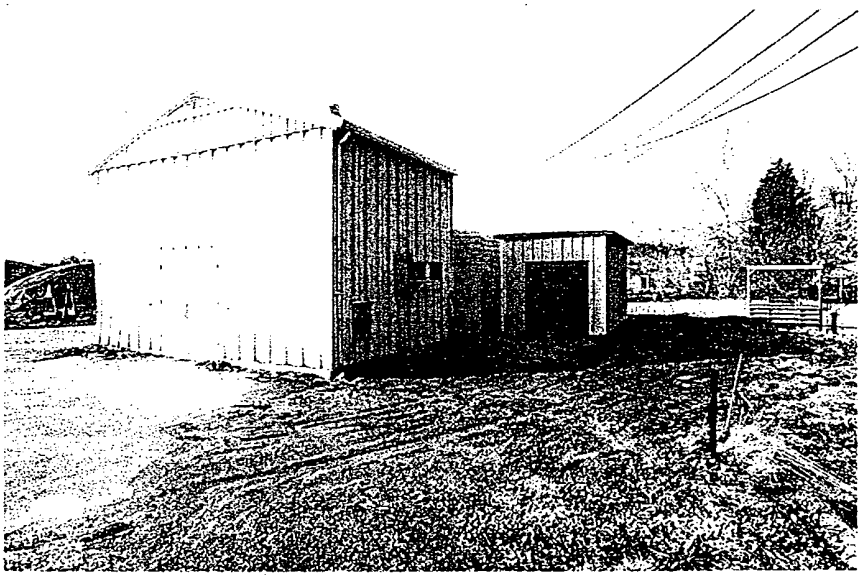
Appendix G

Radiological Information

Final Status Report

For

Building 34



Prepared by:	**Roderick C. Case /**	**Date:**	**April 16, 2003**
Reviewed by:	**R. Coblentz/**	**Date:**	04/23/03
Approved by:	**A. Steven Collas/**	**Date:**	4-24-03

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1.0 Historical Review

Building 34 was constructed in 1965 on the extreme western end of the site near the wastewater retention ponds, and is a collection of three separate buildings.

Building 34 was initially designated as the "Emergency Brigade Training Facility." The Building 34 complex-of-buildings has been the home to or has been associated with a variety of processes and/or operations, including the following:

- Room 1, was built for a live fire training area for the Mound Emergency Brigade. Depleted uranium (U-238) and metal shavings of various types were used in fire fighting practice to simulate pyrophoric situations. Room 1 is known to be contaminated with radioactive material.
- Room 2 was used as an administrative area for the Emergency Brigade training program, the Container Testing Program, and the Biodegradation Facility. Other uses include Health Physics instrument repair facility and Environmental Restoration sampling. Process history indicates that the actual container testing activities took place in the outside areas around Building 34, and the building itself was used as an administrative area.
- Room 3 is a mock corridor between Rooms 1 and 2 and is essentially an outside area used in conjunction with Emergency Brigade Training.
- Room 4 is a detached storage facility, which was moved from the Building 47 area.

Outside burning areas were used to dispose a number of materials including depleted uranium. The precise location of some of these areas is unknown, but believed to be within or under the Building 34 complex.

This survey plan is intended to assess the structural surfaces of Rooms 2, 3, and 4 only. The floor of Room 1 is known to be contaminated and will be removed as LSA waste. The walls and ceiling are slightly contaminated with U-238 (24pCi) and will be rubbelized and retained on site. The surface and subsurface soils, foundations, piping, etc. associated with Building 34 will be evaluated separately.

A complete building history can be found in Reference 1.

2.0 Survey Objectives

The objective of this survey plan is to determine whether or not the residual radioactivity of the surfaces of building materials of rooms 2 and 4 satisfy the site release criteria. This is accomplished by measuring the fixed and removable contamination on building surfaces and performing isotopic analysis on any sediment found in building drains. The survey data is compared to the release criteria of DOE Order 5400.5 using methods defined in Reference 2. The specific survey objectives are outlined in each Survey Plan Form (see Enclosures).

Table 1 lists the permissible surface contamination guideline values as stated in DOE Order 5400.5. These limits are the Derived Concentration Guidelines (DCGL's) for building and structure release.

Table 1

Allowable Total Residual Surface Contamination (dpm/100cm^2)*				
Radionuclides*		**Average***	**Maximum***	**Removable***
Group 1	Transuranics, I-125, I129, Ra-226, Ac-227, Ra-228, Th-228, Th-230, Pa-231	**100**	**300**	**20**
Group 2	Th-Natural, Sr-90, I-126, I-131, I-133, Ra-223, Ra-224, U-232, Th-232	**1,000**	**3,000**	**200**
Group 3	U-Natural, U-235, U-238 and associated decay products, alpha emitters	**5,000**	**15,000**	**1,000**
Group 4	Beta-gamma emitters (Radionuclides with decay modes other than alpha emission or spontaneous fission) except for Sr-90 and others noted above	**5,000**	**15,000**	**1,000**
Tritium		**N/A**	**N/A**	**10,000**

* Note: Refer to DOE Order 5400.5, Radiation Protection of the Public and the Environment, for specific information on surface contamination guidelines and additional notes.

The average activity levels shown in Table 1 assumes that the residual contamination is uniformly distributed across the survey unit and is the $DCGL_w$ for this survey. The maximum activity shown in Table 1 represents the Elevated Measurement Comparison ($DCGL_{emc}$) for small (<100cm^2) areas of activity that may be observed in the survey unit while scanning.

2.1 Survey Design

This survey plan was designed to characterize Rooms 2 and 4. It also included the block wall that forms the east wall of Room 3. The initial classification of the Room 2 floor and walls up to 2 meters is a Class 2 area. The walls > 2 meters and ceiling are classified as a Class 3 area. Rooms 3 and 4 are initially classified as Class 3 areas. The interior building surfaces were cleaned of dirt, debris, and loose paint at survey locations in order to ensure that paint or other coverings did not obscure any residual radioactive material present on the surfaces of the building materials. Obstacles such as insulation and false ceilings were removed to provide access to building surfaces. Sampling of building materials was limited to removable loose surface contamination (smears) and sediment sampling of floor drains. The following table shows the survey unit size and classification.

Survey Unit Number	Survey Unit Room Designation	Area (ft^2)	Survey Unit Classification	# Data Points	% Surface Scan
1	Room 2 Floor and Walls to 6'	864	2	20	50
2	Room 2 Walls above 6' and ceiling	1176	3	20	10
3	Room 2 Exterior walls and roof	1240	3	20	10
4	Room 4 interior surfaces	1060	3	20	10
5	Room 4 exterior surfaces	840	3	20	10
6	Room 3 Block Wall	540	3	20	10

Survey Unit 1 (Room 2 floors and walls to 6') was given reference coordinates on a grid map with the origin at the southeast corner of the survey unit.

The number of data points was determined by calculating the relative shift (Δ/σ) from the DCGL value, the lower bound of the gray region (LBGR), and the standard deviation of the contaminant in the survey unit (Δ/σ = DCGL-LBGR/σ). The standard deviation was estimated to be 17dpm/100cm^2 and the relative shift was calculated as 2.95. The number of data points (n = 20) in the survey unit was obtained from Table 5.5, Reference 2.

The starting point was randomly selected and data points located within the survey unit using the triangular grid method. The spacing of data points is determined by:

$$L = \sqrt{\frac{A}{0.866n}}$$

Where: A = Survey unit area
n = # of data points

For Survey Unit 1, L = 7'
The distance between each row is given as L X 0.866 = 6'

For Class 3 areas, each data point location was determined by multiplying the east-west (Y) and the north-south (X) dimensions of the survey unit by a randomly generated number for each dimension. For consistency, the southeast corner of each survey unit was used as the origin. A computer spreadsheet program was used to determine random numbers and plot data point locations on a survey map. To facilitate field measurements, the calculated coordinates were rounded to the nearest whole number (feet).

Ten (10) additional judgmental data points were surveyed for alpha and beta on beams and horizontal structural surfaces in Rooms 2 and 4.

Replicate surveys were performed in accordance with Reference 3.

Direct field measurements were made at fixed locations using a Ludlum 2350/43-20 gas flow proportional probe for alpha contamination. The integrated count time is one minute. The MDA is 45 dpm/100cm^2 (α) at a background of less than 3 cpm. Integrated beta measurements were made at the same locations in accordance with MD-80036, Issue 29, Op. No. 30030, *Operation of the Ludlum 2360 Scaler/Ratemeter with Ludlum 43-89 Alpha/Beta Scintillator*, Section 6.3.

Laboratory instruments used were appropriate for the analysis requested. Instrument calibration and source check data is documented in accordance with Mound procedures.

2.2 Survey Data

The gross alpha and beta fixed point measurements from each survey unit were averaged and compared to the $DCGL_w$. The average alpha measurement in each Survey Unit (except Survey Unit 5, Room 4 roof) was less than the $DCGL_w$. In Survey Unit 5 the average alpha activity exceeded the Group 1 release criteria. All beta measurements were less than the $DCGL_w$. A summary of the initial alpha and beta measurements is shown in the following table:

Initial Fixed Point Results

Area	Alpha (dpm/100cm^2)			Beta (dpm/100cm^2)		
	Max	Average	±	Max	Average	±
Survey Unit 1	96	31.6	9.73	988	789.8	78.5
Survey Unit 2	77	22.8	7.14	784	503.2	45.9
Survey Unit 3	135	74.3	14.6	700	591.4	26.8
Survey Unit 4	109	17.6	11.2	864	556.2	61.9
Survey Unit 5	321	118.9	40.5	1072	740.0	64.9
Survey Unit 6	116	66.25	14.3	1040	902.8	56.4

Since some of the alpha measurements in Survey Units 3, 4, and 6 were above the $DCGL_w$, the Sign Test was utilized. The sum of the positive signs (S+) was equal to or greater than the critical Value (Table I.3, Reference 2) and these survey units passed the Sign Test. However, the scan surveys in Survey Unit 1(Room 2 Floor) showed an elevated alpha measurement of 668 dpm/100cm2. An acid etch sample was obtained and analyzed by alpha spectroscopy. Sample results were 208pCi Pu-238 (95%). The floors in Rooms 2 and 4 were reclassified as Class 1 and designated as Survey Units 7 and 8 respectively. A new survey plan (SPF 34-02) was written to resurvey these areas using the same methodology as Survey Unit 1. The results of Survey Units 7 and 8 are shown below.

Fixed Point Results

Area	Alpha (dpm/100cm^2)			Beta (dpm/100cm^2)		
	Max	Average	±	Max	Average	±
Survey Unit 7	77	29.0	5.9	772	542.4	37.6
Survey Unit 8	116	48.1	12.6	720	537.8	39.5

In Survey Unit 7, the average and maximum activity was below the $DCGL_w$. Survey Unit 8 average alpha activity was below the $DCGL_w$, but one measurement was above the $DCGL_w$. The Sign Test was utilized and the Survey Unit passes (S+ > 14). The elevated measurement area was decontaminated by acid etching. The leachate was analyzed and the results were Pu-238, 83pCi/sample (92%). A post remedial scan survey of 100% of the floor was completed to ensure no areas of elevated activity were present (RSDS# 03-TF-0088).

In Survey Units 3 and 5, samples were obtained of exterior metal surfaces by cutting coupons of approximately 1 ft^2 in each area where elevated alpha measurements were observed. The coupons were acid etched and analyzed by alpha spectroscopy. Po-210 was the only isotope identified in the samples. Po-210, a U-238 daughter, is observed to be present in the background and is associated with iron oxides (rust) on roofs and external surfaces. Sample results are reported in RSDS#03-TF-0043.

Samples taken from Room 3 (Survey Unit 6) block wall showed very low levels of U-238 with the highest of 0.276pCi/sample. Sample results are reported in RSDS# 03-TF-0079.

The Po-210 in Survey Units 3 and 5, and U-238 in Survey Unit 6 are Group 3 radioisotopes per DOE Order 5400.5 (Table 1). The $DCGL_w$ for Group 3 is 5000dpm/100cm^2. The highest measured alpha activity in Survey Unit 3 was 135dpm/100cm2 and 321dpm/100cm2 in Survey Unit 5.

The removable alpha and beta surface activity results are shown below. All results were significantly less than the $DCGL_w$.

Removable Alpha & Beta Activity Results

Area	Alpha (dpm/100cm^2)			Beta (dpm/100cm^2)		
	Max	Average	±	Max	Average	±
Survey Unit 1	6.55	1.31	0.79	9.12	2.24	1.00
Survey Unit 2	2.19	0.54	0.43	6.85	1.81	0.85
Survey Unit 3	8.16	2.26	0.94	14.08	2.01	1.38
Survey Unit 4	4.37	1.05	0.72	9.28	2.86	1.03
Survey Unit 5	6.55	2.46	0.92	7.75	2.72	0.98
Survey Unit 6	2.19	0.77	0.51	16.3	3.10	1.73
Survey Unit 7	15.3	1.55	1.62	8.5	1.62	0.88
Survey Unit 8	6.56	0.89	0.80	6.85	1.87	0.76

The highest removable tritium activity was 70.3 dpm/100cm2 (RSDS# 03-TF-0028). The average removable tritium was 9.20 dpm/100cm2 (±2.26).

Surface scans were performed on 100% of Survey Units 7 and 8. The highest observed alpha measurement was 42dpm/100cm^2. Judgmental surveys were performed in horizontal structural areas (beams). The highest observed activity was 64dpm/100cm2 alpha and 148dpm/100cm2 beta.

2.3 Sediment Sample Data

No sediments were present in the single floor drain in Room 2. A water sample from the drain was analyzed by gamma spectroscopy and no activity was observed above the analysis MDA (See RSDS#03-TF-0079). An attempt was made to collect a sample of sediment observed on the floor of Room 2. However, insufficient material was available for a valid analysis. No other sediments were present in the building.

2.4 Quality Control

Quality control measurements were taken to ensure the quality of the data. Eighteen (18) data points were selected from the sample group of 170 data points. The locations were reviewed to ensure the data points were representative of each survey unit. Replicate measurements were taken at these locations using the same instruments and performed in the same manner as the original survey. The acceptance criterion for fixed-point measurements is that the variance in the measurements of the original sample population is within a factor of two of the variance in the replicate samples (at 95% confidence level). Negative beta values occur when the measured value is below the instrument background level. These values are used for this analysis to show the true variability of the data set. The results of the replicate surveys are shown in the following table:

Replicate Analysis Results

Location #	Alpha (dpm/100cm^2)			Beta (dpm/100cm^2)		
	Initial	2σ	Replicate	Initial	2σ	Replicate
SU2QC-09	77	17.55	13	-104	20.40	84
SU2QC-11	6	4.9	6	-84	18.33	-24
SU3QC-13	109	30.88	58	-32	11.31	192
SU3QC-06	6	4.90	51	-4	4.00	-112
SU4QC-03	109	20.88	128	-92	19.18	-140
SU4QC-11	0	0.00	6	-64	16.00	-188
SU6QC-02	116	21.54	32	320	35.78	236
SU6QC-10	13	4.21	77	364	38.16	136
SUJQC-01	6	4.90	19	-40	12.65	28
SUJQC-02	64	16.00	13	36	12.00	28
SU1QC-01	6	4.90	26	196	28.00	180
SU1QC-10	96	19.60	32	352	37.52	328
SU7QC-17	58	15.23	19	472	43.45	256
SU7QC-04	13	7.21	26	512	45.25	356
SU8QC-16	0	0.00	51	584	48.33	376
SU8QC-04	116	21.54	116	528	45.96	120
SU5QC-01	19	8.72	32	52	14.42	72
SU5QC-10	103	20.30	77	152	24.66	284
Variance (S^2)	2435.156		1536.9	28918.22		20220.44
Ratio			1.58			1.43
Agreement			Yes			Yes

Replicate analysis cannot be performed on smears since the analysis for tritium is a destructive process. Quality control procedures, blanks, and spikes are a part of the laboratory quality control program at Mound. Participation in the DOE/EML inter-laboratory quality assurance program provides acceptable assurance of nuclide identification reliability and ensures a high quality of sample results. Since a relatively small number of samples were taken for this survey, additional replicate analysis is not required.

Field instrumentation is source checked each day prior to use and again at the completion of survey activities for that day. A known source is placed in a source holder to ensure a reproducible geometry is achieved. Acceptance criteria is $\pm$ 20% of the initial source response following calibration. Results are documented in accordance with Mound Radiological Control procedures. Laboratory instrumentation is source checked and documented in accordance with Mound Laboratory procedures. Chain of custody was maintained for all samples and is documented on the Field Sample Data Collection Sheet.

2.5 Conclusion

The objective of this survey plan is to determine whether or not the residual radioactivity of the surfaces of building materials associated with Building 34 satisfy the site release criteria established by DOE Order 5400.5. This is accomplished by comparing the survey data to the release criteria using statistical methods as defined by the MARSSIM (Reference 2). The scan survey results demonstrate that there are no elevated measurement areas above the $DCGL_{emc}$.

All of the DQO's for this survey plan have been met and no further surveys are required. The null hypothesis (The residual radioactivity on the survey unit surfaces does not meet the release criteria) is rejected in favor of the alternate hypothesis (The residual radioactivity on the survey unit surfaces does meet the release criteria). Therefore, Building 34 (Rooms 2 and 4) meets the release criteria established by DOE Order 5400.5.

The following tables show the maximum fixed and removable activity on the inside and outside building surfaces.

Building 34 Final Survey Results (Inside Surfaces)

TYPE	RSDS	LOCATION	SURVEY RESULTS (dpm/100 cm^2)	SURFACE CONTAMINATION GUIDELINES (dpm/100 cm^2) (Note 1)	COMMENTS
Highest Alpha Smearable Activity	03-TF-0032	Floor Room 2	15.3	20	
Highest Alpha Fixed Activity	03-TF-0032	Floor Room4	90	100	
Highest Beta Smearable Activity	03-TF-0027	Beam Room2	16.29	1,000	
Highest Beta Fixed Activity	03-TF-0032	Floor Room2	772	5,000	
Highest Tritium Smearable Activity	03-TF-0028	Ceiling Room 4	70.3	10,000	

Note 1: DOE Order 5400.5, Group 1 (DCGLw)

Building 34 Final Survey Results (Outside Surfaces)

TYPE	RSDS	LOCATION	SURVEY RESULTS (dpm/100 cm^2)	SURFACE CONTAMINATION GUIDELINES (dpm/100 cm^2) (Note 1)	COMMENTS
Highest Alpha Smearable Activity	0039	Ext. Wall Room 2	8.16	1000	
Highest Alpha Fixed Activity	0043	Roof Room 4	321	5000	
Highest Beta Smearable Activity	0043	Roof Room 2	14.08	1000	
Highest Beta Fixed Activity	0043	Roof Room 4	508	5000	
Highest Tritium Smearable Activity	0031	Ext. Wall Room 3	38.26	10,000	
Note 1: DOE Order 5400.5, Group 3 (DCGLw)					

3.0 Attachments and Enclosures

Attachment 1 – Survey Unit Grid Point Plots

Attachment 2 – Average Total Alpha and Beta Graph

Attachment 3 – Sample Data Analysis Worksheets

Enclosures – SPF 34-01

SPF 34-02

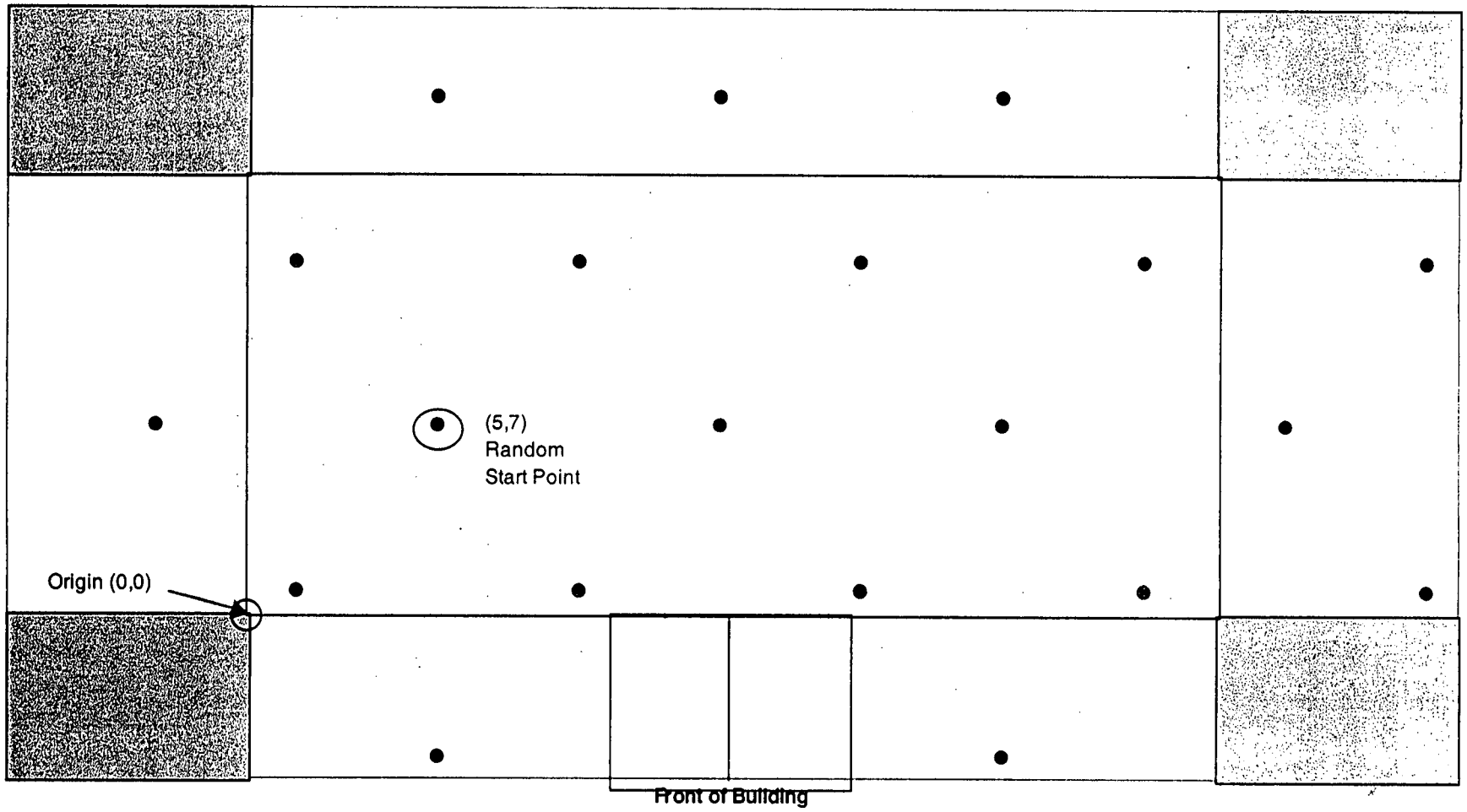
4.0 References

1. BWXTO, EC&AS Department, White Paper: *Building 34 Structural History and Process History Summary Background Document*, February 2002

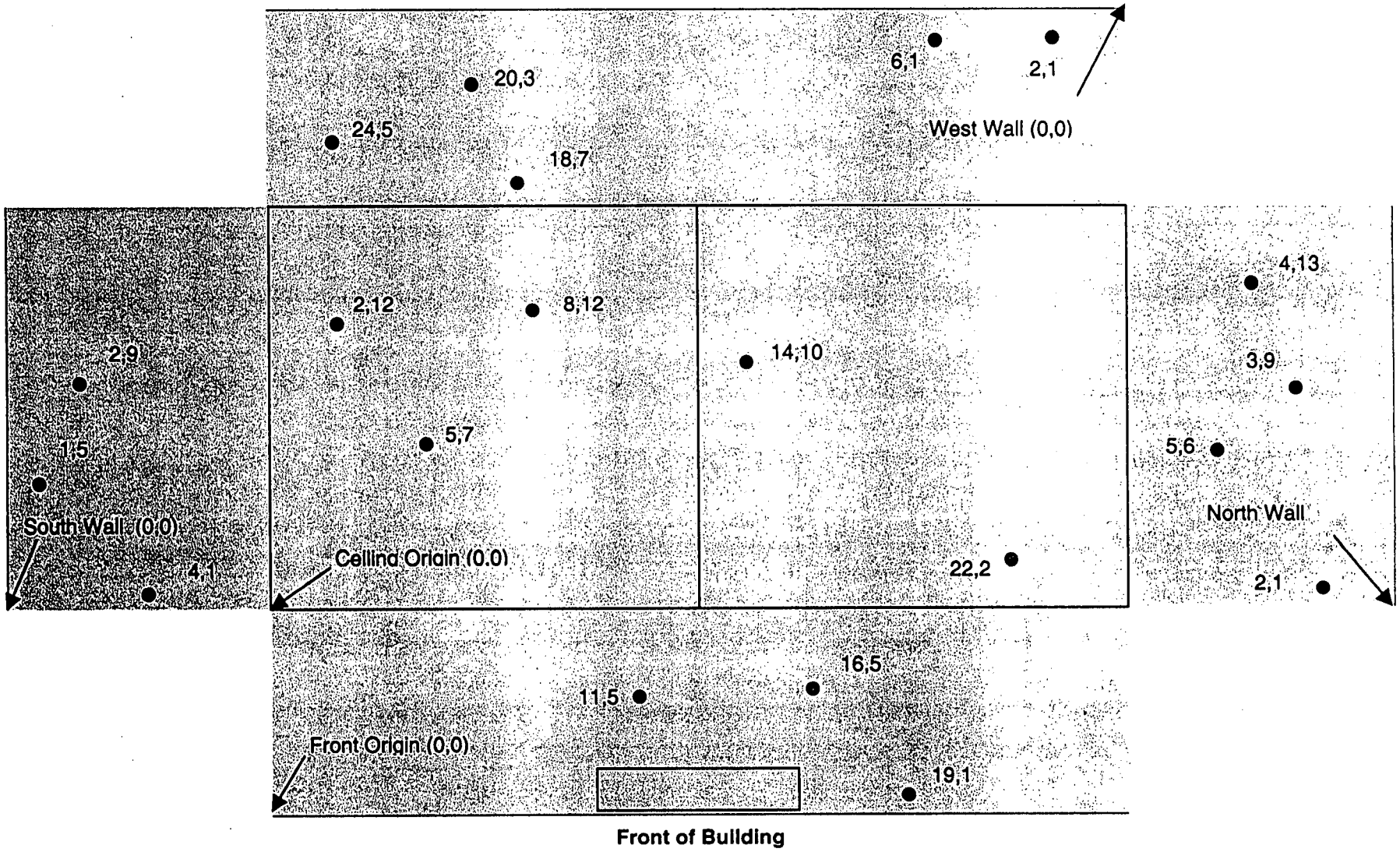
2. NUREG 1575, Rev 1, Aug 2000, *Multi-Agency Radiation Survey and Site Investigation Manual*, (MARSSIM)

3. MARSSIM Implementing Procedures, *Field Quality Control for Building Contamination Surveys*, MD-80046, Op. 402

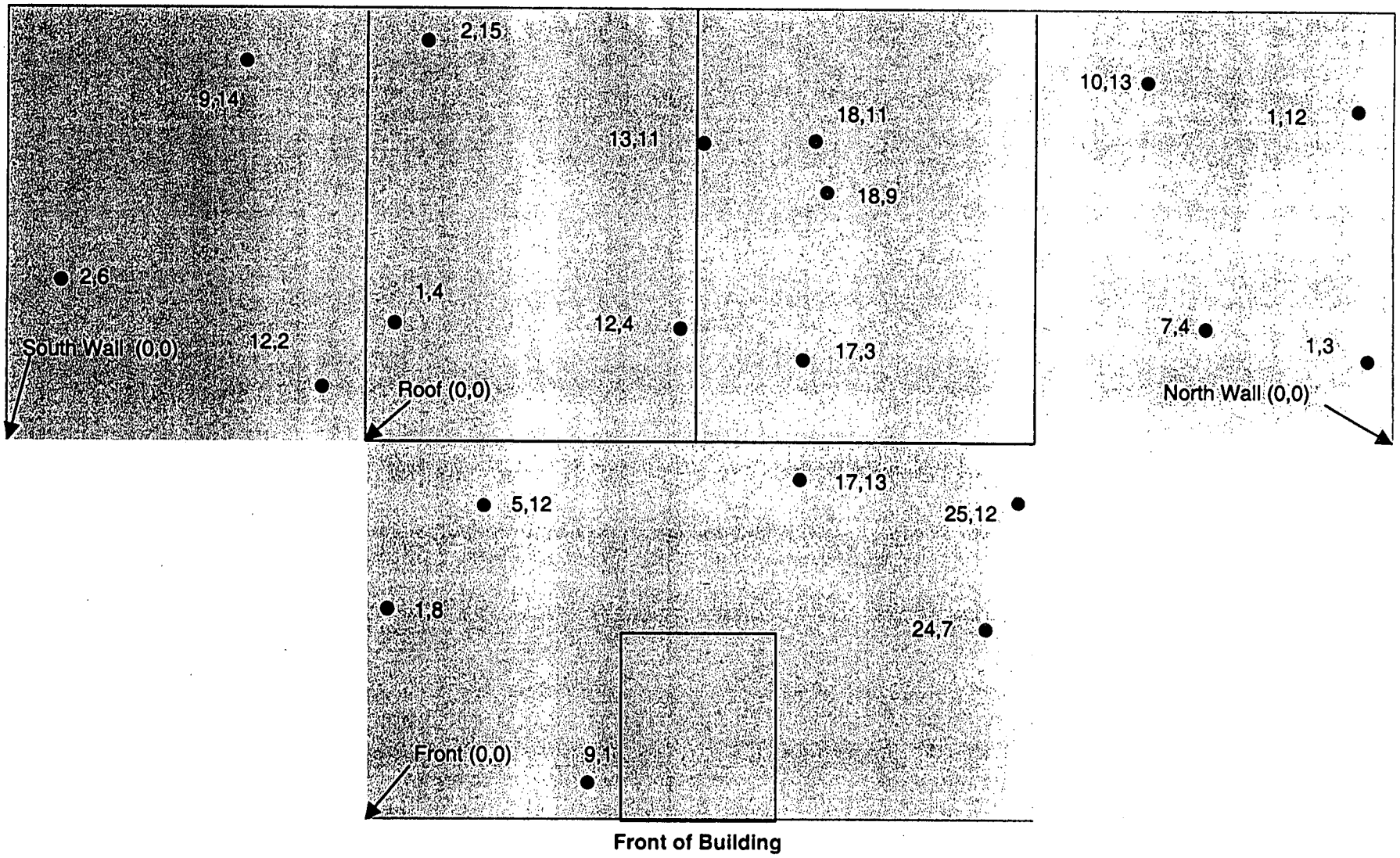
Survey Unit 1

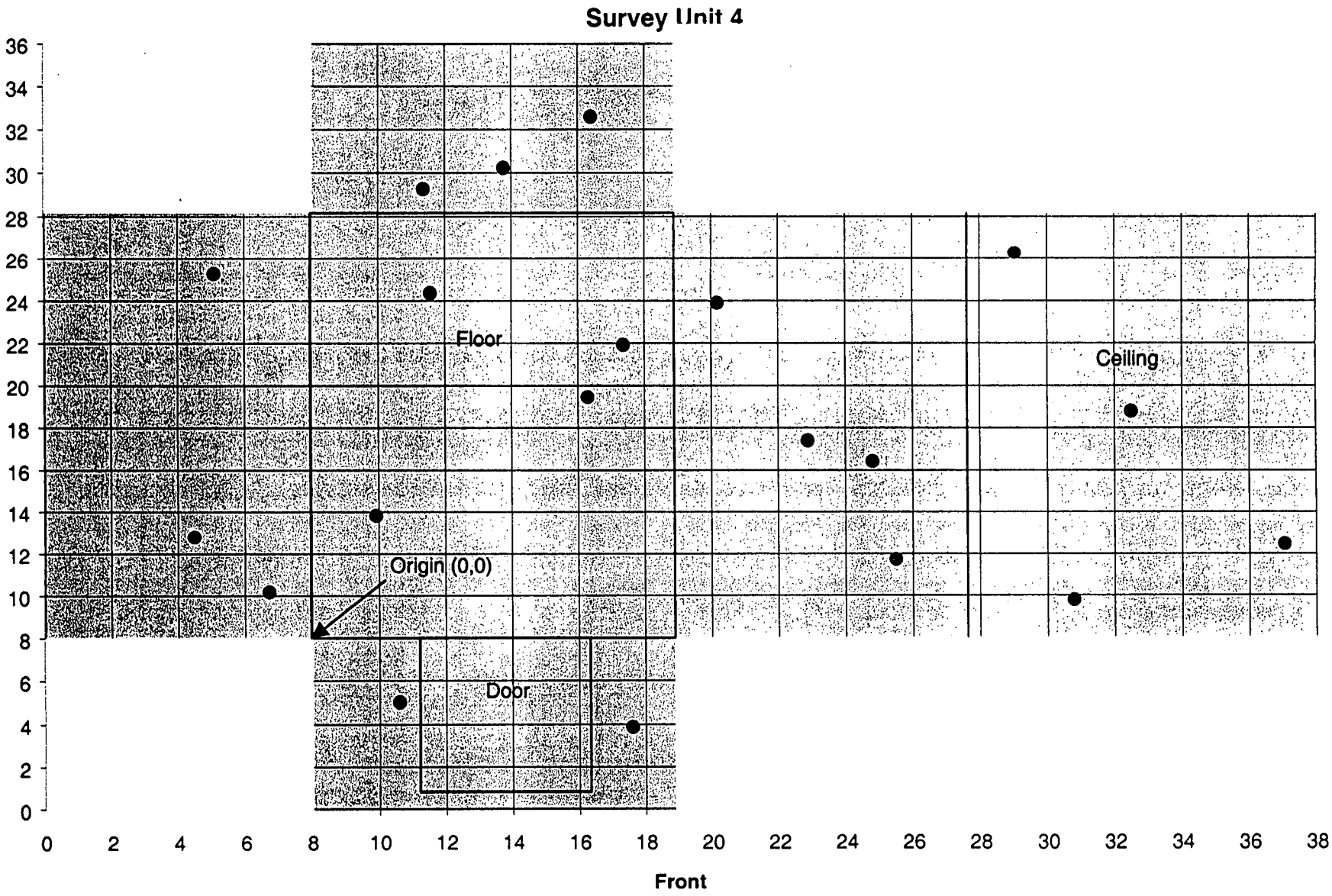


Survey Unit 2

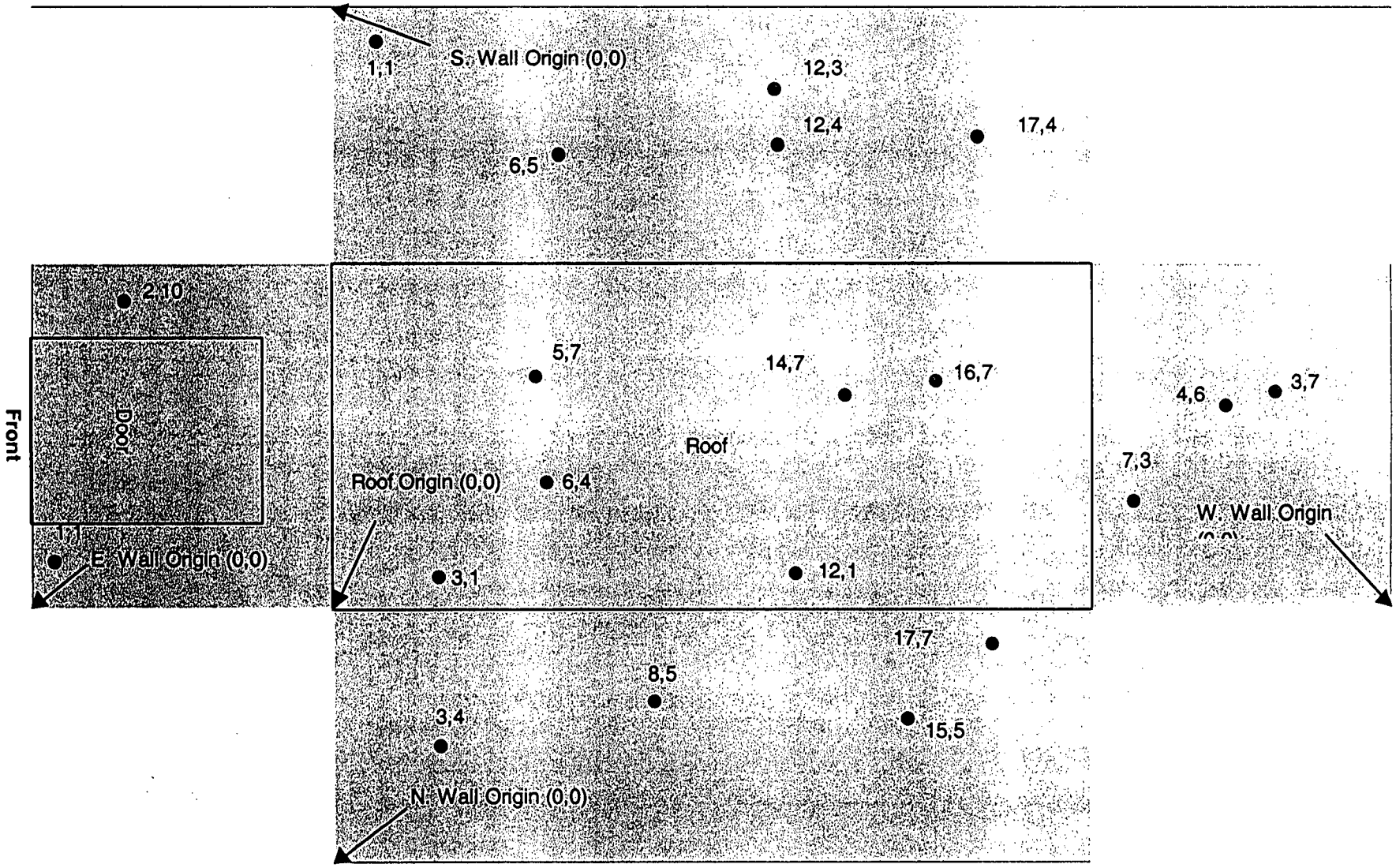


Survey Unit 3



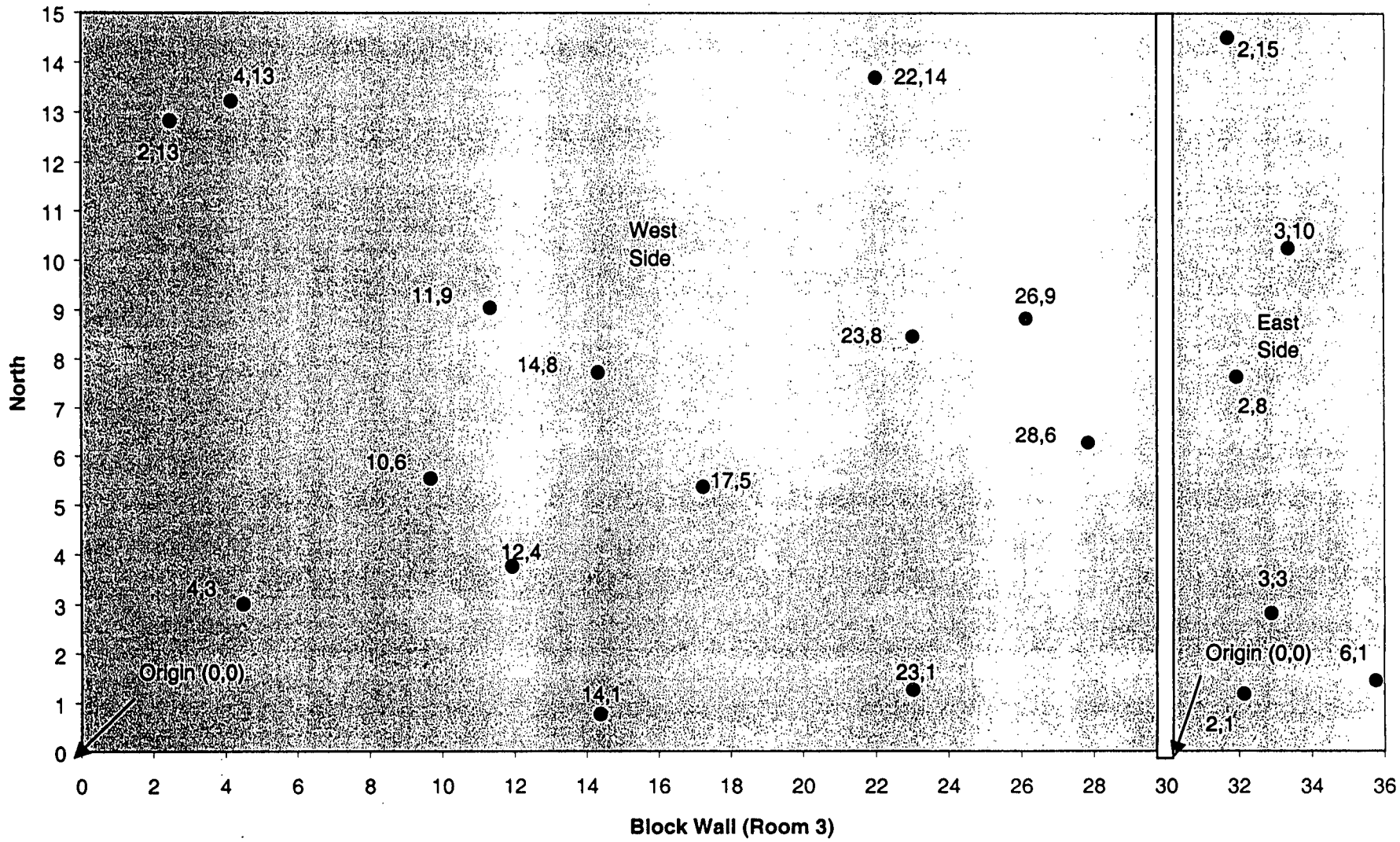

Survey Unit 4
Floor
Ceiling
Origin (0,0)
Door
Front
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38

Survey Unit 5

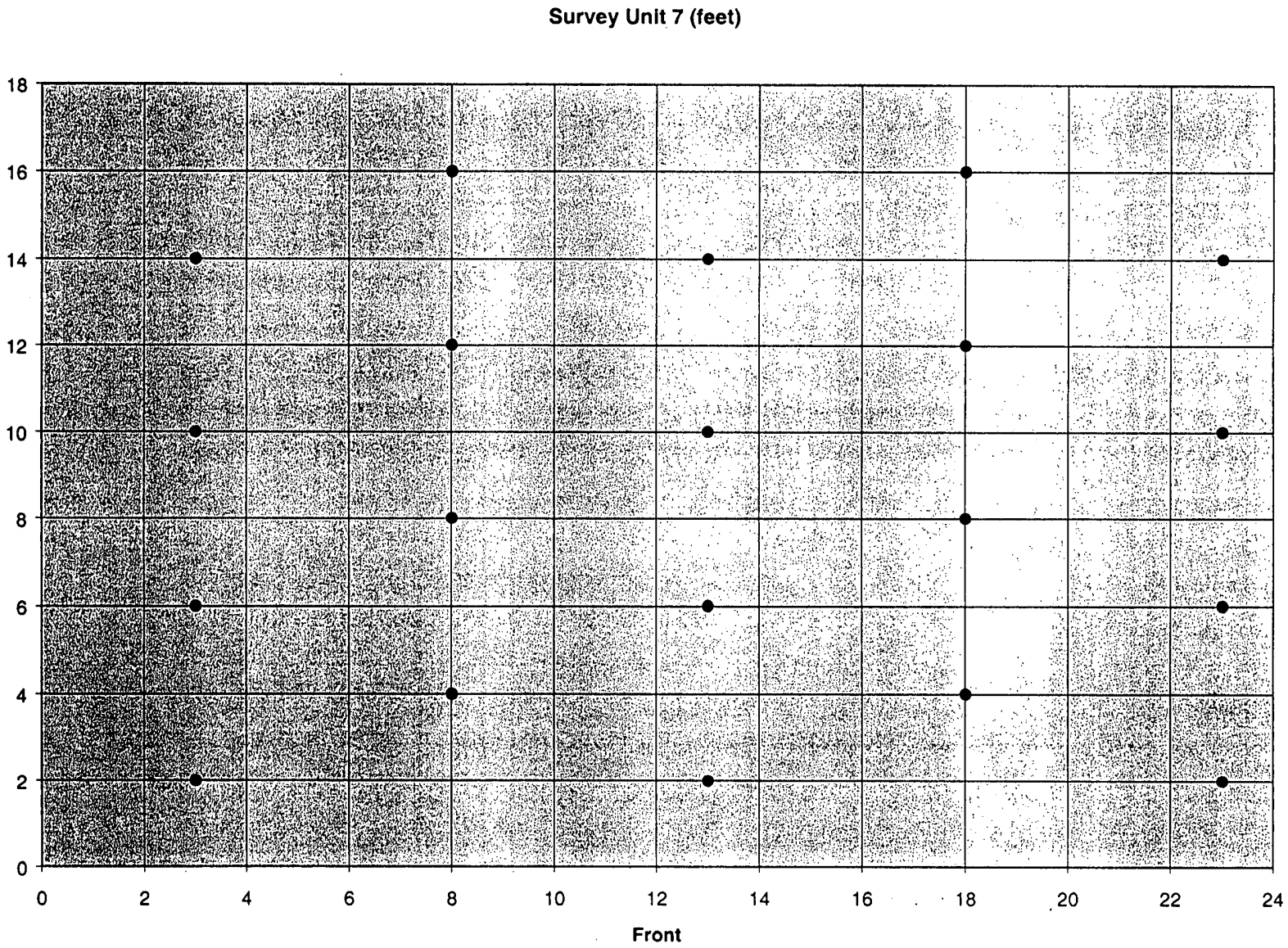


G 15 of 161

Survey Unit 6

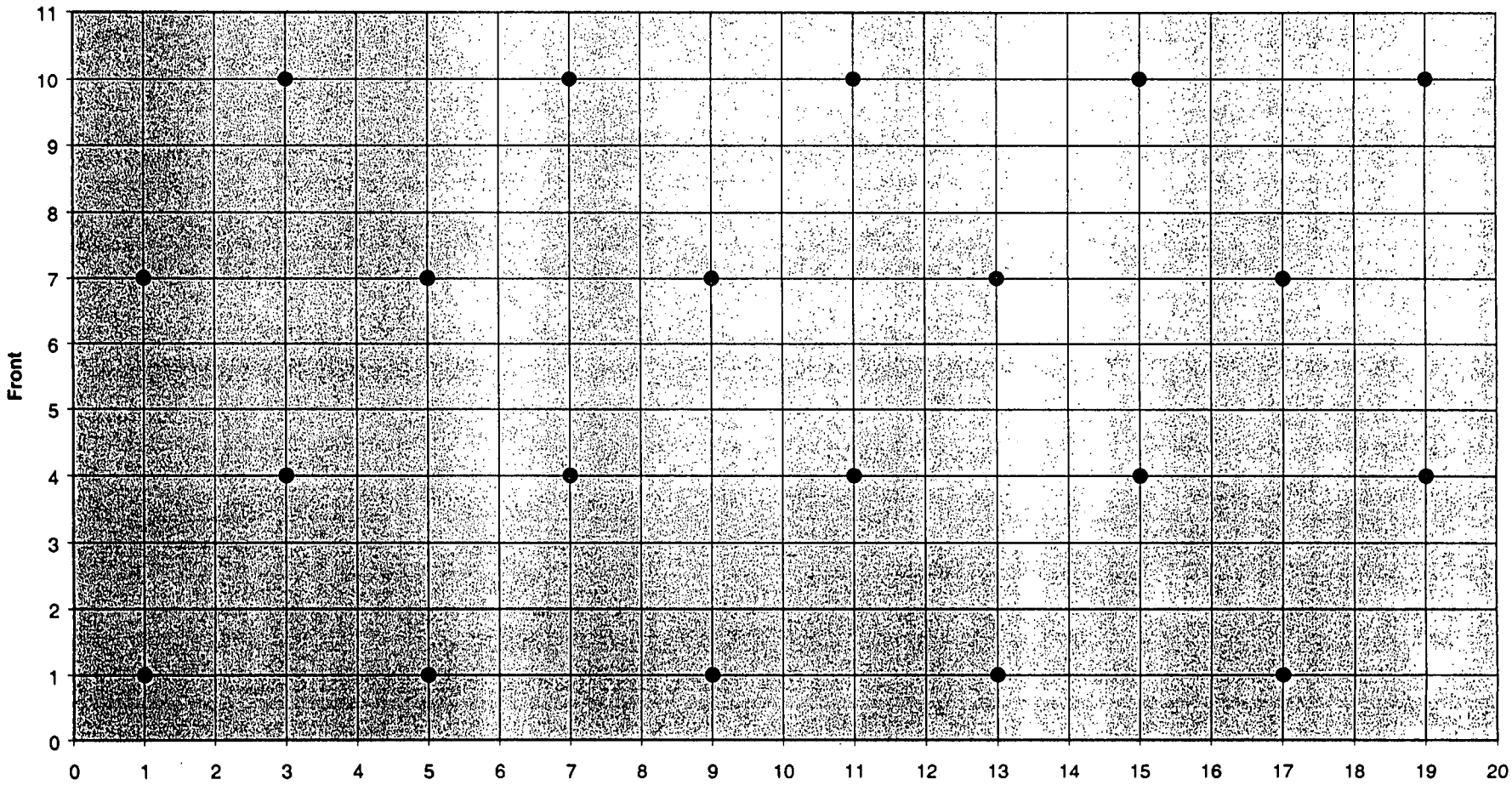


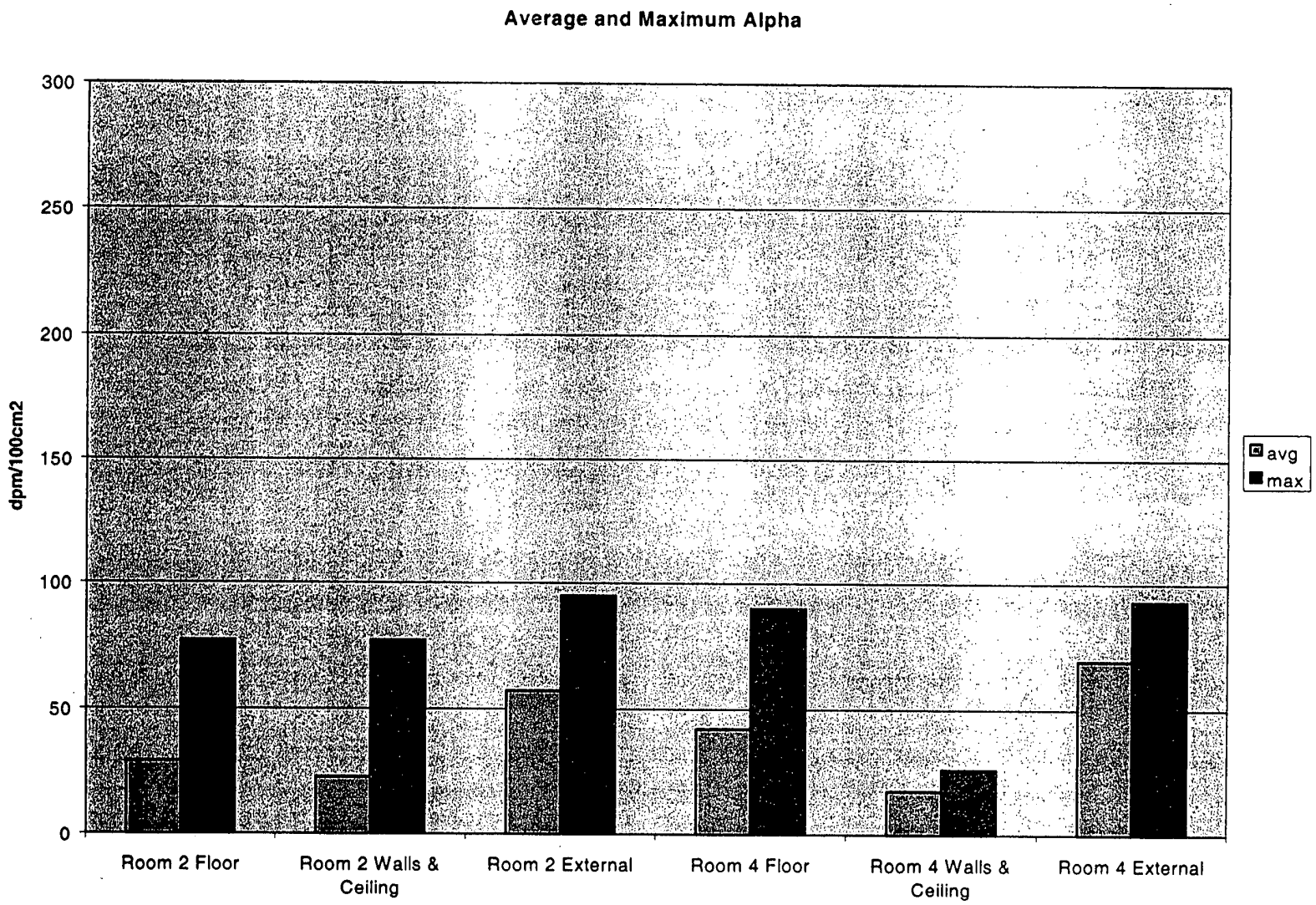
G16of 161


Survey Unit 7 (feet)
18
16
14
12
10
8
6
4
2
0
0
2
4
6
8
10
12
14
16
18
20
22
24
Front

G170 191

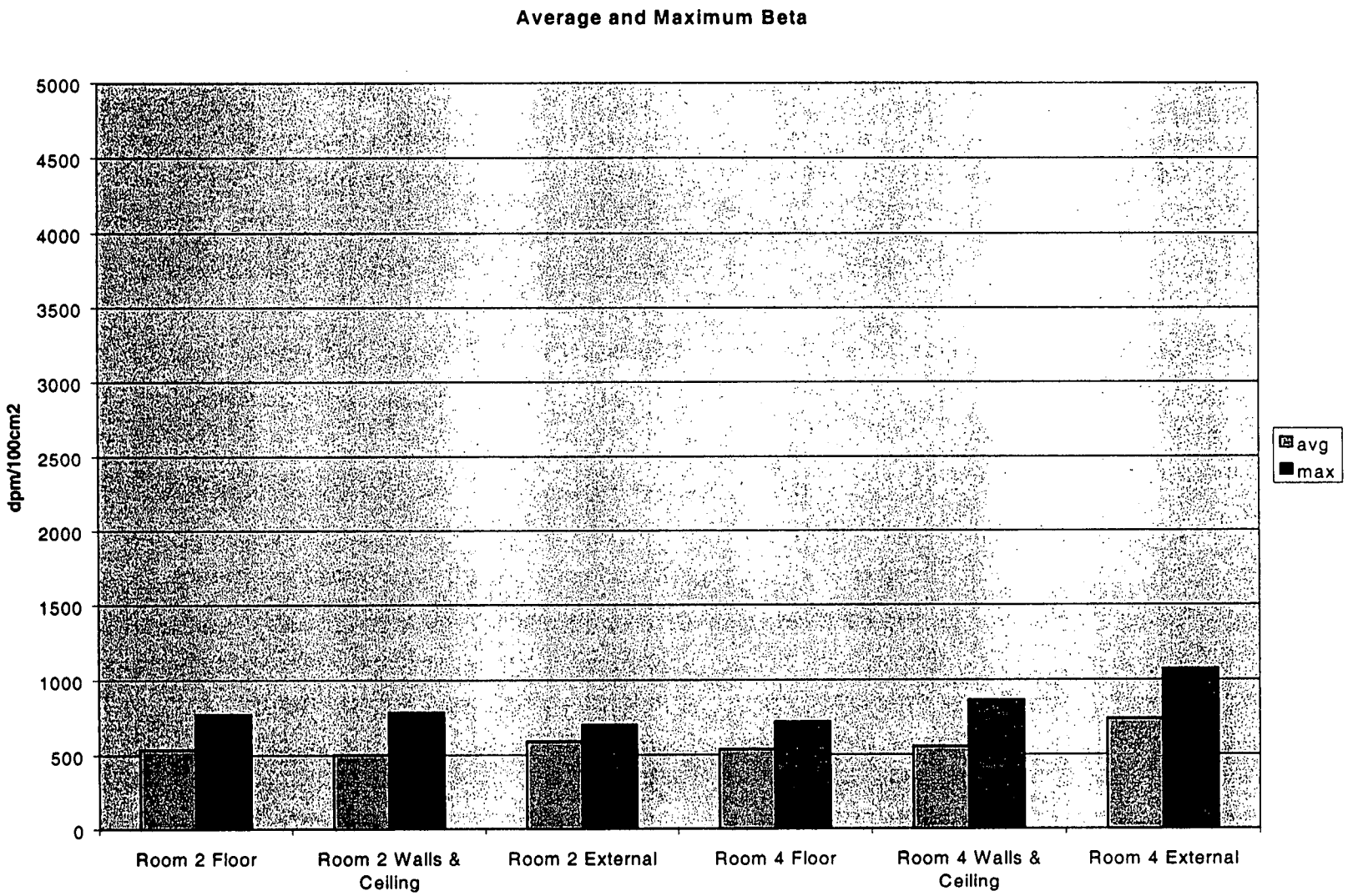
Survey Unit 8 (feet)




Average and Maximum Alpha
dpm/100cm2
300
250
200
150
100
50
0
Room 2 Floor
Room 2 Walls & Ceiling
Room 2 External
Room 4 Floor
Room 4 Walls & Ceiling
Room 4 External
avg
max

G17 of 161

Building 34 Final Status Report
Attachment 2



G20 of 161

SURVEY PLAN FORM

SP NUMBER	34-001	DATE OF REQUEST	January 15, 2003
TYPE OF SP	☐ FSS ☒ CHARACTERIZATION ☐ REFERENCE ☐ OTHER:		
AREA/LOCATION	Building 34		
PURPOSE	The purpose of this SP is to characterize Rooms 2 and 4 of Building 34 to support decisions on final disposition.		
SURVEY UNIT # 1	Rooms 2 Floor and Walls < 6'	SURVEY UNIT # 4	Room 4 Interior
SURVEY UNIT # 2	Room 2 Ceiling and Walls > 6'	SURVEY UNIT # 5	Room 4 Exterior
SURVEY UNIT # 3	Room 2 Exterior Walls and Roof	SURVEY UNIT #6	Room 3 Block Wall Exterior

SAMPLE TYPE

☐ SURFACE SOIL SAMPLE:

☐ SUB-SURFACE SOIL SAMPLE:

☒ SEDIMENT SAMPLE: See specific sediment sampling instructions on page 3.

☐ Rubbelized Material:

☐ OTHER:

SURVEY TYPE

SURFACE SCAN	☐ BETA ☐ GAMMA ☒ ALPHA	INST. TYPE PROBE TYPE	L-2350 43-37 Floor Probe or 43-20 Hand Probe	SCAN RATE & DETECTOR DISTANCE FROM SURFACE	Scan surface at a rate of 1" per second at a distance of not more than ¼" from surface
STATIC MEASURE-MENT	☐ BETA ☐ GAMMA ☒ ALPHA	INST. TYPE PROBE TYPE	L-2350 43-20 Hand Probe	SCAN RATE & DETECTOR DISTANCE FROM SURFACE	Perform 1 minute counts at specified locations not more than ¼" from surface
STATIC MEASURE-MENT	☒ BETA ☐ GAMMA ☐ ALPHA	INST. TYPE PROBE TYPE	L 2360 L 43-89	COUNT TIME & DETECTOR DISTANCE FROM SURFACE	Refer to MD-80036, Issue 29, Op. No. 30030, *Operation of the Ludlum 2360 Scaler/Ratemeter with Ludlum 43-89 Alpha/Beta Scintillator*, Section 6.3
DOSE RATE MEASURE-MENT	☐ BETA ☐ GAMMA ☐ ALPHA	INST. TYPE PROBE TYPE		DETECTOR DISTANCE FROM SURFACE	

COMMENTS AND GENERAL REQUIRE-MENTS

All surveys shall be performed and documented in accordance with Mound Radiological Control procedures.

Perform scan surveys prior to fixed-point surveys.

Ensure building surfaces are clean and free of loose debris, dirt, and obstructions. Remove insulation and false ceiling prior to surveying Room 2.

Rad Con shall document all discrepancies from the above sampling and surveying instructions on the Survey Plan Continuation Sheet.

Safety Considerations

1. Obtain assistance from the responsible building custodian for access to upper walls, ceilings, roof, etc. Exercise extreme caution when performing surveys from ladders, lifts, or scaffolds. Follow appropriate site safety procedures when accessing areas requiring fall protection measures.
2. Ensure ventilation units are de-energized prior to attempting to collect a sample. Obtain approval and assistance from the responsible building custodian to dismantle any equipment for sample collection.

Data Point Location

1. Locate the data points in each survey unit using the coordinates shown in Attachment 2.
2. Mark each data point with tape or other non-permanent marking.
3. Document locations on the appropriate RSDS Map.

Floor Scan Measurements using a Ludlum 2350-1 with 43-37 alpha probe

1. Set the Ludlum 2350-1 datalogger to alarm at 75dpm/100cm^2 in the ratemeter mode.
2. Perform a floor scan at 1" per second using a serpentine pattern on 50% of the floor surface in Survey Units 1 & 4 (Approximately 2' between each scan path).
3. Perform a 30 second integrated count at every location where an alarm is obtained. In addition, obtain a 30 second integrated count at any point where an audible or visual indication of elevated activity is observed at approximately twice the background count rate.
4. Record location and results of each integrated count on RSDS map in accordance with Mound Rad Con procedures.

Surface Scan Using a Ludlum 2350-1 with a 43-20 Hand (Alpha) probe

1. Perform a surface scan on 50% of Room 2 walls up to 6'.
2. Perform a surface scan of walls > 6' and ceiling in Room 2. Scan an area of approximately 3ft^2 around each data point.
3. Perform a surface scan of walls and ceiling of Room 4. Scan an area of approximately 3ft^2 around each data point.
4. If two (2) or more counts are heard using the audible output of the instrument during a five (5) second scanning period, perform a thirty (30) second integrated count at that location. Document the highest reading and location in each area on the RSDS.

Static Measurements Using L 2350 With a 43-20 probe (alpha) and L 2360 with L43-89 probe (beta)

1. Perform a 1 minute integrated alpha and beta count at each data point in Survey Units 1, 2, 3, 4,and 5.
2. Perform at least ten (10) 1 minute integrated alpha and beta measurements on beams, supports, or other horizontal structural surfaces where, in the judgement of the surveyor, a potential exists for residual contamination.
3. Perform a 1 minute integrated alpha and beta count at each sediment sample location.
4. Record location, material type, and results on RSDS map in accordance with Mound Rad Con procedures.
5. Document gross activity for each location (No "<" values). Record instrument background at survey location.

Loose Surface Contamination

1. Obtain a smear of 100cm^2 at each survey point identified above.
2. Count each smear for alpha, beta, and H^3. H^3 analysis is not required for building external surfaces.
3. Record location and results on RSDS map in accordance with Mound Rad Con procedures.

Continued Next Page

Specific Sampling and Survey Instructions Continued

Sediment Samples

1. Collect approximately 250ml of debris from each accessible ventilation unit opening, floor drain, roof gutter and any other area where debris has accumulated.
2. If insufficient material is present at these sample locations, obtain a representative smear or swab.
3. Label sample container (EPA Dish) with sample number, date, time, and location in accordance with Mound procedures.
4. Document sample information and description of material on Attachment 1.
5. Show sample location on the RSDS map.
6. Submit sample to laboratory for gamma spectroscopy analysis.
7. Additional intrusive samples may be collected in areas of elevated activity as determined by the MARSSIM Engineer.

Quality Control

1. QC measurements will be performed by re-surveying 2 data points in each survey unit. Select the highest and lowest measurement in each survey unit for replicate survey.
2. Sediment samples or smears with measured activity above the MDA may be resubmitted for replicate analysis. Ensure alpha and beta smear results are obtained before performing H^3 analysis.
3. Record location, material, and results on RSDS in accordance with Mound Rad Con procedures.

APPROVAL SIGNATURES			
MARISSM Engineer	R. Case	DATE	January 15, 2003
Technical Reviewer	G. Tomlinson	DATE	1-16-03
Rad Con Manager	Danny K. Riley	DATE	1-16-03
SP CLOSE-OUT SIGNATURES			
MARISSM Engineer	R. Case	DATE	4-17-03
Technical Reviewer	RM Coblentz	DATE	04/23/03
Rad Con Manager	ASCollins	DATE	4/24/03
COMMENTS			

G23 of 161

SEE RSDS # 03-TF-0043
03-TF-0079

Field Sample Data Collection Sheet

Sheet ___ of ___

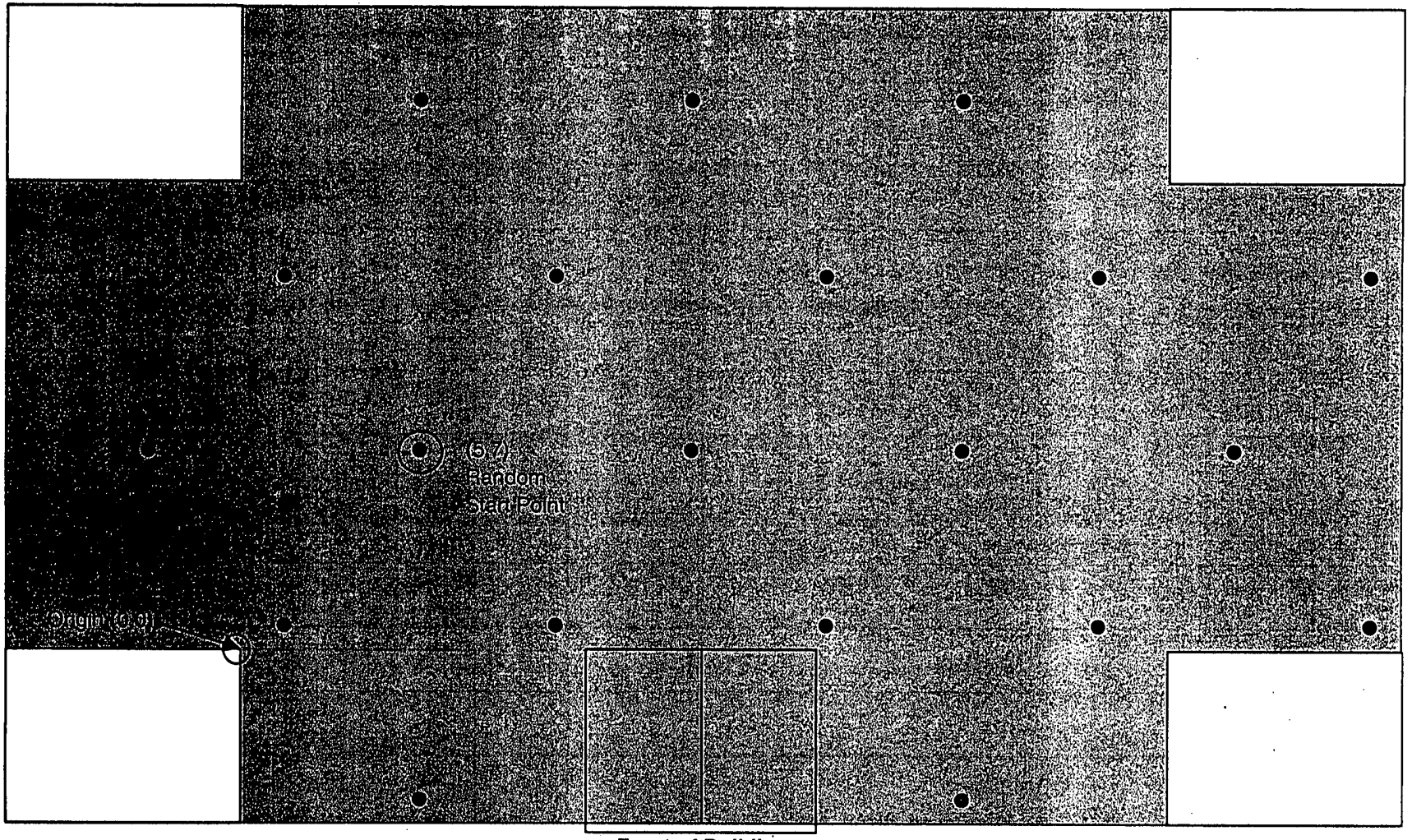
Attachment 1

Sample Number	Sample Date	Sample Time	Sample Volume /Weight	Sample Description	Sampled By	Chain of Custody Relinquished to Lab			
						Date	Time	Initials	Rec'd By
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									

N/A

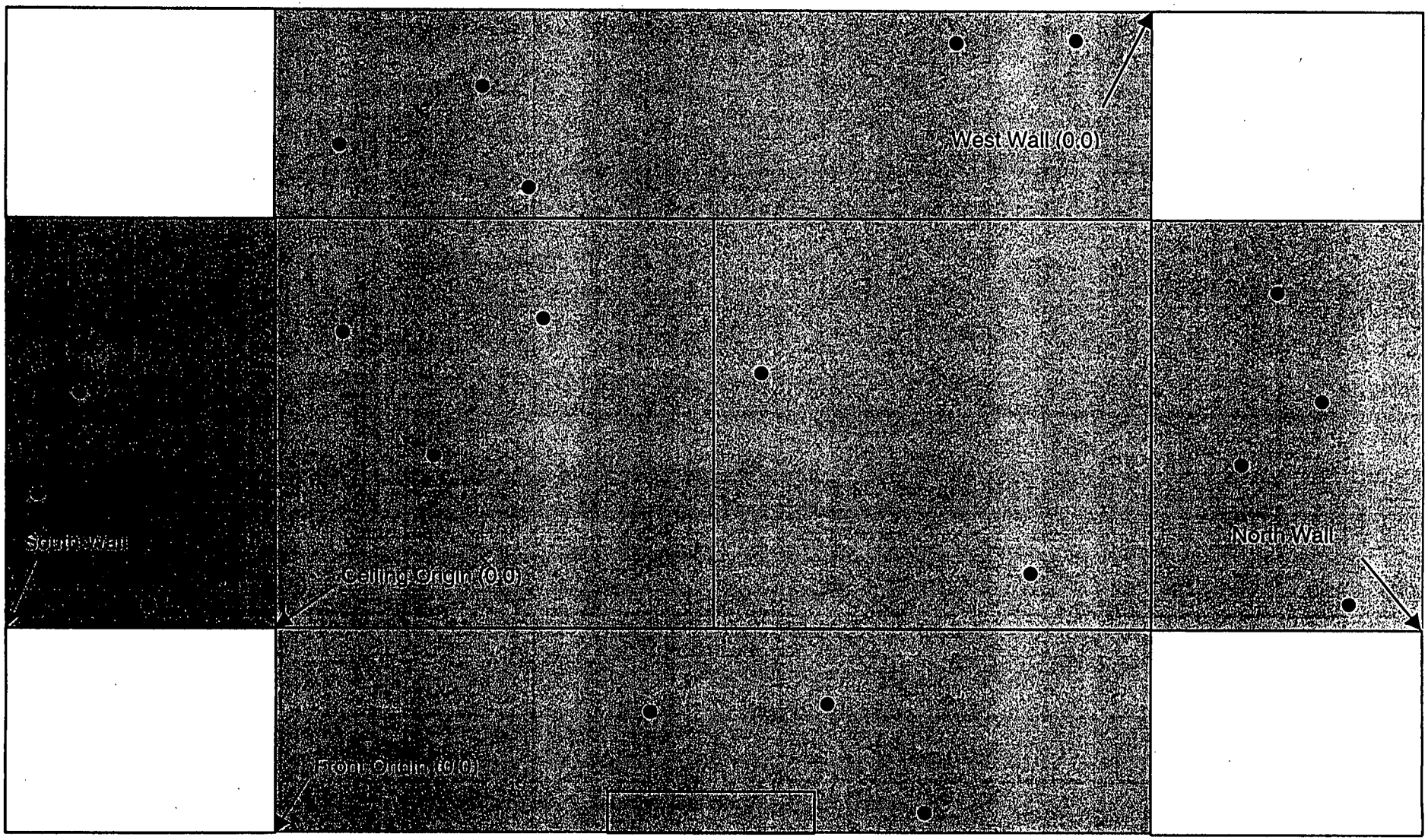
G-2 of 161

Survey Unit 1 Room 2



G2 5 of 161

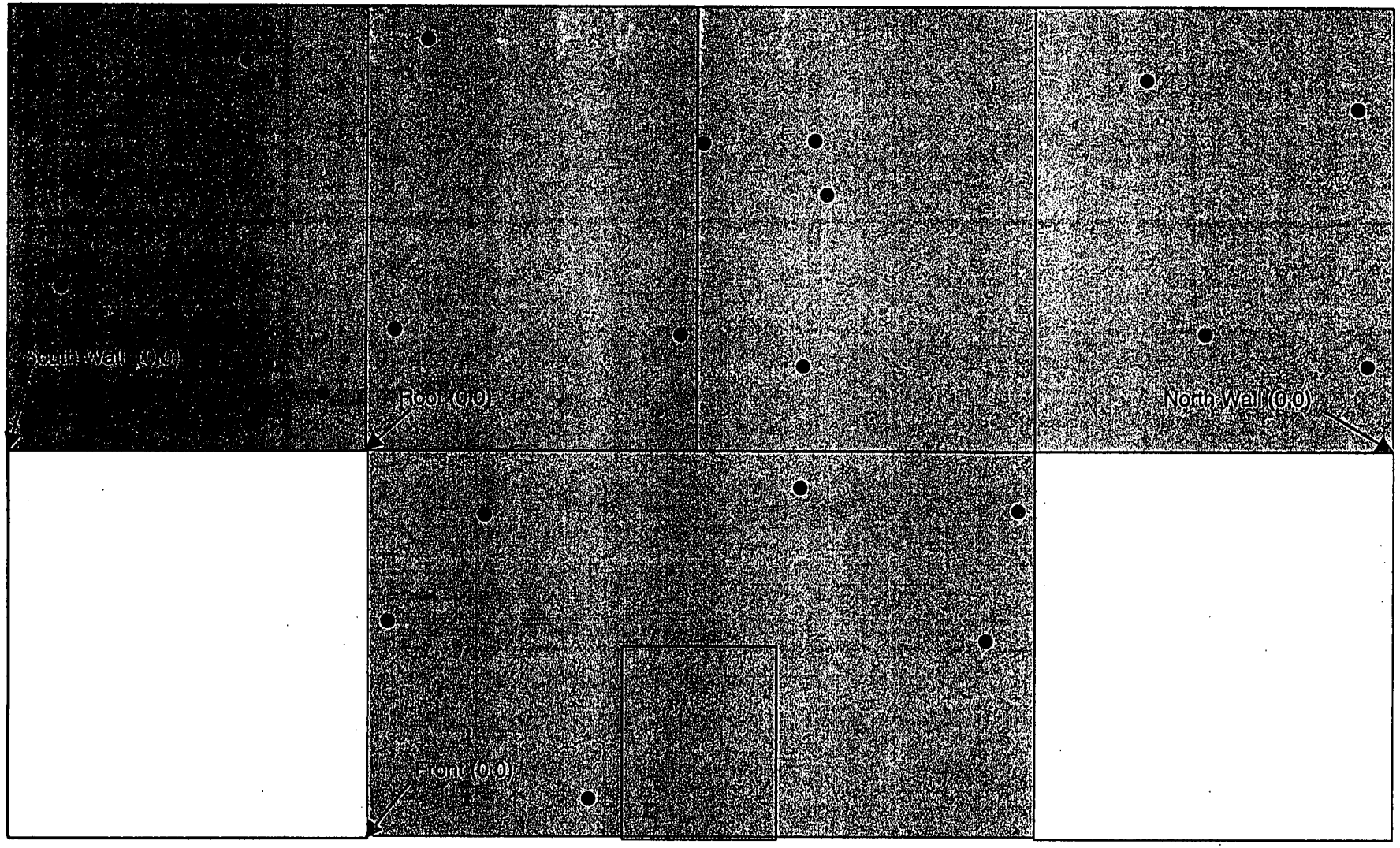
Survey Unit 2 Room 2



Front of Building

G26 of 161

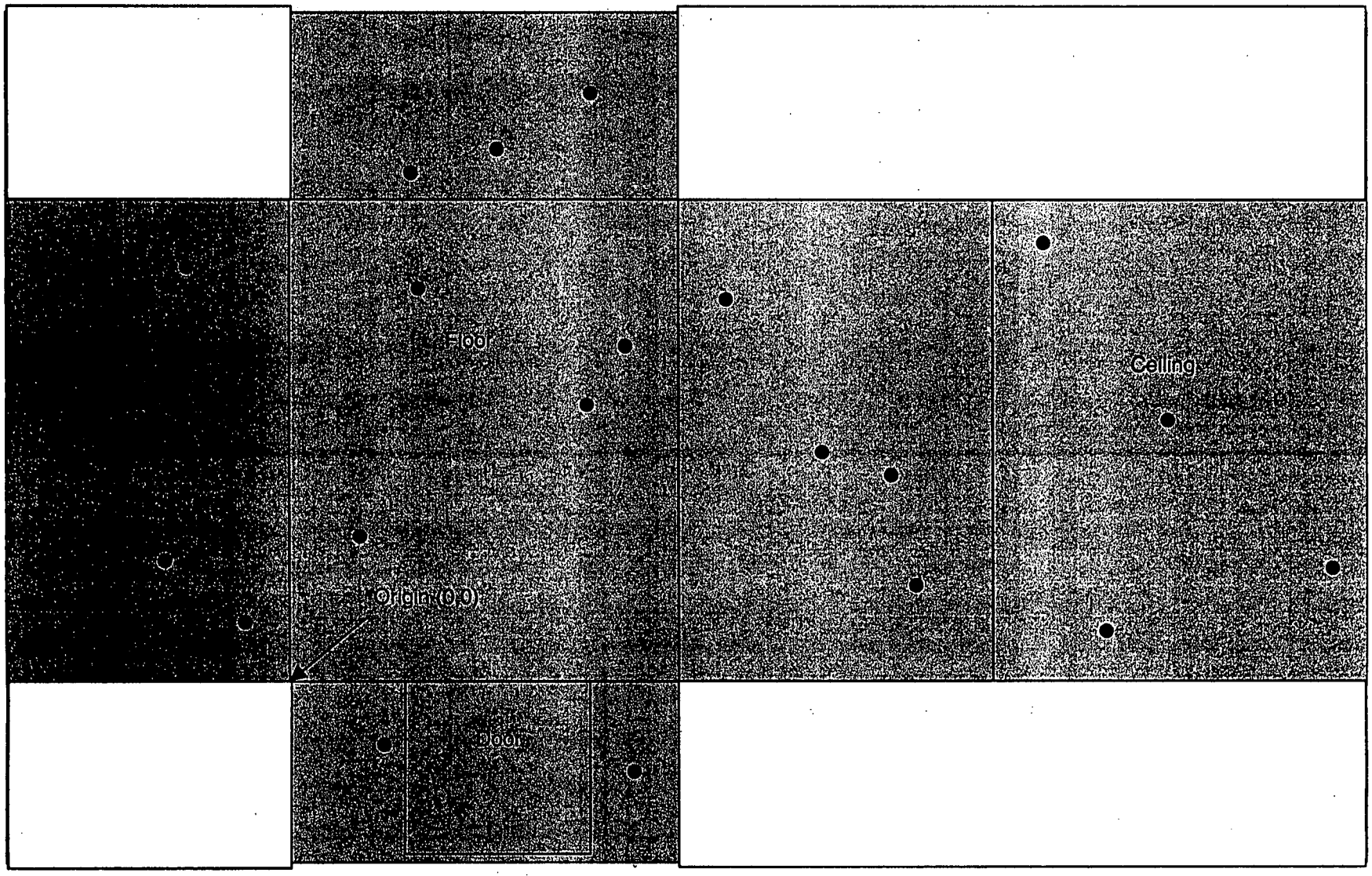
Survey Unit 3 Room 2



Front of Building

G-27 of 121

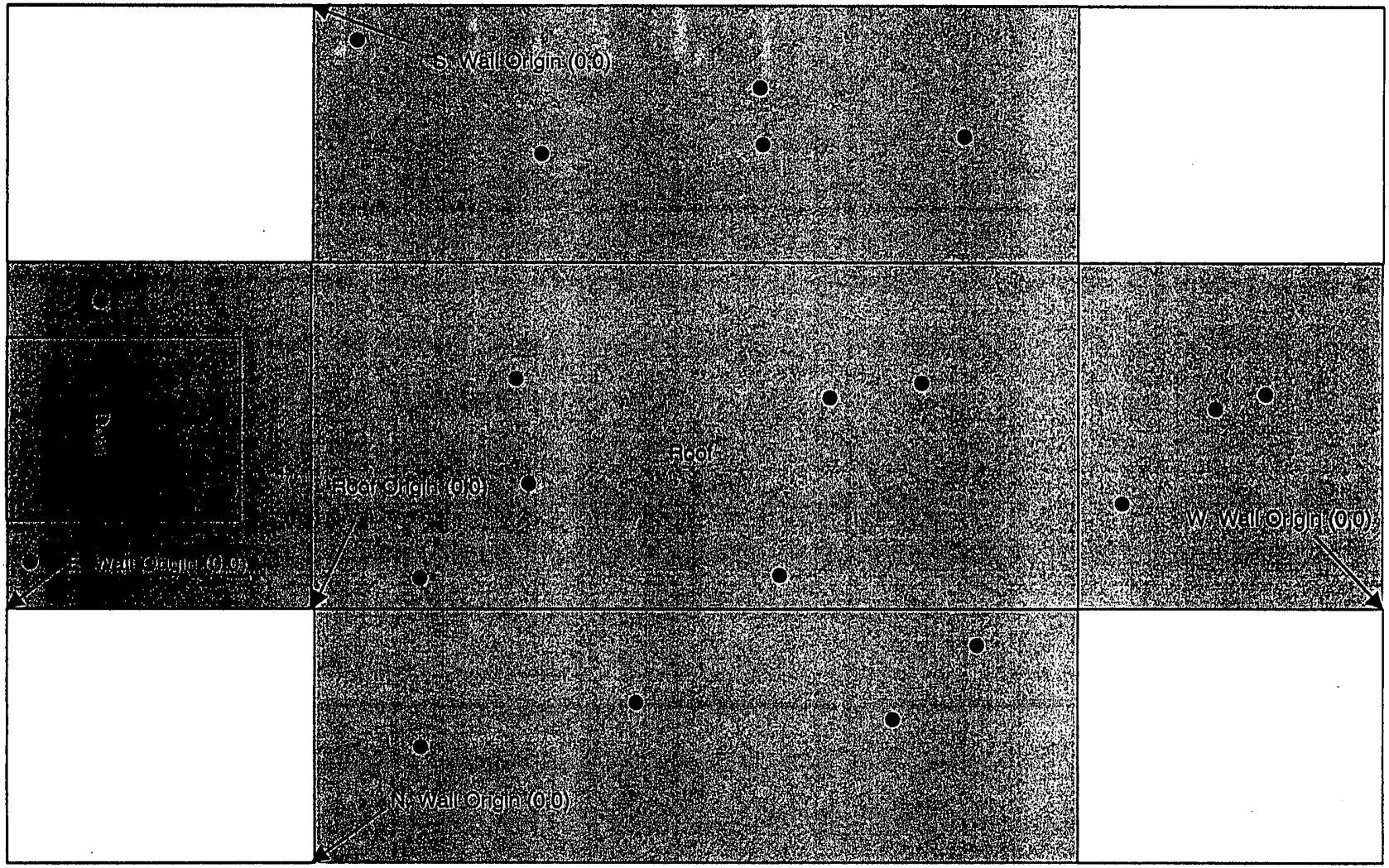
Survey Unit 4 Room 4 Interior



Front

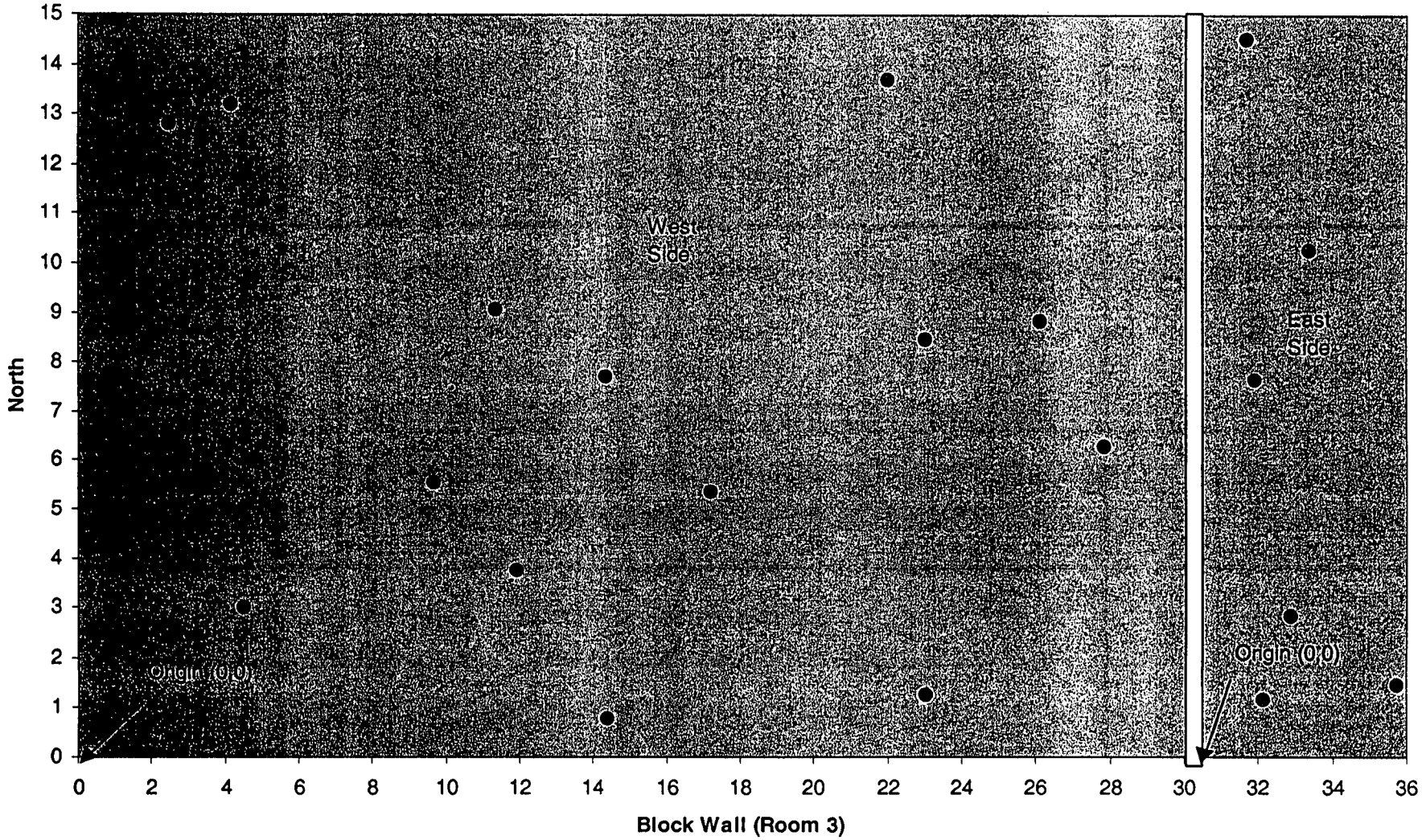
G-28 of 161

Survey Unit 5 Room 4 Exterior



G-29-8 161

Survey Unit 6



Attachment 2

Data Point Coordinates

Survey Unit 1	
X	Y
5	19
12	19
19	19
1	13
8	13
15	13
22	13
29	13
-2	7
5	7
12	7
19	7
26	7
1	1
8	1
15	1
22	1
29	1
5	-5
19	-5

Survey Unit 2	
X	Y
20	3
2	1
1	5
5	7
18	7
2	12
4	1
2	1
3	9
4	13
24	5
11	5
14	10
16	5
6	1
19	1
2	9
5	6
22	2
8	12

Survey Unit 3	
X	Y
2	6
9	14
1	12
18	9
9	1
1	4
12	2
2	15
5	12
18	11
17	13
1	8
1	3
13	11
7	4
24	7
10	13
12	4
17	3
25	12

Survey Unit 4	
X	Y
8	25
2	6
3	21
-4	5
29	4
6	22
4	16
12	16
-3	17
24	11
3	-3
10	-4
17	8
21	18
9	14
-1	2
8	11
15	9
23	2
17	4

Survey Unit 5	
X	Y
6	5
12	1
8	5
2	10
3	7
7	3
14	7
16	7
3	1
5	7
15	5
17	4
3	4
17	7
12	3
1	1
4	6
6	4
12	4
1	1

Survey Unit 6	
X	Y
23	8
14	1
23	1
2	15
11	9
17	5
2	8
12	4
4	13
22	14
28	6
10	6
4	3
26	9
14	8
2	1
2	13
3	3
6	1
3	10

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RADIOLOGICAL SURVEY DATA SHEET

 DJH 2-7-03

LOCATION: (BLDG./AREA/ROOM) 34 ROOM 2	SURVEY NO. 03-TF-0021
PURPOSE: MARISSM PLAN 34-01 UNIT 1 FLOOR & WALL SCAN	RWP NO. NA
	DATE: 1-23-03
	TIME: 0830

MAP/DRAWING

SEE ATTACHMENTS

LEGEND: # = mrem/hr (γ) whole body
E = mrem/hr (β+η+γ) extremity on contact
△# = mrem/hr neutron
[#] = air sample number
(#) = swipe number
(#/α) or /β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5673/5676/5143	8-13-03
	N	A

[redacted]	HP# 7474	Date: 2-7-03
Counted by: (Signature) N	HP#	Date:
Counted by: (Print Name) A		
Reviewed [redacted]	HP# 7707	Date: 02/11/03
Reviewed [redacted]		

ML-9620 (2-98)

G-3306161

[redacted]

20665 AY 2-7-03 | 03-TF-0021 | Page ___ of ___

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
		N/A		

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
		N/A		

COMMENTS: N/A

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

ML-9620 (4-98)

G-3406 161

34 BUILDING CHARACTERIZATION SURVEY SCAN UNIT 1

RSDS# 03-TF-0021 RCT: DGH RCT:

43-20 BKG:	0	EFF:	0.172	PROBE AREA:	181	cm2	Surface Eff:		0.5	Detector # :	2
43-37 BKG:	0	EFF:	0.212	PROBE AREA:	584	cm2	Surface Eff:		0.5	Detector # :	3
LOCATION	2350#	RCT ID	PROBE	DET #	ITEM #	DATE	TIME	CNTS	CT TIME	dpm/100cm2	
SRC BKG	5673	7474	5143	2		1/22/03	9:52	6	300	8	
SRC CHECK	5673	7474	5143	2		1/22/03	9:57	2174	60	13966	
SRC CHECK	5673	7474	5143	2		1/22/03	9:58	2225	60	14294	
SRC CHECK	5673	7474	5143	2		1/22/03	10:00	2037	60	13086	
SRC CHECK	5673	7474	5143	2		1/22/03	10:01	2110	60	13555	
SCANW 01	5673	7474	5143	2	1	1/22/03	14:41	4	30	51	
SCANW 02	5673	7474	5143	2	2	1/22/03	14:42	1	30	13	
SCANW 03	5673	7474	5143	2	3	1/22/03	14:47	7	30	90	
SCANW 04	5673	7474	5143	2	4	1/22/03	15:08	0	30	0	
SCANW 05	5673	7474	5143	2	5	1/22/03	15:13	1	30	13	
SCANW 06	5673	7474	5143	2	6	1/22/03	15:19	0	30	0	
SRC BKG	5673	7474	5143	2		1/23/03	8:32	8	300	10	
SRC CHECK	5673	7474	5143	2		1/23/03	8:34	2014	60	12938	
SRC CHECK	5673	7474	5143	2		1/23/03	8:36	1937	60	12444	
SRC CHECK	5673	7474	5143	2		1/23/03	8:38	2161	60	13883	
SRC CHECK	5673	7474	5143	2		1/23/03	8:39	2025	60	13009	
SRC BKG	5673	7474	5676	3		1/23/03	8:46	18	300	6	
SRC CHECK	5673	7474	5676	3		1/23/03	8:54	1923	60	3106	
SRC CHECK	5673	7474	5676	3		1/23/03	8:58	1926	60	3111	
SRC CHECK	5673	7474	5676	3		1/23/03	8:59	2157	60	3484	
SRC CHECK	5673	7474	5676	3		1/23/03	9:01	2082	60	3363	
SRC CHECK	5673	7474	5676	3		1/23/03	9:03	2132	60	3444	
SRC CHECK	5673	7474	5676	3		1/23/03	9:04	2175	60	3514	
SCANW 07	5673	7474	5143	2	7	1/23/03	9:48	0	30	0	
SCANW 08	5673	7474	5143	2	8	1/23/03	9:54	1	30	13	
SCANW 09	5673	7474	5143	2	9	1/23/03	9:59	0	30	0	
SCANW 10	5673	7474	5143	2	10	1/23/03	10:06	0	30	0	
SCANW 11	5673	7474	5143	2	11	1/23/03	10:10	3	30	39	
SCANW 12	5673	7474	5143	2	12	1/23/03	10:12	1	30	13	
SCANF 01	5673	7474	5676	3	1	1/23/03	12:59	6	30	19	
SCANF 02	5673	7474	5676	3	2	1/23/03	13:01	5	30	16	

34 BUILDING CHARACTERIZATION SURVEY SCAN UNIT 1

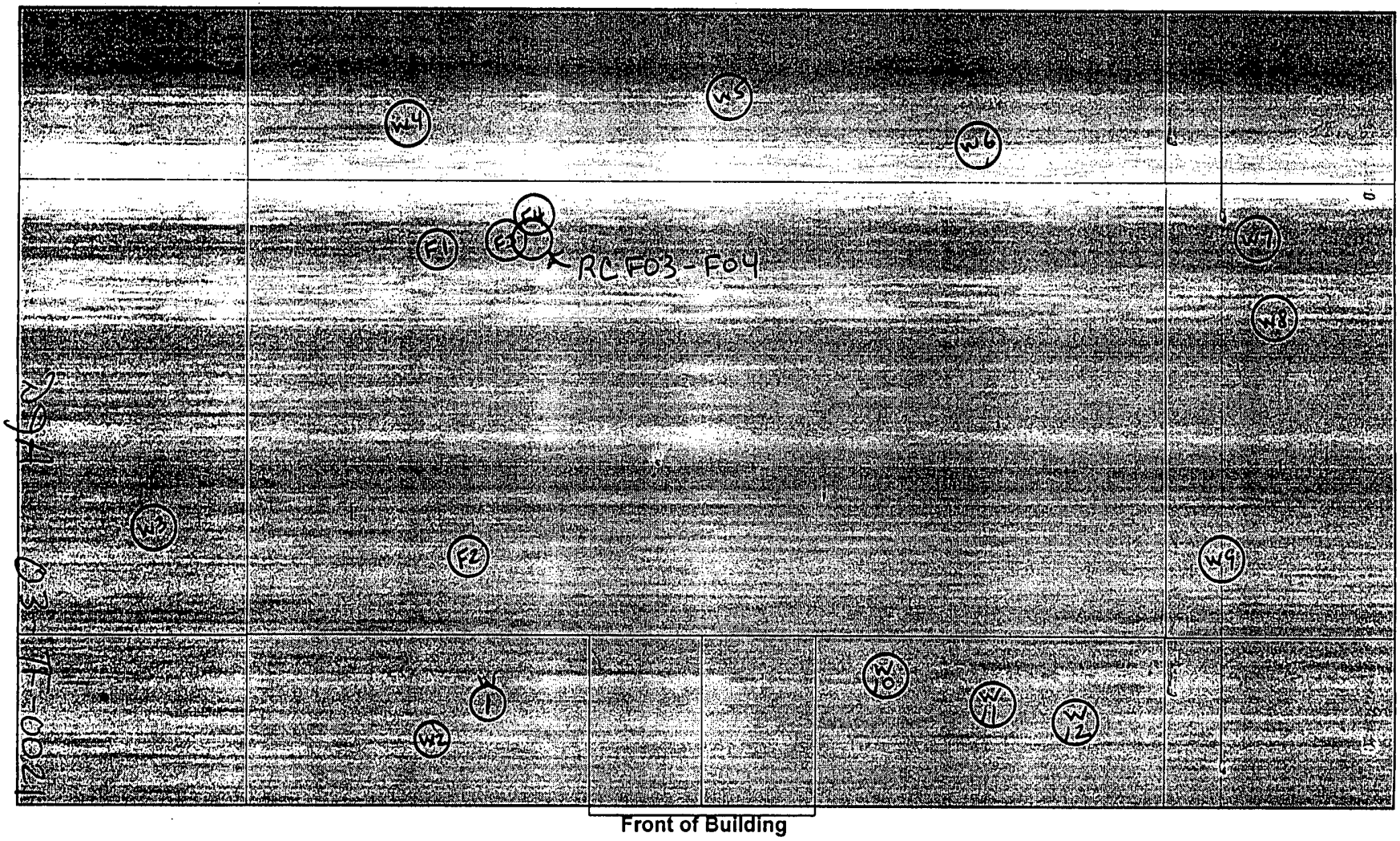
RSDS# 03-TF-0021 RCT: DJA RCT: _____

LOCATION	2350#	RCT ID	PROBE	DET #	ITEM #	DATE	TIME	CNTS	CT TIME	dpm/100cm2
SCANF 03	5673	7474	5676	3	3	1/23/03	13:05	23	30	74
SCANF 04	5673	7474	5676	3	4	1/23/03	13:06	34	30	110
RCF03-F04	5673	6178	5143	2	25	1/27/03	13:36	104	60	668

 DJA 2-7-03

G36 of 161

Survey Unit 1



DCF-0021

5 of 5
G3Pg 161

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RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) 34 Room 2	SURVEY NO. 03-TF-0024
PURPOSE: MARISSM Survey Plan 34-01 Upper Walls & Ceiling	RWP NO. N/A
	DATE: 1-27-03
	TIME: 1509

MAP/DRAWING

SEE ATTACHMENTS

LEGEND: # = mrem/hr (γ) whole body
E = mrem/hr (β+η+γ) extremity on contact
△# = mrem/hr neutron
[#] = air sample number
(#) = swipe number
(#/α) or /β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5673/5143	8-13-03
2360	5760/5800	10-16-03
	N	A

[redacted]	HP# 6178 1474	Date: 2-7-03
Counted by: (Signature) See	HP#	Date:
Counted by: (Print Name) Attached		
Reviewed/A[redacted]	HP# 7707	Date: 02/11/03
Reviewed/A[redacted]		

ML-9620 (2-98)

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	See	ATTA	ched	WALL
2				
3				
4				
5				WALL
6				Ceiling
7				
8				
9				
10				Ceiling
11				WALLS
12				
13				
14				
15				
16				
17				
18				
19				
20	See	ATTA	ched	WALLS
		N	A	

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
		N	A	

COMMENTS: N/A

NOTES:
1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

ML-9620 (4-98)

34 BUILDING CHARACTERIZATION SURVEY UNIT 2

RSDS# 03-TF-0024 RCT: KA RCT: DgA

43-20 BKG:	0	EFF:	0.172	PROBE AREA:	181	cm2	Surface Eff:		0.5	Detector # :	2
43-37 BKG:	0	EFF:	0.212	PROBE AREA:	584	cm2	Surface Eff:		0.5	Detector # :	3
LOCATION	2350#	RCT ID	PROBE	DET #	ITEM #	DATE	TIME	CNTS	CT TIME	dpm/100cm2	
SRCBKG	5673	7474	5143	2		1/27/03	8:24	4	300	5	
SRC CHECK	5673	7474	5143	2		1/27/03	8:26	2024	60	13003	
SRC CHECK	5673	7474	5143	2		1/27/03	8:28	2173	60	13960	
SRC CHECK	5673	7474	5143	2		1/27/03	8:29	1906	60	12245	
SRC CHECK	5673	7474	5143	2		1/27/03	8:31	1940	60	12463	
SU-2 01	5673	7474	5143	2	1	1/27/03	8:56	2	60	13	
SU-2 02	5673	7474	5143	2	2	1/27/03	9:06	3	60	19	
SU-2 03	5673	7474	5143	2	3	1/27/03	9:12	6	60	39	
SU-2 04	5673	7474	5143	2	4	1/27/03	9:18	3	60	19	
SU-2 05	5673	7474	5143	2	5	1/27/03	9:22	2	60	13	
SU-2 06	5673	7474	5143	2	6	1/27/03	9:29	1	60	6	
SU-2 07	5673	7474	5143	2	7	1/27/03	9:36	5	60	32	
SU-2 08	5673	7474	5143	2	8	1/27/03	9:42	2	60	13	
SU-2 09	5673	7474	5143	2	9	1/27/03	9:49	12	60	77	
SU-2 10	5673	7474	5143	2	10	1/27/03	9:56	2	60	13	
SU-2 11	5673	7474	5143	2	11	1/27/03	10:01	1	60	6	
SU-2 12	5673	7474	5143	2	12	1/27/03	10:07	4	60	26	
SU-2 13	5673	7474	5143	2	13	1/27/03	10:09	4	60	26	
SU-2 14	5673	7474	5143	2	14	1/27/03	10:14	3	60	19	
SU-2 15	5673	7474	5143	2	15	1/27/03	13:01	2	60	13	
SU-2 16	5673	7474	5143	2	16	1/27/03	13:03	7	60	45	
SU-2 17	5673	7474	5143	2	17	1/27/03	13:10	3	60	19	
SU-2 18	5673	7474	5143	2	18	1/27/03	13:16	4	60	26	
SU-2 19	5673	7474	5143	2	19	1/27/03	13:22	2	60	13	
SU-2 20	5673	7474	5143	2	20	1/27/03	13:27	3	60	19	
SU2 QC-09	5673	6178	5143	2		1/27/03	15:04	2	60	13	
SU2 QC-11	5673	6178	5143	2		1/27/03	15:07	1	60	6	

34-BLDG CHARACTERIZATION BETA SURVEY UNIT 2

RSDS# 02-TF-0024 RCT: KA RCT: DJH

LOCATION	2360	RCT ID	PROBE	ITEM #	DATE	gross count	CT TIME	dpm/100cm2
1	5760	6178	5800	1	1/27/03	171	60	104
2	5760	6178	5800	2	1/27/03	157	60	48
3	5760	6178	5800	3	1/27/03	164	60	76
4	5760	6178	5800	4	1/27/03	200	60	220
5	5760	6178	5800	5	1/27/03	153	60	32
6	5760	6178	5800	6	1/27/03	127	60	-72
7	5760	6178	5800	7	1/27/03	138	60	-28
8	5760	6178	5800	8	1/27/03	126	60	-76
9	5760	6178	5800	9	1/27/03	119	60	-104
10	5760	6178	5800	10	1/27/03	122	60	-92
11	5760	6178	5800	11	1/27/03	124	60	-84
12	5760	6178	5800	12	1/27/03	110	60	-140
13	5760	6178	5800	13	1/27/03	117	60	-112
14	5760	6178	5800	14	1/27/03	108	60	-148
15	5760	6178	5800	15	1/27/03	107	60	-152
16	5760	6178	5800	16	1/27/03	110	60	-140
17	5760	6178	5800	17	1/27/03	101	60	-176
18	5760	6178	5800	18	1/27/03	107	60	-152
19	5760	6178	5800	19	1/27/03	113	60	-128
20	5760	6178	5800	20	1/27/03	122	60	-92
BETA BACKGROUNG FOR 1-22-2003 WAS——————>								145

G-42 of 161

Alpha/Beta Analysis

Batch ID:	Smear Unit 1 - 200301280840	**Count Date:**	1/28/2003
Group:	H	**Count Minutes:**	1.5
Serial Number:	78218-1	**Count Mode:**	Simultaneous
Batch ID:	03-TF-0024 ABER-20 BSB	**Operating Volts:**	1440
Selected Geometry:	Swipe/Smear	**Cal Due Dates:**	6/19/2004

Efficiency (%)				Spillover (%)			
Alpha:	34.73	±	0.13	**Alpha to Beta:**	11.39	±	0.00
Beta:	46.13	±	0.13	**Beta to Alpha:**	0.07	±	0.00

Sample ID	Carrier ID	Alpha (dpm)	σ	Beta (dpm)	σ
1	23	0.00	0.00	0.00	0.00
2	48	0.00	0.00	1.37	1.45
3	42	2.19	1.92	1.21	1.45
4	100	0.00	0.00	0.00	0.00
5	27	0.00	0.00	2.74	2.04
6	93	0.00	0.00	6.85	3.23
7	36	0.00	0.00	0.00	0.00
8	44	0.00	0.00	0.00	0.00
9	39	2.18	1.92	2.58	2.05
10	83	0.00	0.00	1.37	1.45
11	66	0.00	0.00	1.37	1.45
12	6	2.19	1.92	0.00	0.16
13	57	0.00	0.00	0.00	0.00
14	65	0.00	0.00	5.48	2.89
15	41	0.00	0.00	4.11	2.50
16	46	0.00	0.00	1.37	1.45
17	63	2.18	1.92	3.95	2.51
18	78	0.00	0.00	1.37	1.45
19	57	2.19	1.92	1.21	1.45
20	2	0.00	0.00	1.37	1.45
		KA		KA	

B J Brown

Batch ID: 03-TF-0024 ABER-20 BSB

KA 2-7-03

~~Page 1 of 1~~

G-43 of 161

5 of 7

Time: 2.00
Data Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
Background Subtract: 1st Vial

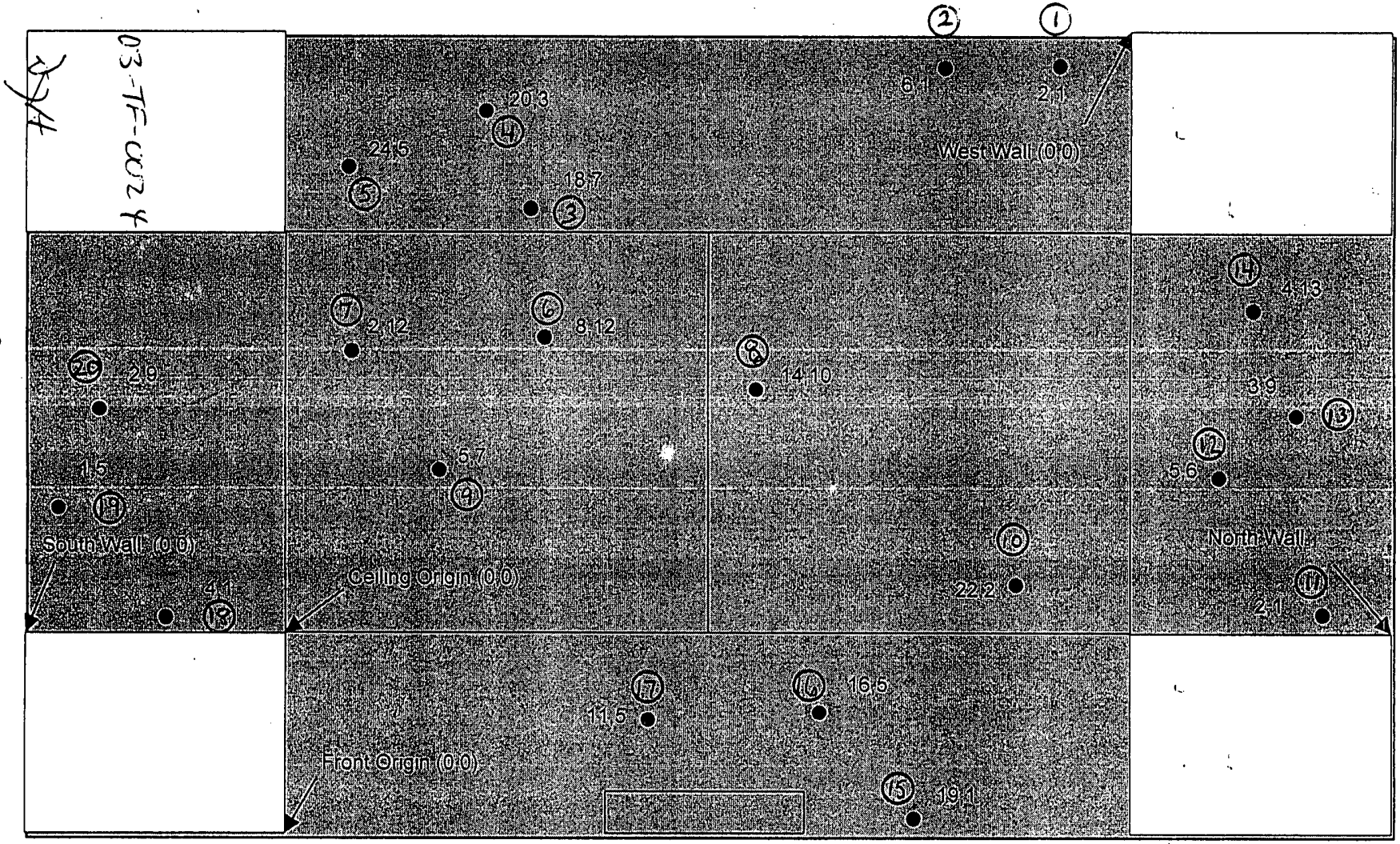
	LL	UL	LCR	2S%	BKG
Region A:	0.5 -	18.6	0	0.0	5.88
Region B:	2.0 -	18.6	0	0.0	5.75
Region C:	40.0 -	2000	0	0.0	10.73

Quench Indicator: tSIE/AEC
~~Ext Std Terminator: Count~~
03-TF-0024 K. A. -20 BSB
Luminescence Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: C:\DATA\PROT1.DAT
Count Data Filename: C:\DATA\SDATA1.DAT

S#	TIME	CPMA	CPMB	CPMC	tSIE	LUM	FLAG	DPM1	2SIGMA
-1	10.00	5.86	5.75	10.73	596.69	0	B		0.00
0	2.00	394.10	380.27	3.27	504.19	0		844.45	86.63
1	2.00	3.50	2.97	5.92	485.54	0		7.68	10.08
2	2.00	4.69	4.80	2.77	595.68	0		8.28	9.60
3	2.00	0.00	0.00	5.23	601.62	0		0.00	0.00
4	2.00	0.00	0.00	0.85	598.34	0		0.00	0.00
5	2.00	0.71	0.58	3.27	583.57	0		1.43	7.85
6	2.00	4.64	4.41	3.27	635.01	0		8.93	9.32
7	2.00	3.14	3.25	1.27	539.30	0		6.47	9.31
8	2.00	7.99	7.60	3.77	628.95	0		15.43	10.85
9	2.00	6.56	6.66	0.00	603.97	0		12.89	10.28
10	2.00	7.08	6.90	4.27	605.18	0		13.91	10.48
11	2.00	3.14	3.25	1.77	614.77	0		6.13	8.81
12	2.00	3.14	2.59	0.00	629.20	0		6.07	8.73
13	2.00	0.64	0.50	0.83	584.93	0		1.28	7.81
14	2.00	5.14	4.84	2.77	671.52	0		9.70	9.33
15	2.00	6.61	5.82	0.77	666.22	0		12.50	9.92
16	2.00	4.19	4.00	0.00	610.26	0		8.19	9.29
17	2.00	7.14	5.79	0.77	575.69	0		14.33	10.74
18	2.00	5.14	5.25	1.27	583.83	0		10.26	9.87
19	2.00	2.74	2.84	1.27	644.12	0		5.23	8.46
20	2.00	0.00	0.00	0.00	505.65	0		0.00	0.00

KA

Survey Unit 2



Front of Building

03-TF-002 4

Gsg 1 of 1
7 of 7

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RADIOLOGICAL SURVEY DATA SHEET

Page 1 of 67 29H 2-6-03

LOCATION: (BLDG./AREA/ROOM) 34 : ROOM 4	SURVEY NO. 03-TF-0024
PURPOSE: MARSSM SURVEY PLAN 34-01 UNIT 5 ROOM 4 EXTERIOR	RWP NO. N/A
	DATE: 1-30-03
	TIME: 1530

MAP/DRAWING

SEE ATTACHMENTS

COPY

LEGEND: # = mrem/hr (γ) whole body
E = mrem/hr (β+η+γ) extremity on contact
△# = mrem/hr neutron
[#] = air sample number
(#) = swipe number
(#/α) or /β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2360	5704/5714	9-26-03
2350	5673/5143	8-13-03
	N/A	

[redacted] HPs 7474 6178 Date: 2-7-03

Counted by: (Signature) SEE	HPs	Date:
Counted by: (Print Name) ATTACHED		
Reviewed [redacted]	HPs 7767	Date: 02/11/03
Reviewed [redacted]		

ML-9620 (2-98)

03-TF-0026

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	SEE ATTACHED			U-5 01
2				U-5 02
3				U-5 03
4				U-5 04
5				U-5 05
6				U-5 06
7				U-5 07
8				U-5 08
9				U-5 09
10				U-5 10
11				U-5 11
12				U-5 12
13				U-5 13
14				U-5 14
		N/A		

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
		N/A		

COMMENTS: N/A

NOTES:
1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

ML-9620 (4-98)

34 BUILDING CHARACTERIZATION SURVEY UNIT 5

RSDS# 03-TF-0026 RCT: [illegible] RCT:_____

43-30 BKG:		EFF:		PROBE AREA:		cm2	Surface Eff:			Detector # :	2
43-37 BKG:		EFF:		PROBE AREA:		cm2	Surface Eff:			Detector # :	3
SRC BKG	5673	6178	5143	2		1/30/03	9:04	2	300	3	
SRC CHECK	5673	6178	5143	2		1/30/03	9:06	2027	60	13022	
SRC CHECK	5673	6178	5143	2		1/30/03	9:07	2124	60	13645	
SRC CHECK	5673	6178	5143	2		1/30/03	9:09	2097	60	13472	
SRC CHECK	5673	6178	5143	2		1/30/03	9:10	2213	60	14217	
U-5 01	5673	6178	5143	2	1	1/30/03	9:16	3	60	19	
U-5 02	5673	6178	5143	2	2	1/30/03	9:18	5	60	32	
U-5 03	5673	6178	5143	2	3	1/30/03	9:20	14	60	90	
U-5 04	5673	6178	5143	2	4	1/30/03	9:21	14	60	90	
U-5 05	5673	6178	5143	2	5	1/30/03	9:22	13	60	84	
U-5 06	5673	6178	5143	2	6	1/30/03	9:24	6	60	39	
U-5 07	5673	6178	5143	2	7	1/30/03	9:25	14	60	90	
U-5 08	5673	6178	5143	2	8	1/30/03	9:30	6	60	39	
U-5 09	5673	6178	5143	2	9	1/30/03	9:31	12	60	77	
U-5 10	5673	6178	5143	2	10	1/30/03	9:33	16	60	103	
U-5 11	5673	6178	5143	2	11	1/30/03	9:34	5	60	32	
U-5 12	5673	6178	5143	2	12	1/30/03	9:36	16	60	103	
U-5 13	5673	6178	5143	2	13	1/30/03	9:37	9	60	58	
U-5 14	5673	6178	5143	2	14	1/30/03	9:38	13	60	84	
QC 01	5673	7474	5143	2	5	2/6/03	8:47	5	60	32	
QC 10	5673	7474	5143	2	6	2/6/03	8:48	12	60	77	

34-BLDG CHARACTERIZATION BETA SURVEY UNIT 5

RSDS# 03-TF-0026 RCT: DJA RCT: KA

LOCATION	2360	RCT ID	PROBE	ITEM #	DATE	gross count	CT TIME	dpm/100cm2
1	5704	6178	5714	1	1/30/03	168	60	52
2	5704	6178	5714	2	1/30/03	153	60	-8
3	5704	6178	5714	3	1/30/03	177	60	88
4	5704	6178	5714	4	1/30/03	185	60	120
5	5704	6178	5714	5	1/30/03	185	60	120
6	5704	6178	5714	6	1/30/03	170	60	60
7	5704	6178	5714	7	1/30/03	190	60	140
8	5704	6178	5714	8	1/30/03	168	60	52
9	5704	6178	5714	9	1/30/03	168	60	52
10	5704	6178	5714	10	1/30/03	193	60	152
11	5704	6178	5714	11	1/30/03	274	60	476
12	5704	6178	5714	12	1/30/03	165	60	40
13	5704	6178	5714	13	1/30/03	207	60	208
14	5704	6178	5714	14	1/30/03	194	60	156
BETA BACKGROUNG FOR 1-30-2003 WAS——————>								155

G-50 of 161

DJA 2-6-03

Alpha/Beta Analysis

Batch ID:	Smear Unit 1 - 200302051530	**Count Date:**	2/5/2003
Group:	J	**Count Minutes:**	1.5
Serial Number:	78218-1	**Count Mode:**	Simultaneous
Batch ID:	03-TF-0026 HARVEY (14) BSB	**Operating Volts:**	1440
Selected Geometry:	Swipe/Smear	**Cal Due Dates:**	6/19/2004

Efficiency (%)				Spillover (%)			
Alpha:	34.73	±	0.13	Alpha to Beta:	11.39	±	0.00
Beta:	46.13	±	0.13	Beta to Alpha:	0.07	±	0.00

Sample ID	Carrier ID	Alpha (dpm)	σ	Beta (dpm)	σ
1	49	2.18	1.92	2.58	2.05
2	92	4.37	2.72	1.06	1.46
3	91	0.00	0.00	5.48	2.89
4	98	6.55	3.33	7.75	3.55
5	16	0.00	0.00	1.37	1.45
6	56	4.37	2.72	1.06	1.46
7	86	2.19	1.92	0.00	0.16
8	83	0.00	0.00	1.37	1.45
9	97	4.37	2.72	2.43	2.06
10	77	2.19	1.92	0.00	0.16
11	59	0.00	0.00	1.37	1.45
12	94	2.18	1.92	5.32	2.90
13	39	4.37	2.72	2.43	2.06
14	60	2.19	1.92	1.21	1.45
		29/1		29/1	

Jim Brown

Batch ID: 03-TF-0026 HARVEY (14) BSB

5 of 7

Protocol #: 2 PW H3 #403727 User : 5268

Time: 2.00
Data Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
Background Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
Region A:	0.5	- 18.6	0	0.0	9.09
Region B:	2.0	- 18.6	0	0.0	8.67
Region C:	40.0	- 2000	0	0.0	10.62

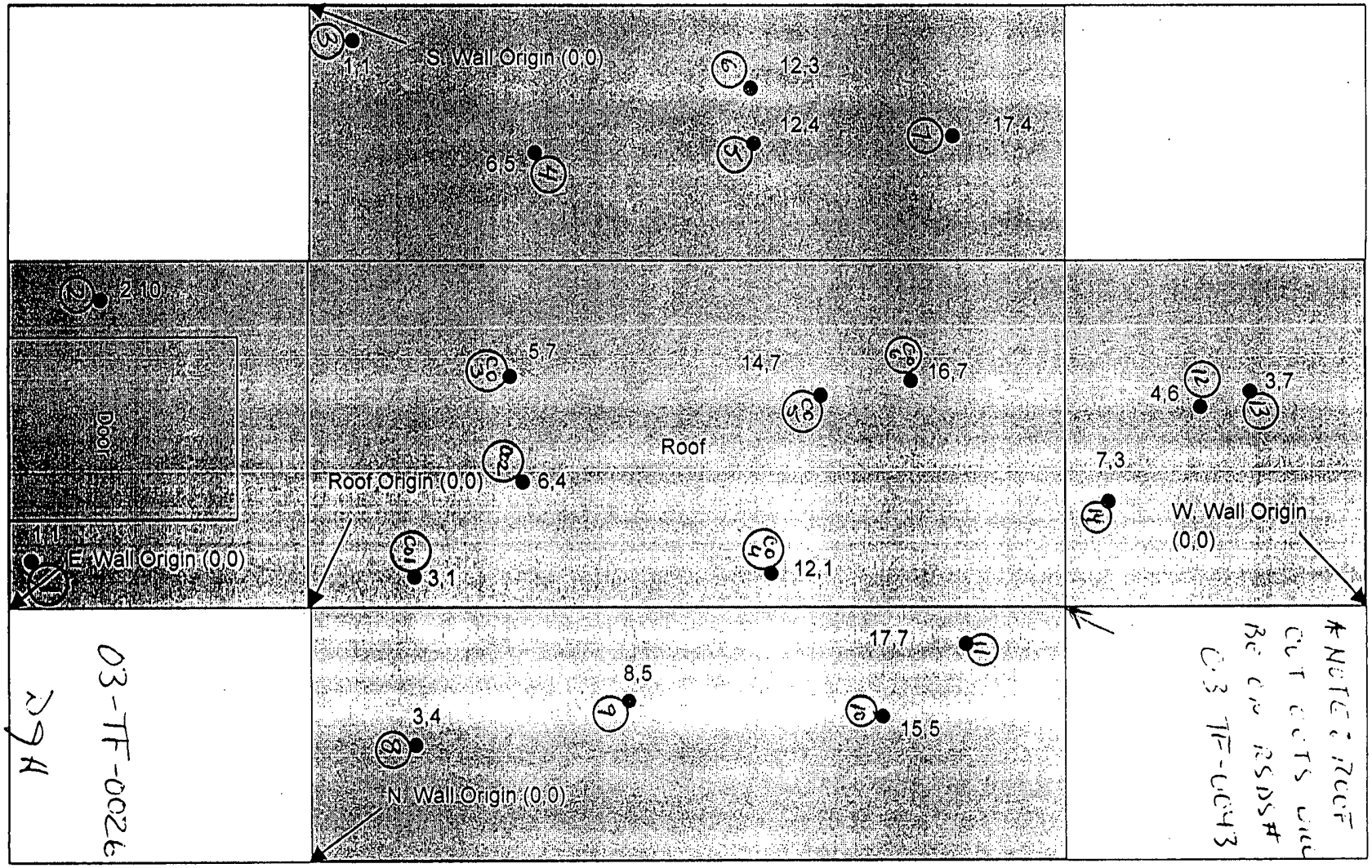
Quench Indicator: tSIE/AEC
Ext Std Terminator: Count
03-TF-0026 HARVEY - 14 BSB
Luminescence Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: C:\DATA\PROT2.DAT
Count Data Filename: C:\DATA\SDATA2.DAT

S#	TIME	CPMA	CPMB	CPMC	tSIE	LUM	FLAG	DPM1	2SIGMA
-1	10.00	9.09	8.67	10.62	495.00	2	B		0.00
0	2.00	436.78	420.67	3.88	533.24	0		904.31	90.66
1	2.00	0.00	0.00	0.00	655.22	0		0.00	0.00
2	2.00	0.00	0.00	3.88	674.10	0		0.00	0.00
3	2.00	0.00	0.00	2.38	643.20	0		0.00	0.00
4	2.00	6.73	6.18	8.88	628.06	0		13.02	11.52
5	2.00	3.02	3.43	7.38	674.36	0		5.68	9.95
6	2.00	4.91	4.42	0.00	671.93	0		9.26	10.63
7	2.00	0.57	0.98	4.88	558.65	0		1.15	9.73
8	2.00	4.79	5.20	5.88	575.49	0		9.61	11.27
9	2.00	0.00	0.00	1.38	482.39	0		0.00	0.00
10	2.00	0.00	0.00	0.00	537.09	0		0.00	0.00
11	2.00	0.00	0.00	4.38	635.12	0		0.00	0.00
12	2.00	0.00	0.00	2.53	637.72	0		0.00	0.00
13	2.00	0.00	0.00	0.42	557.78	0		0.00	0.00
14	2.00	0.00	0.00	0.00	642.21	0		0.00	0.00

≥9H

6 of 7

Survey Unit 5



03-TF-0026
294

7 of 7
GS3 of 161

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RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) 34 ROOM 2 AND 4	SURVEY NO. 03-TF-0027
PURPOSE: MARSSM SURVEY PLAN 34-01 JUDGEMENTALS	RWP NO. N/A
	DATE: 1-28-03
	TIME: 1530

MAP/DRAWING

COPY

SEE ATTACHMENTS

LEGEND: # = mrem/hr (γ) whole body
E = mrem/hr (β+η+γ) extremity on contact
△# = mrem/hr neutron
[#] = air sample number
(#) = swipe number
(#/α) or /β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2360	5704/5714	9-26-03
2350	5673/5743	8-13-03
	N/A	

[redacted]	HP# 6176 7474	Date: 2-7-03
Counted by: (Signature) SEE	HP#	Date:
Counted by: (Print Name) ATTACHED		
Reviewed/A [redacted]	HP# 7707	Date: 02/11/03
Reviewed/A [redacted]		

ML-9620 (2-98)

GSS06 161

2 of 7

Survey No. 03-TF-0027

Page ___ of ___

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	SEE	ATTACHED		BEAMS
2				
3				
4				
5				
6				
7				
8				
9				
10				BEAMS
		N/A		

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
		N/A		

COMMENTS: N/A

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

ML-9620 (4-98)

34 BUILDING CHARACTERIZATION SURVEY JUDGEMENTALS

RSDS# 03-TF-0027

RCT: DJH RCT: WA

43-20 BKG:	0	EFF:	0.172	PROBE AREA:	181	cm2	Surface Eff:		0.5	Detector # :	2
43-37 BKG:	0	EFF:	0.212	PROBE AREA:	584	cm2	Surface Eff:		0.5	Detector # :	3
LOCATION	2350#	RCT ID	PROBE	DET #	ITEM #	DATE	TIME	CNTS	CT TIME	dpm/100cm2	
SCR BKG	5673	7474	5143	2		1/28/03	13:46	5	300	6	
SCR CHECK	5673	7474	5143	2		1/28/03	13:52	2022	60	12990	
SCR CHECK	5673	7474	5143	2		1/28/03	13:54	2240	60	14390	
SCR CHECK	5673	7474	5143	2		1/28/03	13:56	2016	60	12951	
SCR CHECK	5673	7474	5143	2		1/28/03	13:58	2076	60	13337	
SU-J 01	5673	7474	5143	2	1	1/28/03	14:46	1	60	6	
SU-J 02	5673	7474	5143	2	2	1/28/03	14:47	10	60	64	
SU-J 03	5673	7474	5143	2	3	1/28/03	14:52	3	60	19	
SU-J 04	5673	7474	5143	2	4	1/28/03	14:54	7	60	45	
SU-J 05	5673	7474	5143	2	5	1/28/03	14:58	8	60	51	
SU-J 06	5673	7474	5143	2	6	1/28/03	14:59	4	60	26	
SU-J 07	5673	7474	5143	2	7	1/28/03	15:02	5	60	32	
SU-J 08	5673	7474	5143	2	8	1/28/03	15:04	6	60	39	
SU-J 09	5673	7474	5143	2	9	1/29/03	14:32	5	60	32	
SU-J 10	5673	7474	5143	2	10	1/29/03	14:36	4	60	26	
QC J-01	5673	7474	5143	2		1/30/03	9:46	3	60	19	
QC J-02	5673	7474	5143	2		1/30/03	9:48	2	60	13	

34-BLDG CHARACTERI ION BETA SURVEY JUDGEMENTALS

RSDS# 02-TF-(RCT: RCT: KA

LOCATION	2360	RCT ID	PROBE	DATE	gross count	CT TIME	dpm/100cm2
1	5704	6178	5714	1/28/03	149	60	-40
2	5704	6178	5714	1/28/03	168	60	36
3	5704	6178	5714	1/28/03	153	60	-24
4	5704	6178	5714	1/28/03	196	60	148
5	5704	6178	5714	1/28/03	173	60	56
6	5704	6178	5714	1/28/03	136	60	-92
7	5704	6178	5714	1/28/03	177	60	72
8	5704	6178	5714	1/28/03	165	60	24
9	5704	6178	5714	1/29/03	102	60	-156
10	5704	6178	5714	1/29/03	117	60	-96
BETA BACKGROUNG FOR 1-28-2				WAS——————>			159
BETA BACKGROUNG FOR 1-29-2				WAS——————>			141

G5806161

Alpha/Beta Analysis

Batch ID:	Smear Unit 1 - 200301291545	**Count Date:**	1/29/2003
Group:	F	**Count Minutes:**	1.5
Serial Number:	78218-1	**Count Mode:**	Simultaneous
Batch ID:	03-TF-0027 HARVEY (10) BSB	**Operating Volts:**	1440
Selected Geometry:	Swipe/Smear	**Cal Due Dates:**	6/19/2004

Efficiency (%)				Spillover (%)			
Alpha:	34.73	±	0.13	**Alpha to Beta:**	11.39	±	0.00
Beta:	46.13	±	0.13	**Beta to Alpha:**	0.07	±	0.00

Sample ID	Carrier ID	Alpha (dpm)	σ	Beta (dpm)	σ
1	39	2.17	1.92	16.29	5.01
2	17	0.00	0.00	0.00	0.00
3	62	2.19	1.92	0.00	0.16
4	56	0.00	0.00	4.11	2.50
5	5	0.00	0.00	2.74	2.04
6	65	2.19	1.92	1.21	1.45
7	40	2.18	1.92	2.58	2.05
8	6	0.00	0.00	1.37	1.45
9	21	0.00	0.00	1.37	1.45
10	61	0.00	0.00	2.74	2.04
		29A		29A	

Protocol #: 1 PW H3 #403727 User : 5268

Time: 2.00
Data Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
Background Subtract: 1st Vial

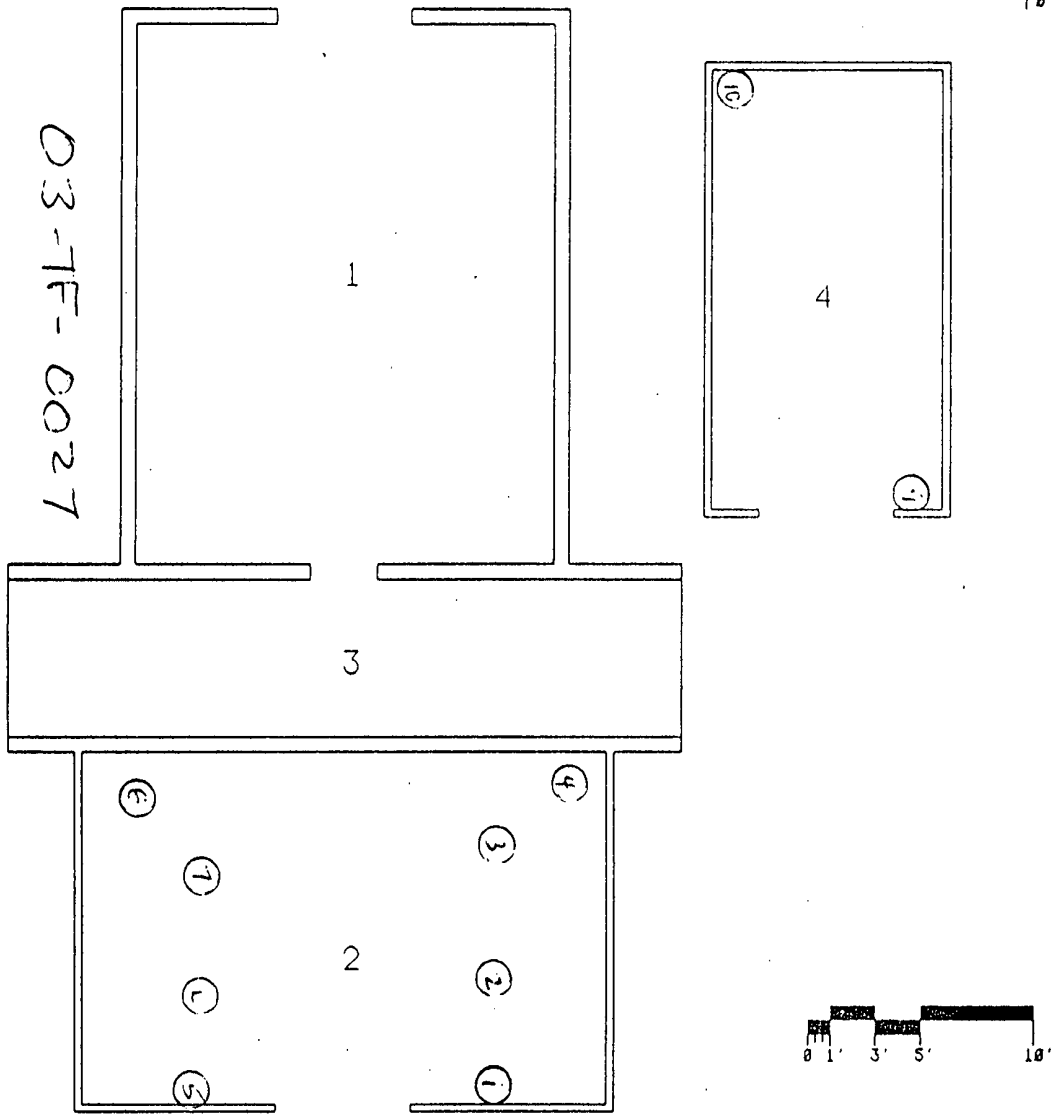
	LL	UL	LCR	2S%	BKG
Region A:	0.5	- 18.6	0	0.0	7.61
Region B:	2.0	- 18.6	0	0.0	7.45
Region C:	40.0	- 2000	0	0.0	10.65

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count
03-TF-0027 HARVEY (10) BSB
Luminescence Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: C:\DATA\PROT1.DAT
Count Data Filename: C:\DATA\SDATA1.DAT

S#	TIME	CPMA	CPMB	CPMC	tSIE	LUM	FLAG	DPM1	2SIGMA
-1	10.00	7.61	7.45	10.65	602.63	1	B		0.00
0	2.00	382.97	374.46	0.00	506.71	0		818.07	84.64
1	2.00	0.00	0.00	3.85	412.85	0		0.00	0.00
2	2.00	4.08	4.24	10.85	377.18	0		10.63	13.43
3	2.00	3.03	3.20	10.32	379.98	0		7.85	12.80
4	2.00	2.13	2.30	4.35	445.34	0		4.93	10.98
5	2.00	6.89	7.05	0.00	493.13	0		14.96	12.35
6	2.00	3.70	3.36	2.35	485.98	0		8.10	11.12
7	2.00	0.89	0.05	2.35	531.53	0		1.84	9.28
8	2.00	0.00	0.00	3.85	462.83	0		0.00	0.00
9	2.00	1.03	0.14	4.35	479.08	0		2.27	9.97
10	2.00	0.00	0.00	0.35	411.92	0		0.00	0.00

29H

REV	DATE	REVISION	BY	CHKR	DWG	LPREC	APVD	R
Ø	12/12/91	ASBUILT ISSUE	DCB				DVD	



BLDG #34
FIRST FLOOR
BLDG CODE:3034

03-TF-0027
Page 7 of 7
Page 20 of 161

APPROVALS:	DATE:
SAFETY COMMITTEE REQUIRED:	
___ NONE ___ TRUEDOC ___ TEDOC ___ DWDOC	
TECH. REVIP.	
GR. MGR.	
TRUEDOC	
TEDOC	
DWDOC	

DESIGN CHK	PROJ MGR
DRFSMN	CHG BDPV
LP & CC	PROJ REV
CHG MGR	
APVD	DATE

SHEET	1	2	3	4	5	6
TOTAL	Ø					

FAST CLASSIFICATION

TITLE (U) TITLE CLASSIFICATION
BLDG #34
FLOOR PLANS

DRAWING CLASSIFICATION	SIZE	DRAWING NUMBER	JOB NUMBER
UNCLASSIFIED	C	FSC911245	12335
DWG TYPE SFP	FROM BLDG #34	CHECK 14865	SCALE AS NOTED	SHEET 1 OF 1
STATUS MO-REL-12/12/91	ORIGIN MO-BRJ-V3.0		

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RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) Bldg 34 Room 4	SURVEY NO. 03-TF-0028
PURPOSE: MARISSM Survey Plan 34-01 UNIT 4 INTERIOR	RWP NO. NA
	DATE: 1-29-03
	TIME: 1430

MAP/DRAWING

COPY

SEE ATTACHMENTS

LEGEND: # = mrem/hr (γ) whole body
E = mrem/hr (β+η+γ) extremity on contact
(#) = mrem/hr neutron
[#] = air sample number
(#) = swipe number
(#/α) or /β = direct cont. measurement in dpm/100cm^2

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5673/5143	8-13-03
2360	5760/5800	10-16-03
	N A	

[redacted]

	HP# 6178 7474	Date: 2-7-03
Counted by: (Signature) See	HP#	Date:
Counted by: (Print Name) ATTACHED		
Review [redacted]	HP# 7707	Date: 02/11/03
Review [redacted]		

ML-9620 (2-98)

[redacted]

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	See	ATTA	ched	Floor
2				
3				
4				Floor
5				WALLS
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				WALLS
17				Ceiling
18				
19				
20	See	ATTA	ched	Ceiling
		N	A	

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
		N	A	

COMMENTS: N/A

NOTES:
1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

ML-9620 (4-98)

34 BUILDING CHARACTERIZATION SURVEY UNIT 4

RSDS# 03-TF-0028 RCT: KA RCT: DGH

43-20 BKG:	0	EFF:	0.172	PROBE AREA:	181	cm2	Surface Eff:		0.5	Detector # :	2
43-37 BKG:	0	EFF:	0.212	PROBE AREA:	584	cm2	Surface Eff:		0.5	Detector # :	3
LOCATION	2350#	RCT ID	PROBE	DET #	ITEM #	DATE	TIME	CNTS	CT TIME	dpm/100cm2	
SRC BKG	5673	7474	5676	3		1/29/03	9:00	47	300	15	
SRC CHECK	5673	7474	5676	3		1/29/03	9:03	2033	60	3284	
SRC CHECK	5673	7474	5676	3		1/29/03	9:05	2088	60	3373	
SRC CHECK	5673	7474	5676	3		1/29/03	9:06	2136	60	3451	
SRC CHECK	5673	7474	5676	3		1/29/03	9:08	2116	60	3418	
SRC CHECK	5673	7474	5676	3		1/29/03	9:09	2140	60	3457	
SRC CHECK	5673	7474	5676	3		1/29/03	9:11	2180	60	3522	
SRC BKG	5673	7474	5143	2		1/29/03	9:24	5	300	6	
SRC CHECK	5673	7474	5143	2		1/29/03	9:26	2116	60	13594	
SRC CHECK	5673	7474	5143	2		1/29/03	9:28	2138	60	13735	
SRC CHECK	5673	7474	5143	2		1/29/03	9:29	2030	60	13041	
SRC CHECK	5673	7474	5143	2		1/29/03	9:30	2078	60	13350	
U-4 2 6	5673	7474	5143	2	1	1/29/03	12:58	6	60	39	
U-4 4 16	5673	7474	5143	2	2	1/29/03	13:00	3	60	19	
U-4 9 14	5673	7474	5143	2	3	1/29/03	13:02	17	60	109	
U-4 8 11	5673	7474	5143	2	4	1/29/03	13:03	8	60	51	
U-4 -1 2	5673	7474	5143	2	5	1/29/03	13:04	3	60	19	
U-4 -4 5	5673	7474	5143	2	6	1/29/03	13:06	1	60	6	
U-4 -3 17	5673	7474	5143	2	7	1/29/03	13:08	0	60	0	
U-4 3 21	5673	7474	5143	2	8	1/29/03	13:10	2	60	13	
U-4 6 22	5673	7474	5143	2	9	1/29/03	13:11	2	60	13	
U-4 8 25	5673	7474	5143	2	10	1/29/03	13:12	4	60	26	
U-4 12 16	5673	7474	5143	2	11	1/29/03	13:14	0	60	0	
U-4 15 9	5673	7474	5143	2	12	1/29/03	13:15	4	60	26	
U-4 17 8	5673	7474	5143	2	13	1/29/03	13:17	1	60	6	
U-4 17 4	5673	7474	5143	2	14	1/29/03	13:18	0	60	0	
U-4 3 -3	5673	7474	5143	2	15	1/29/03	13:20	1	60	6	
U-4 10 -4	5673	7474	5143	2	16	1/29/03	13:21	1	60	6	
U-4 29 4	5673	7474	5143	2	17	1/29/03	14:10	1	60	6	
U-4 24 11	5673	7474	5143	2	18	1/29/03	14:19	0	60	0	
U-4 21 18	5673	7474	5143	2	19	1/29/03	14:24	0	60	0	
U-4 23 2	5673	7474	5143	2	20	1/29/03	14:30	1	60	6	
QC 9 14	5673	7474	5143	2		1/30/03	9:12	20	60	128	

34 BUILDING CHARACTERIZATION SURVEY UNIT 4

RSDS# 03-TF-0028 RCT: KA RCT: DJH

LOCATION	2350#	RCT ID	PROBE	DET #	ITEM #	DATE	TIME	CNTS	CT TIME	dpm/100cm2
QC12 16	5673	7474	5143	2		1/30/03	9:14	1	60	6

34-BLDG CHARACTERIZATION BETA SURVEY UNIT 4

RSDS# 03-TF-0028 RCT: KA RCT: DJA

LOCATION	2360	RCT ID	PROBE	ITEM #	DATE	gross count	CT TIME	dpm/100cm2
1	5760	7474	5800	1	1/29/03	116	60	-100
2	5760	7474	5800	2	1/29/03	216	60	300
3	5760	7474	5800	3	1/29/03	118	60	-92
4	5760	7474	5800	4	1/29/03	114	60	-108
5	5760	7474	5800	5	1/29/03	115	60	-104
6	5760	7474	5800	6	1/29/03	126	60	-60
7	5760	7474	5800	7	1/29/03	188	60	188
8	5760	7474	5800	8	1/29/03	124	60	-68
9	5760	7474	5800	9	1/29/03	127	60	-56
10	5760	7474	5800	10	1/29/03	118	60	-92
11	5760	7474	5800	11	1/29/03	125	60	-64
12	5760	7474	5800	12	1/29/03	112	60	-116
13	5760	7474	5800	13	1/29/03	120	60	-84
14	5760	7474	5800	14	1/29/03	116	60	-100
15	5760	7474	5800	15	1/29/03	206	60	260
16	5760	7474	5800	16	1/29/03	143	60	8
17	5760	7474	5800	17	1/29/03	213	60	288
18	5760	7474	5800	18	1/29/03	123	60	-72
19	5760	7474	5800	19	1/29/03	131	60	-40
20	5760	7474	5800	20	1/29/03	130	60	-44
BETA BACKGROUNG FOR 1-29-2003 WAS——————————>								141

 G-678161

Alpha/Beta Analysis

Batch ID:	Smear Unit 1 - 200301300634	**Count Date:**	1/30/2003
Group:	E	**Count Minutes:**	1.5
Serial Number:	78218-1	**Count Mode:**	Simultaneous
Batch ID:	03-TF-0028 HARVEY (20) BSB	**Operating Volts:**	1440
Selected Geometry:	Swipe/Smear	**Cal Due Dates:**	6/19/2004

	Efficiency (%)				Spillover (%)			
Alpha:	34.73	±	0.13		**Alpha to Beta:**	11.39	±	0.00
Beta:	46.13	±	0.13		**Beta to Alpha:**	0.07	±	0.00

Sample ID	Carrier ID	Alpha (dpm)	σ	Beta (dpm)	σ
1	3	0.00	0.00	1.37	1.45
2	51	0.00	0.00	0.00	0.00
3	19	4.36	2.72	9.28	3.83
4	38	2.18	1.92	2.58	2.05
5	12	0.00	0.00	5.48	2.89
6	84	4.37	2.72	5.17	2.90
7	37	2.18	1.92	6.69	3.24
8	28	0.00	0.00	1.37	1.45
9	64	0.00	0.00	2.74	2.04
10	48	0.00	0.00	2.74	2.04
11	42	0.00	0.00	0.00	0.00
12	44	4.37	2.72	2.43	2.06
~~13~~ 17	36	0.00	0.00	1.37	1.45
~~14~~ 18	93	0.00	0.00	2.74	2.04
~~15~~ 19	27	0.00	0.00	4.11	2.50
~~16~~ 20	100	2.18	1.92	6.69	3.24
		KA		KA	

2-4-03

B J Brown

Batch ID: 03-TF-0028 HARVEY (20) BSB

KA 2-7-03

~~Page 1 of 1~~

Time: 2.00
Data Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
Background Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
Region A:	0.5 -	18.6	0	0.0	8.21
Region B:	2.0 -	18.6	0	0.0	8.25
Region C:	40.0 -	2000	0	0.0	12.68

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count
03-TF-0028 HARVEY (20) BSB
Luminescence Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: C:\DATA\PROT5.dat
Count Data Filename: C:\DATA\SDATA5.DAT

S#	TIME	CPMA	CPMB	CPMC	tSIE	LUM	FLAG	DPM1	2SIGMA
-1	10.00	8.21	8.25	12.68	491.07	3	B		0.00
0	2.00	241.93	237.50	0.00	487.83	0		529.09	62.52
1	2.00	11.07	9.73	0.00	595.87	0		21.90	12.91
2	2.00	2.29	2.25	2.82	469.28	0		5.13	11.06
3	2.00	21.10	20.14	11.82	424.87	0		50.12	19.06
4	2.00	20.82	20.09	33.32	475.92	0		46.24	17.73
5	2.00	20.27	19.85	19.82	385.84	0		51.95	20.26
6	2.00	3.29	2.30	2.82	573.55	0		6.61	10.33
7	2.00	8.11	7.91	1.55	538.75	0		16.73	12.43
8	2.00	6.29	6.15	5.32	467.41	0		14.12	12.81
9	2.00	2.79	2.75	3.32	453.10	0		6.38	11.53
10	2.00	3.79	3.75	9.32	394.28	0		9.55	13.20
11	2.00	17.79	17.75	1.95	555.36	0		36.24	15.39
12	2.00	6.04	5.51	3.82	445.49	0		13.96	13.08
~~13~~ 17	2.00	5.86	4.95	1.82	689.05	0		10.95	10.52
2-4-03 ~~14~~ 18	2.00	11.13	10.52	12.32	605.74	0		21.85	12.83
~~15~~ 19	2.00	12.00	11.15	9.82	621.28	0		23.31	12.97
2-4-03 ~~16~~ 20	2.00	36.79	34.61	47.32	645.90	0		70.30	19.17

KA

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: SMEAR005
Batch Ended: 2/4/03 15:11
Cal. Due Date: 4/25/03
Serial Number: 26966-3

Batch ID: 03-TF-0028 HARVEY (20) BSB

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
C1	13	0.00	2.08		0.00	1.25	
C2	14	1.31	1.89		2.67	2.32	
C3	15	0.00	2.11		1.91	2.16	
C4	16	0.00	2.08		1.09	2.44	

KA KA

Anthe Brown

Protocol #: 2 PW H3 #403727 User : 5268

Time: 2.00
Data Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
Background Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
Region A:	0.5 -	18.6	0	0.0	9.81
Region B:	2.0 -	18.6	0	0.0	9.62
Region C:	40.0 -	2000	0	0.0	10.79

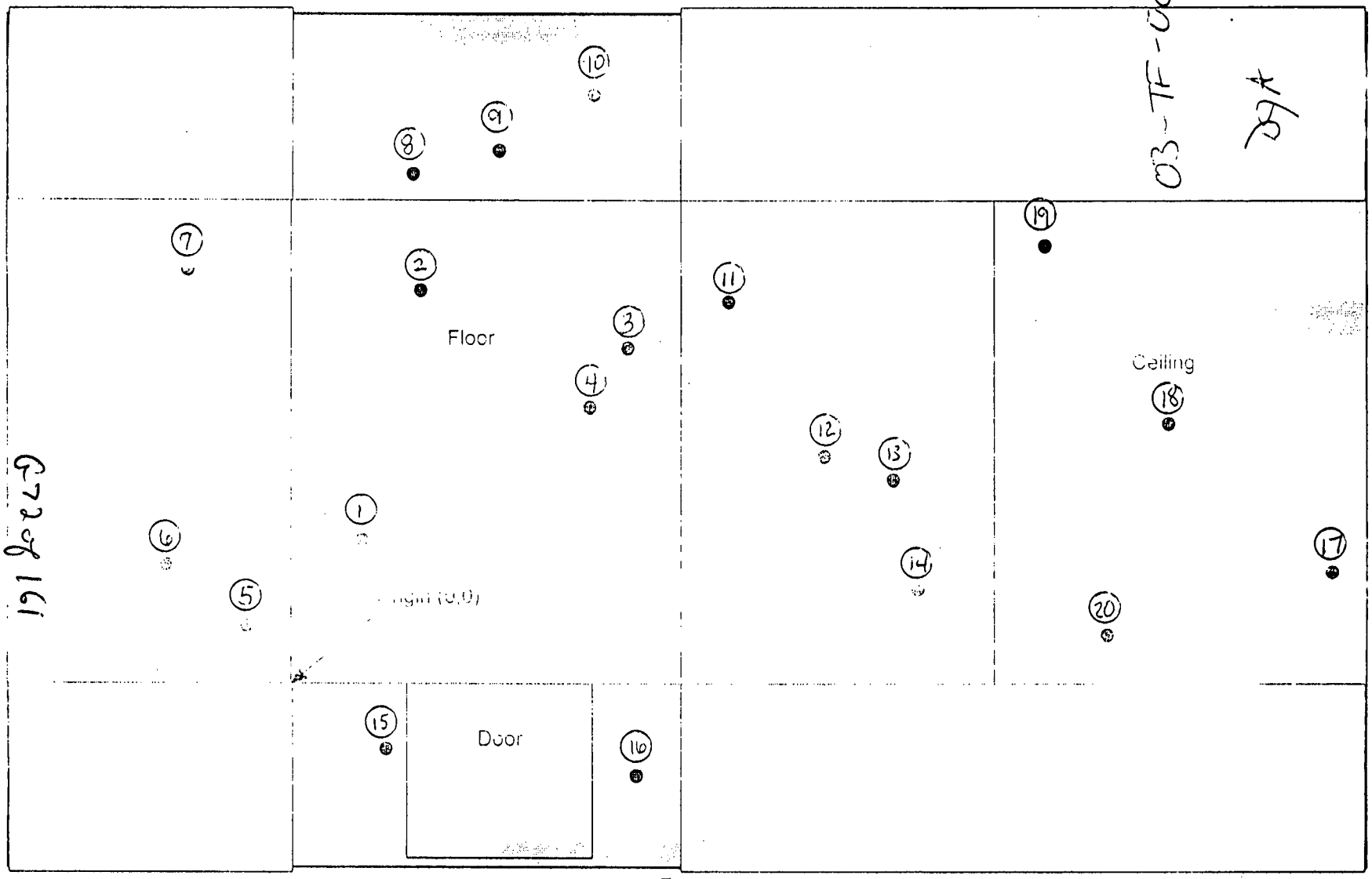
Quench Indicator: tSIE/AEC
Ext Std Terminator: Count
03-TF-0028 HARVEY (4) BSB
Luminescence Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: C:\DATA\PROT2.DAT
Count Data Filename: C:\DATA\SDATA2.DAT

S#	TIME	CPMA	CPMB	CPMC	tSIE	LUM	FLAG	DPM1	2SIGMA
-1	10.00	9.81	9.62	10.79	490.89	0	B		0.00
0	2.00	463.86	448.07	2.21	532.67	0		960.79	95.01
13 ~~1~~	2.00	0.00	0.00	0.00	526.37	0		0.00	0.00
14 ~~2~~	2.00	0.00	0.00	0.00	594.57	0		0.00	0.00
15 ~~3~~	2.00	0.00	0.00	3.21	533.93	0		0.00	0.00
16 ~~4~~	2.00	0.00	0.00	0.00	623.42	0		0.00	0.00

2/4/03 bsb

KA

Survey Unit 4 Room 4 Interior



Front

03-TF-0028

Page 10 of 10

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) 34 OUTSIDE WALL	SURVEY NO: 03-TF-0031
PURPOSE: MARSSIM SURVEY PLAN 34-01 UNIT 6	RWP NO: N/A
	DATE: 2-3-03
	TIME: 1530

MAP/DRAWING

SEE ATTACHMENTS

LEGEND: # = mrem/hr (γ) whole body
E = mrem/hr (β+η+γ) extremity on contact
(#) = mrem/hr neutron
[#] = air sample number
(#) = swipe number
(#/α) or /β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5673/5743	8-13-03
2360	5709/5795	8-2-03
	N/A	

[redacted]	HP# 6178 7474	Date: 2-7-03
Counted by: (Signature) SEE	HP#	Date:
Counted by: (Print Name) ATTACHED		
Reviewe[redacted]	HP# 7707	Date: 02/11/03
Reviewe[redacted]		

ML-9620 (2-98)

G738161

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1-20	SEE	ATTACHED		WALL
		N	A	

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
		N	A	

COMMENTS: N/A

NOTES:
1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

ML-9620 (4-98)

34 BUILDING CHARACTERIZATION SURVEY UNIT 6

RSDS# 03-TF-0031 RCT: DJH RCT: KA

43-20 BKG:	0	EFF:	0.172	PROBE AREA:	181	cm2	Surface Eff:		0.5	Detector # :	2
43-37 BKG:	0	EFF:	0.212	PROBE AREA:	584	cm2	Surface Eff:		0.5	Detector # :	3
LOCATION	2350#	RCT ID	PROBE	DET #	ITEM #	DATE	TIME	CNTS	CT TIME	dpm/100cm2	
SRC BKG	5673	7474	5676	3		2/3/03	8:16	43	300	14	
SRC CHECK	5673	7474	5676	3		2/3/03	8:18	2079	60	3358	
SRC CHECK	5673	7474	5676	3		2/3/03	8:20	2027	60	3274	
SRC CHECK	5673	7474	5676	3		2/3/03	8:21	1985	60	3207	
SRC CHECK	5673	7474	5676	3		2/3/03	8:23	2024	60	3270	
SRC CHECK	5673	7474	5676	3		2/3/03	8:24	2104	60	3399	
SRC CHECK	5673	7474	5676	3		2/3/03	8:26	2082	60	3363	
SRC BKG	5673	7474	5143	2		2/3/03	8:33	7	300	9	
SRC CHECK	5673	7474	5143	2		2/3/03	9:40	2134	60	13709	
SRC CHECK	5673	7474	5143	2		2/3/03	9:41	2211	60	14204	
SRC CHECK	5673	7474	5143	2		2/3/03	9:43	2102	60	13504	
SRC CHECK	5673	7474	5143	2		2/3/03	9:44	2251	60	14461	
SU-6 01	5673	7474	5143	2	1	2/3/03	14:04	8	60	51	
SU-6 02	5673	7474	5143	2	2	2/3/03	14:06	18	60	116	
SU-6 03	5673	7474	5143	2	3	2/3/03	14:07	11	60	71	
SU-6 04	5673	7474	5143	2	4	2/3/03	14:09	9	60	58	
SU-6 05	5673	7474	5143	2	5	2/3/03	14:10	6	60	39	
SU-6 06	5673	7474	5143	2	6	2/3/03	14:11	13	60	84	
SU-6 07	5673	7474	5143	2	7	2/3/03	14:13	9	60	58	
SU-6 08	5673	7474	5143	2	8	2/3/03	14:14	3	60	19	
SU-6 09	5673	7474	5143	2	9	2/3/03	14:15	3	60	19	
SU-6 10	5673	7474	5143	2	10	2/3/03	14:16	2	60	13	
SU-6 11	5673	7474	5143	2	11	2/3/03	14:29	10	60	64	
SU-6 12	5673	7474	5143	2	12	2/3/03	14:30	17	60	109	
SU-6 13	5673	7474	5143	2	13	2/3/03	14:23	13	60	84	
SU-6 14	5673	7474	5143	2	14	2/3/03	14:24	16	60	103	
SU-6 15	5673	7474	5143	2	15	2/3/03	14:32	11	60	71	
SU-6 16	5673	7474	5143	2	16	2/3/03	14:26	18	60	116	
SU-6 17	5673	7474	5143	2	17	2/3/03	14:27	17	60	109	
SU-6 18	5673	7474	5143	2	18	2/5/03	10:56	12	60	77	
SU-6 19	5673	7474	5143	2	19	2/5/03	10:58	9	60	58	
SU-6 20	5673	7474	5143	2	20	2/5/03	11:01	8	60	51	
QC 02	5673	7474	5143	2		2/3/03	14:34	5	60	32	

 G7508161

34 BUILDING CHARACTERIZATION SURVEY UNIT 6

RSDS# 03-TF-0031 RCT: DJH RCT: KA

LOCATION	2350#	RCT ID	PROBE	DET #	ITEM #	DATE	TIME	CNTS	CT TIME	dpm/100cm2
QC 10	5673	7474	5143	2		2/3/03	14:35	12	60	77

34-BLDG CHARACTERIZATION BETA SURVEY UNIT 6

RSDS# 03-TF-0031 RCT: 29H RCT: KA

LOCATION	2360	RCT ID	PROBE	ITEM #	DATE	gross count	CT TIME	dpm/100cm2
1	5709	6178	5795	1	2/3/03	216	60	328
2	5709	6178	5795	2	2/3/03	214	60	320
3	5709	6178	5795	3	2/3/03	236	60	408
4	5709	6178	5795	4	2/3/03	216	60	328
5	5709	6178	5795	5	2/3/03	235	60	404
6	5709	6178	5795	6	2/3/03	200	60	264
7	5709	6178	5795	7	2/3/03	253	60	476
8	5709	6178	5795	8	2/3/03	213	60	316
9	5709	6178	5795	9	2/3/03	225	60	364
10	5709	6178	5795	10	2/3/03	225	60	364
11	5709	6178	5795	11	2/3/03	214	60	320
12	5709	6178	5795	12	2/3/03	253	60	476
13	5709	6178	5795	13	2/3/03	217	60	332
14	5709	6178	5795	14	2/3/03	235	60	404
15	5709	6178	5795	15	2/3/03	215	60	324
16	5709	6178	5795	16	2/3/03	248	60	456
17	5709	6178	5795	17	2/3/03	228	60	376
18	5709	6178	5795	18	2/5/03	201	60	252
19	5709	6178	5795	19	2/5/03	215	60	308
20	5709	6178	5795	20	2/5/03	219	60	324
BETA BACKGROUNG FOR 2-3-2003 WAS---------->								134
BETA BACKGROUNG FOR 2-5-2003 WAS---------->								138

Alpha/Beta Analysis

Batch ID:	Smear Unit 1 - 200302041526	**Count Date:**	2/4/2003
Group:	F	**Count Minutes:**	1.5
Serial Number:	78218-1	**Count Mode:**	Simultaneous
Batch ID:	03-TF-0031 HARVEY (17) BSB	**Operating Volts:**	1440
Selected Geometry:	Swipe/Smear	**Cal Due Dates:**	6/19/2004

Efficiency (%)				Spillover (%)			
Alpha:	34.73	±	0.13	**Alpha to Beta:**	11.39	±	0.00
Beta:	46.13	±	0.13	**Beta to Alpha:**	0.07	±	0.00

Sample ID	Carrier ID	Alpha (dpm)	σ	Beta (dpm)	σ
1	68	2.19	1.92	0.00	0.16
2	86	0.00	0.00	1.37	1.45
3	47	0.00	0.00	2.74	2.04
4	35	2.19	1.92	0.00	0.16
5	95	2.18	1.92	2.58	2.05
6	15	2.19	1.92	1.21	1.45
7	82	2.18	1.92	2.58	2.05
8	34	0.00	0.00	1.37	1.45
9	52	0.00	0.00	1.37	1.45
10	81	0.00	0.00	4.11	2.50
11	55	0.00	0.00	2.74	2.04
12	85	0.00	0.00	1.37	1.45
13	58	0.00	0.00	4.11	2.50
14	74	0.00	0.00	4.11	2.50
15	96	2.18	1.92	2.58	2.05
16	38	0.00	0.00	2.74	2.04
17	17	0.00	0.00	1.37	1.45
		29.H		29.H	

BSBrown

Batch ID: 03-TF-0031 HARVEY (17) BSB

Protocol #: 1 PW H3 #403727 User : 5288

Time: 2.00
Data Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
Background Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
Region A:	0.5	18.6	0	0.0	6.70
Region B:	2.0	18.6	0	0.0	6.23
Region C:	40.0	2000	0	0.0	10.67

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count
03-TF-0031 HARVEY (17) BSB
Luminescence Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: C:\DATA\PROT1.DAT
Count Data Filename: C:\DATA\SDATA1.DAT

S#	TIME	CPMA	CPMB	CPMC	tSIE	LUM	FLAG	DPM1	2SIGMA
-1	10.00	6.70	6.23	10.67	604.73	1	B		0.00
0	2.00	434.20	421.24	3.33	505.85	0		928.49	93.08
1	2.00	6.80	7.27	3.83	611.88	0		13.30	10.70
2	2.00	18.30	17.40	8.34	544.81	0		37.56	15.15
3	2.00	8.30	8.50	17.33	597.55	0		16.40	11.36
4	2.00	12.64	12.43	7.33	544.42	0		25.94	13.34
5	2.00	8.33	8.67	6.83	521.49	0		17.48	12.07
6	2.00	16.83	16.59	9.83	580.16	0		33.67	14.32
7	2.00	12.87	11.43	7.81	642.37	0		24.63	12.51
8	2.00	4.80	4.98	0.75	608.53	0		9.41	9.86
9	2.00	3.80	3.97	2.83	613.63	0		7.42	9.52
10	2.00	0.00	0.00	5.33	516.64	0		0.00	0.00
11	2.00	0.19	0.33	1.83	632.05	0		0.37	7.82
12	2.00	7.97	7.82	2.33	618.91	0		15.51	11.07
13	2.00	18.30	17.49	18.83	524.43	0		38.26	15.43
14	2.00	9.80	10.27	12.83	547.91	0		20.07	12.32
15	2.00	10.80	10.47	16.00	595.74	0		21.36	12.24
16	2.00	5.30	5.12	6.33	538.57	0		10.93	10.68
17	2.00	0.00	0.00	0.00	598.91	0		0.00	0.00

DJA

7 of 10

G-79 of 161

Alpha/Beta Analysis

Batch ID:	Smear Unit 1 - 200302061326	**Count Date:**	2/6/2003
Group:	H	**Count Minutes:**	1.5
Serial Number:	78218-1	**Count Mode:**	Simultaneous
Batch ID:	03-TF-0031 ABER-3 (#18-20) BSB	**Operating Volts:**	1440
Selected Geometry:	Swipe/Smear	**Cal Due Dates:**	6/19/2004

	Efficiency (%)				Spillover (%)			
Alpha:	34.73	±	0.13		**Alpha to Beta:**	11.39	±	0.00
Beta:	46.13	±	0.13		**Beta to Alpha:**	0.07	±	0.00

Sample ID	Carrier ID	Alpha (dpm)	σ	Beta (dpm)	σ
~~1~~ 18	28	0.00	0.00	1.37	1.45
~~2~~ 19	38	0.00	0.00	2.74	2.04
~~3~~ 20	39	2.18	1.92	3.95	2.51

2/6/03 bsb

DJH DJH

DJBrown

06 Feb 2003 14:10 TRI-CARB - 1.09 Page #1
Protocol #: 3 PW H3 #407906 User : 5268

Time: 2.00
Data Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
Background Subtract: 1st Vial

	LL	UL	LCR	2SZ	BKG
Region A:	0.5 -	18.6	0	0.0	8.89
Region B:	2.0 -	18.6	0	0.0	8.46
Region C:	40.0 -	2000	0	0.0	9.90

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count
~~03-30-0105-DXAM- (15)~~ BSB 03-27-0031 Aber (3) 2/6/03 bal
Luminescence Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: C:\DATA\PROT3.dat
Count Data Filename: C:\DATA\SDATA3.DAT
Spectrum Data Drive & Path: C:\DATA

	S#	-TIME	CPMA	CPMB	LUM	FLAG	tSIE	- DPM1	2SIGMA	CPMC
	-1	10.00	8.89	8.46	0	B	575.15		0.000	9.90
	0	2.00	749.53	702.67	0		485.25	1498.23	110.202	3.60
18	~~1~~	2.00	6.53	5.72	18		543.85	12.41	12.964	16.60
19	~~2~~	2.00	1.87	0.11	23		439.01	3.96	12.192	9.10
20	~~3~~	2.00	5.61	4.51	13		466.20	11.49	12.389	0.10

SYSTEM NORMALIZED 2/6/03 bal

DJH

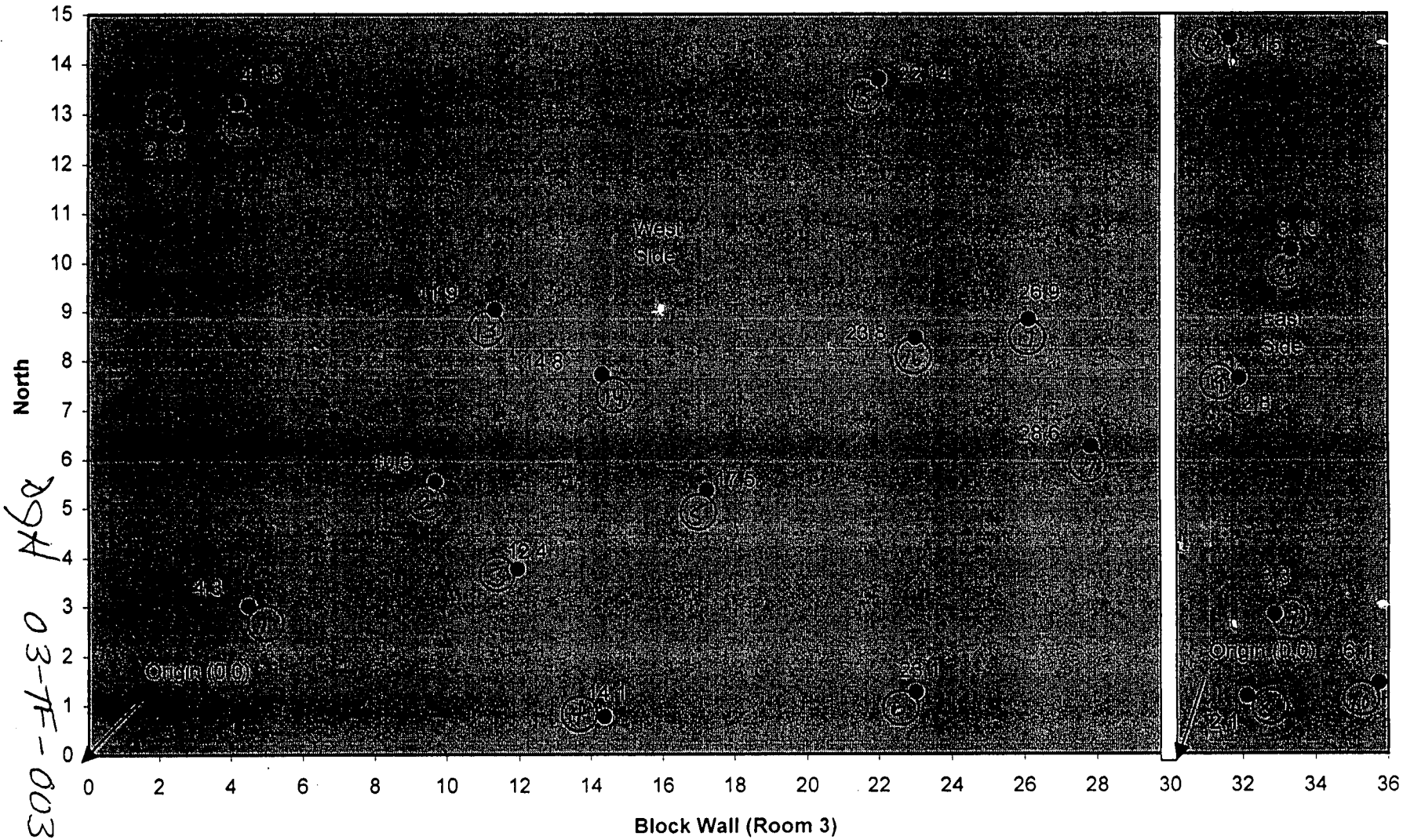
C14 IPA DATA PROCESSED - 06-Feb-2003 14:28
C14 Eff (0-156 keV) = 104.31 %
H3 IPA DATA PROCESSED - 06-Feb-2003 14:30
H3 Eff (0-18.6 keV) = 64.58 %

Amitk Brown

9 of 10

G-81 of 161

Survey Unit 6



03-TF-0031
10 of 10
Page 161

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) 34 - ROOM 2	SURVEY NO. 03-TE-0039
PURPOSE: MARSSIM SURVEY PLAN 34-01 UNIT 3 EXTERIOR ROOM 2	RWP NO. N/A
	DATE: 9-5-03
	TIME: 1530

MAP/DRAWING

SEE ATTACHMENTS

LEGEND: # = mrem/hr (γ) whole body
E = mrem/hr (β+η+γ) extremity on contact
△# = mrem/hr neutron
□# = air sample number
(#) = swipe number
(#/α) or /β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2360	5709/5795	8-2-03
235D	5673/5143	8-13-03
	N/A	

[redacted]		HP# 6178 7474	Date: 2-7-03
[redacted]			
Counted by: (Signature) SEE		HP#	Date:
Counted by: (Print Name) ATTACHED			
Reviewed [redacted]		HP# 7707	Date: 02/11/03
Reviewed [redacted]			

ML-9620 (2-98)

2 of 7

Survey No. 02-TF-0039

Page ___ of ___

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1-B	SEE	ATTAC	HED	EXTERIOR
		N	A	

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
		N	A	

COMMENTS: N/A

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

ML-9620 (4-98)

34 BUILDING CHARACTERIZATION SURVEY UNIT 3

RSDS# 02-TF-0039 RCT: DA RCT: KA

43-20 BKG:	0	EFF:	0.172	PROBE AREA:	181	cm2	Surface Eff:		0.5	Detector # :	2
43-37 BKG:	0	EFF:	0.212	PROBE AREA:	584	cm2	Surface Eff:		0.5	Detector # :	3
LOCATION	2350#	RCT ID	PROBE	DET #	ITEM #	DATE	TIME	CNTS	CT TIME	dpm/100cm2	
SRC BKG	5673	7474	5143	2		2/5/03	9:15	7	300	9	
SRC CHECK	5673	7474	5143	2		2/5/03	9:17	2104	60	13517	
SRC CHECK	5673	7474	5143	2		2/5/03	9:19	2030	60	13041	
SRC CHECK	5673	7474	5143	2		2/5/03	9:20	2013	60	12932	
SRC CHECK	5673	7474	5143	2		2/5/03	9:22	2124	60	13645	
SU-3 01	5673	7474	5143	2	1	2/5/03	9:27	9	60	58	
SU-3 02	5673	7474	5143	2	2	2/5/03	9:28	6	60	39	
SU-3 03	5673	7474	5143	2	3	2/5/03	9:30	5	60	32	
SU-3 04	5673	7474	5143	2	4	2/5/03	9:31	10	60	64	
SU-3 05	5673	7474	5143	2	5	2/5/03	9:33	11	60	71	
SU-3 06	5673	7474	5143	2	6	2/5/03	9:34	1	60	6	
SU-3 07	5673	7474	5143	2	7	2/5/03	10:23	6	60	39	
SU-3 08	5673	7474	5143	2	8	2/5/03	10:27	11	60	71	
SU-3 09	5673	7474	5143	2	9	2/5/03	10:33	7	60	45	
SU-3 10	5673	7474	5143	2	10	2/5/03	10:37	6	60	39	
SU-3 11	5673	7474	5143	2	11	2/5/03	10:43	14	60	90	
SU-3 12	5673	7474	5143	2	12	2/5/03	10:47	13	60	84	
SU-3 13	5673	7474	5143	2	13	2/5/03	10:53	17	60	109	
QC 13	5673	7474	5143	2		2/5/03	10:56	9	60	58	
QC 06	5673	7474	5143	2		2/5/03	11:00	8	60	51	

34-BLDG CHARACTERIZATION BETA SURVEY UNIT 3

RSDS# 03-TF-0039 RCT: DGH RCT: KA

LOCATION	2360	RCT ID	PROBE	ITEM #	DATE	gross count	CT TIME	dpm/100cm2
1	5709	7474	5795	1	2/5/03	153	60	-48
2	5709	7474	5795	2	2/5/03	167	60	8
3	5709	7474	5795	3	2/5/03	170	60	20
4	5709	7474	5795	4	2/5/03	176	60	44
5	5709	7474	5795	5	2/5/03	153	60	-48
6	5709	7474	5795	6	2/5/03	164	60	-4
7	5709	7474	5795	7	2/5/03	164	60	-4
8	5709	7474	5795	8	2/5/03	164	60	-4
9	5709	7474	5795	9	2/5/03	165	60	0
10	5709	7474	5795	10	2/5/03	144	60	-84
11	5709	7474	5795	11	2/5/03	170	60	20
12	5709	7474	5795	12	2/5/03	171	60	24
13	5709	7474	5795	13	2/5/03	157	60	-32
BETA BACKGROUNG FOR 2-5-2003 WAS---------->								165

 6866 161

Alpha/Beta Analysis

Batch ID:	Smear Unit 1 - 200302051529	**Count Date:**	2/5/2003
Group:	I	**Count Minutes:**	1.5
Serial Number:	78218-1	**Count Mode:**	Simultaneous
Batch ID:	03-17-0039 Harvey (13) lot	**Operating Volts:**	1440
Selected Geometry:	Swipe/Smear	**Cal Due Date:**	6/19/2004

Background (cpm)				Efficiency (%)				Spillover (%)			
Alpha Rate:	0.18	±	0.18	**Alpha:**	34.73	±	0.13	**Alpha to Beta:**	11.39	±	0.00
Beta Rate:	0.82	±	0.42	**Beta:**	46.13	±	0.13	**Beta to Alpha:**	0.07	±	0.00

Sample ID	Carrier ID	Alpha (dpm)	σ	Beta (dpm)	σ
1	28	1.60	1.99	0.00	1.71
2	37	8.16	3.87	0.00	0.96
3	84	0.00	0.51	0.00	0.90
4	12	1.59	1.99	2.31	2.67
5	97	0.00	0.51	0.00	1.70
6	71	1.60	1.99	0.94	2.24
7	18	3.78	2.76	0.79	2.25
8	26	3.78	2.76	0.79	2.25
9	82	1.59	1.99	3.69	3.03
10	68	0.00	0.51	0.00	1.70
11	93	1.60	1.99	0.00	1.71
12	11	1.60	1.99	0.94	2.24
13	71	3.78	2.76	3.53	3.04
		DJH		DJH	

BJBrown

Batch ID:

06 Feb 2003 15:07 ALPHA/BETA - 1.09 Page #1
Protocol #: 3 PW 3 403727 User : 5268

Time: 2.00
Data Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
Background Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
Region A:	0.5 -	18.6	0	0.0	7.92
Region B:	2.0 -	18.6	0	0.0	7.84
Region C:	40.0 -	2000	0	0.0	11.98

Quench Indicator: tSIE/AEC
~~Ext Std Terminator: Count~~
03-TF-0039 HARVEY (13) BSB
~~Luminescence Correction~~ On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: C:\DATA\PROT3.dat
Count Data Filename: C:\DATA\SDATA3.DAT

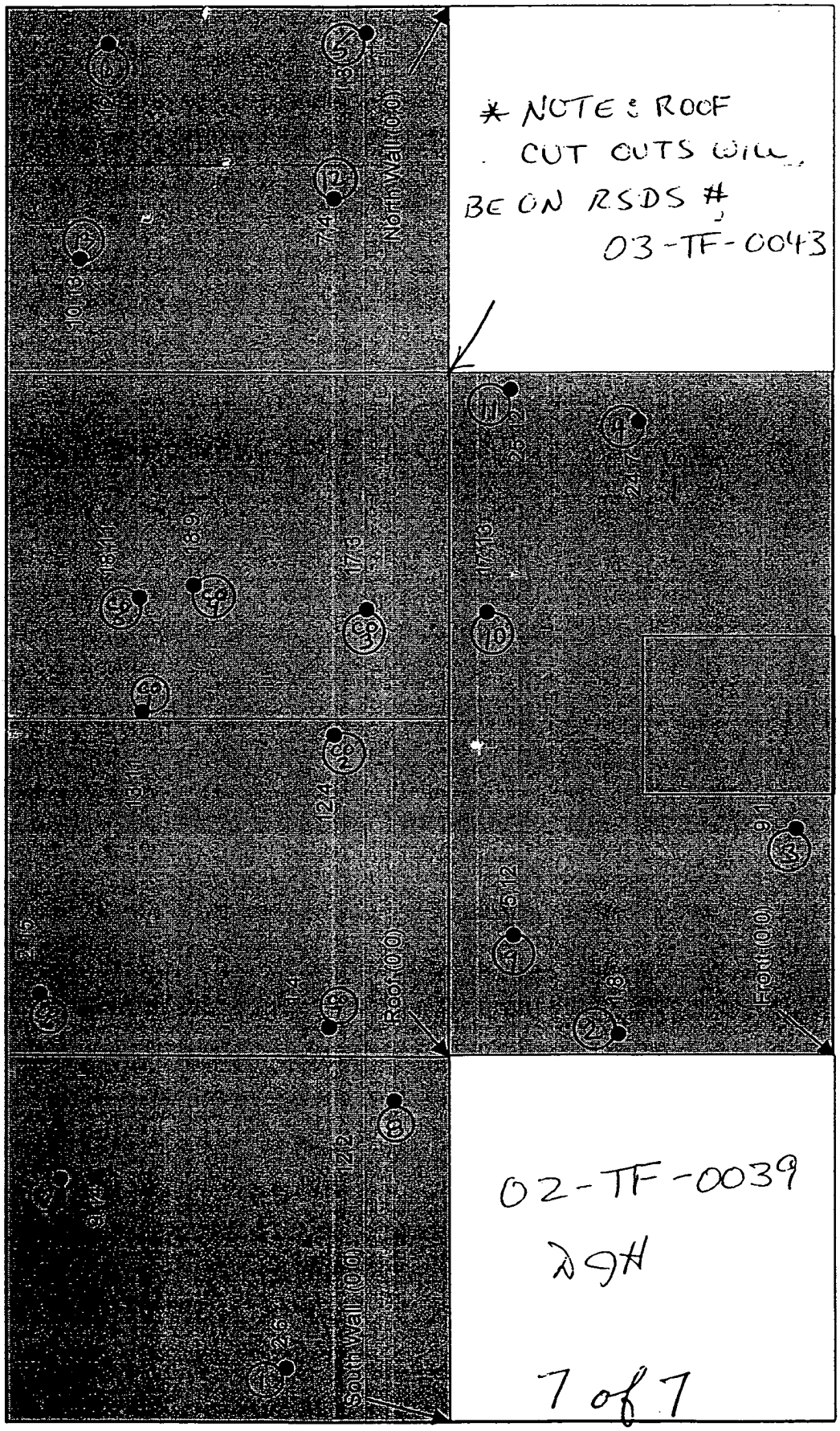
S#	TIME	CPMA	CPMB	CPMC	tSIE	LUM	FLAG	DPM1	2SIGMA
-1	10.00	7.92	7.84	11.98	547.60	4	B		0.00
0	2.00	253.94	247.37	2.52	500.48	0		546.64	63.59
1	2.00	0.58	0.66	0.00	605.34	0		1.13	8.84
2	2.00	0.00	0.00	0.00	600.71	0		0.00	0.00
3	2.00	0.00	0.00	0.00	604.61	0		0.00	0.00
4	2.00	3.17	2.66	0.00	614.62	0		6.19	9.86
5	2.00	1.58	1.66	0.00	692.30	0		2.94	8.80
6	2.00	0.58	0.66	0.02	708.76	0		1.07	8.33
7	2.00	2.08	2.16	0.00	622.00	0		4.03	9.37
8	2.00	1.58	1.66	0.00	654.40	0		3.00	8.98
9	2.00	4.08	3.92	0.52	581.41	0		8.15	10.45
10	2.00	6.08	5.74	0.00	682.16	0		11.40	10.52
11	2.00	2.08	2.16	0.00	514.22	0		4.39	10.21
12	2.00	0.00	0.00	0.00	532.80	0		0.00	0.00
13	2.00	1.58	1.66	0.00	555.86	0		3.21	9.61

DJH

6 of 7

B.S. Brown

Survey Unit 3



* NOTE: ROOF CUT OUTS WILL BE ON RSDS # 03-TF-0043

02-TF-0039

7 of 7

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RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) 34	SURVEY NO. 03-TF-0043
PURPOSE: MARSSIM SURVEY PLAN 34-01 ROOF CUT OUTS AND BETA QC CHECKS	RWP NO. N/A
	DATE: 2-18-03
	TIME: 1200

MAP/DRAWING

COPY

SEE ATTACHED

* NOTE: THERE IS 16 ACID ETCHES THE FIRST 13 ARE ROOF SAMPLES. THE LAST 3 ARE OUTSIDE WALL SAMPLES

LEGEND: # = mrem/hr (γ) whole body
E = mrem/hr (β+η+γ) extremity on contact
= mrem/hr neutron
= air sample number
= swipe number
#/α or /β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5673/5143	8-13-03
2360	5704/5714	9-26-03
	N/A	

[redacted] HP# 6178 Date: 3-13-03

Counted by: (Signature) SEE HP# Date:

Counted by: (Print Name) ATTACHED

Reviewed [redacted] HP# 7707 Date: 03/17/03

Reviewed/Approved by: (Print Na [redacted]

ML-9620 (2-98)

Survey No. 03-TF-0043

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	SEE	ATTACHED		ROOF CUTOUTS
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
		N	A	

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
		N	A	

COMMENTS: N/A

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

ML-9620 (4-98)

34 BUILDING CHARACTERIZATION SURVEY

RSDS# 03-TF-0043 RCT: 29A RCT: _____

43-20 BKG:	0	EFF:	0.172	PROBE AREA:	181	cm2	Surface Eff:		0.5	Detector # :	2
43-37 BKG:	0	EFF:	0.212	PROBE AREA:	584	cm2	Surface Eff:		0.5	Detector # :	3
LOCATION	2350#	RCT ID	PROBE	DET #	ITEM #	DATE	TIME	CNTS	CT TIME	dpm/100cm2 ALPHA
SRC BKG	5673	6178	5143	2		2/18/03	8:14	12	300	15
SRC CHECK	5673	6178	5143	2		2/18/03	8:35	1980	60	12720
SRC CHECK	5673	6178	5143	2		2/18/03	8:38	2166	60	13915
SRC CHECK	5673	6178	5143	2		2/18/03	8:39	2023	60	12996
SRC CHECK	5673	6178	5143	2		2/18/03	8:41	2025	60	13009
U-3 R 01	5673	6178	5143	2	1	2/18/03	10:19	16	60	103
U-3 R 02	5673	6178	5143	2	2	2/18/03	10:23	17	60	109
U-3 R 03	5673	6178	5143	2	3	2/18/03	10:25	14	60	90
U-3 R 04	5673	6178	5143	2	4	2/18/03	10:26	17	60	109
U-3 R 05	5673	6178	5143	2	5	2/18/03	10:28	16	60	103
U-3 R 06	5673	6178	5143	2	6	2/18/03	10:29	21	60	135
U-3 R 07	5673	6178	5143	2	7	2/18/03	10:31	14	60	90
U-5 R 01	5673	6178	5143	2	8	2/18/03	11:50	50	60	321
U-5 R 02	5673	6178	5143	2	9	2/18/03	11:53	16	60	103
U-5 R 03	5673	6178	5143	2	10	2/18/03	11:54	38	60	244
U-5 R 04	5673	6178	5143	2	11	2/18/03	11:56	41	60	263
U-5 R 05	5673	6178	5143	2	12	2/18/03	11:57	39	60	251
U-5 R 06	5673	6178	5143	2	13	2/18/03	11:58	40	60	257

34-BLDG CHARACTERIZATION BETA SURVEY UNIT 3 5

RSDS# 03-TF-0043

RCT: DJH RCT: _____

LOCATION	2360	RCT ID	PROBE	ITEM #	DATE	gross count	CT TIME	dpm/100cm2
1	5704	6178	5714	1	2/18/03	175	60	56
2	5704	6178	5714	2	2/18/03	195	60	136
3	5704	6178	5714	3	2/18/03	179	60	72
4	5704	6178	5714	4	2/18/03	191	60	120
5	5704	6178	5714	5	2/18/03	195	60	136
6	5704	6178	5714	6	2/18/03	172	60	44
7	5704	6178	5714	7	2/18/03	184	60	92
8	5704	6178	5714	8	2/18/03	288	60	508
9	5704	6178	5714	9	2/18/03	183	60	88
10	5704	6178	5714	10	2/18/03	267	60	424
11	5704	6178	5714	11	2/18/03	231	60	280
12	5704	6178	5714	12	2/18/03	209	60	192
13	5704	6178	5714	13	2/18/03	210	60	196
BETA BACKGROUNG FOR 2-18-2003 WAS---------->								161

Alpha/Beta Analysis

Batch ID:	Smear Unit 2 - 200302181526	**Count Date:**	2/18/2003
Group:	F	**Count Minutes:**	1.5
Serial Number:	78218-2	**Count Mode:**	Simultaneous
Batch ID:	03-TF-0043 HARVEY - 13 BSB	**Operating Volts:**	1440
Selected Geometry:	Swipe/Smear	**Cal Due Dates:**	6/19/2004

Efficiency (%)				Spillover (%)			
Alpha:	35.30	±	0.11	Alpha to Beta:	9.38	±	0.00
Beta:	44.94	±	0.12	Beta to Alpha:	0.85	±	0.00

Sample ID	Carrier ID	Alpha (dpm)	σ	Beta (dpm)	σ
1	84	0.00	0.05	14.08	4.92
2	12	2.01	1.89	1.16	1.49
3	74	2.01	1.89	1.16	1.49
4	92	4.00	2.67	3.60	2.58
5	64	1.99	1.89	2.44	2.10
6	9	5.06	3.27	0.93	1.50
7	3	0.00	0.03	3.84	2.57
8	97	1.97	1.89	3.72	2.58
9	35	2.01	1.89	1.16	1.49
10	22	0.00	0.03	3.84	2.57
11	99	1.99	1.89	2.44	2.10
12	76	5.99	3.27	6.04	3.33
13	5	1.97	1.89	3.72	2.58

DJH DJH

B J Brown

Field Sample Data Collection Sheet

Attachment 1 03-TF-0043 Sheet ___ of ___

Sample Number	Sample Date	Sample Time	Sample Volume Weight	Sample Description	Sampled By	Chain of Custody Relinquished to Lab Date	Time	Initials	Rec'd By
34-01-ROOF-01	2-18-03	1410	N/A	ACID ETCHES UNIT 3-C01	HOPPY	2-18-03	1410	DJH	HOP
34-01-ROOF-02				UNIT 3-C02				DJH	HOP
34-01-ROOF-03				UNIT 3-C03				DJH	HOP
34-01-ROOF-04				UNIT 3-C04				DJH	HOP
34-01-ROOF-05				UNIT 3-C05				DJH	HOP
34-01-ROOF-06				UNIT 3-C06				DJH	HOP
34-01-ROOF-07				UNIT 3-C07				DJH	HOP
34-01-ROOF-08				UNIT 5-C01				DJH	HOP
34-01-ROOF-09				UNIT 5-C02				DJH	HOP
34-01-ROOF-10				UNIT 5-C03				DJH	HOP
34-01-ROOF-11				UNIT 5-C04				DJH	HOP
34-01-ROOF-12				UNIT 5-C05				DJH	HOP
34-01-ROOF-13	2-18-03	1410	N/A	ACID ETCHES UNIT 5-C06	HOPPY	2-18-03	1410	DJH	HOP

Field Sample Data Collection Sheet

Attachment 1 03-TF-0043

Sheet ___ of ___

Sample Number	Sample Date	Sample Time	Sample Volume /Weight	Sample Description	Sampled By	Chain of Custody Relinquished to Lab			
						Date	Time	Initials	Rec'd By
34-01- CO-14	2-18-03	1410	N/A	ACID ETCH UNIT 3 #13	HOPPY	2-18-03	1410	DH	Hop
34-01- CO-15	↓	1410	↓	↓ UNIT 5 #10	↓	↓	1410	DH	Hop
34-01- CO-16	2-18-03	1410	↓ N/A	ACID ETCH UNIT 5 #12	HOPPY	2-18-03	1410	DH	Hop
34-01-									
34-01-									
34-01-									
34-01-									
34-01-				NO FURTHER ENTRIES THIS PAGE					
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									

191 of 239

7 of 12

Laboratory ID#:	0301785 - 0301800
Project/function:	SMPP/TFV
Submitted:	Feb 18, 2003
Submitted by:	D. Harvey
Point of Contact:	D. Harvey x3163
RSDS#:	02-TF-0043
Date:	Mar 4, 2003

Lab ID 0301785
Sample Location 34 Roof #1

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	54.37	10.00	3.50

Lab ID 0301786
Sample Location 34 Roof #2

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	67.09	11.56	3.56

Lab ID 0301787
Sample Location 34 Roof #3

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	62.22	11.99	4.32

Lab ID 0301788
Sample Location 34 Roof #4

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	37.72	5.45	3.63

Lab ID 0301789
Sample Location 34 Roof #5

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	37.66	5.84	1.76

Lab ID 0301790
Sample Location 34 Roof #6

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	43.44	7.13	2.26

Lab ID 0301791
Sample Location 34 Roof #7

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	29.19	7.77	4.65

Lab ID 0301792
Sample Location 34 Roof #8

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	459.73	38.05	3.49

DJH

03-TF-0043

Lab ID 0301793
Sample Location 34 Roof #9

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	170.44	16.24	2.81

Lab ID 0301794
Sample Location 34 Roof #10

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	418.75	34.55	1.18

Lab ID 0301795
Sample Location 34 Roof #11

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	273.20	25.74	1.66

Lab ID 0301796
Sample Location 34 Roof #12

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	62.81	9.88	2.74

Lab ID 0301797
Sample Location 34 Roof #13

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	194.25	17.56	3.45

Lab ID 0301798
Sample Location 34 Roof #14

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	13.75	4.03	2.86

Lab ID 0301799
Sample Location 34 Roof #15

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	13.36	2.84	3.33

Lab ID 0301800
Sample Location 34 Roof #16

Isotope	dpm/sample	Uncertainty +/-	LDL
Po-210	9.93	7.32	22.07

29th

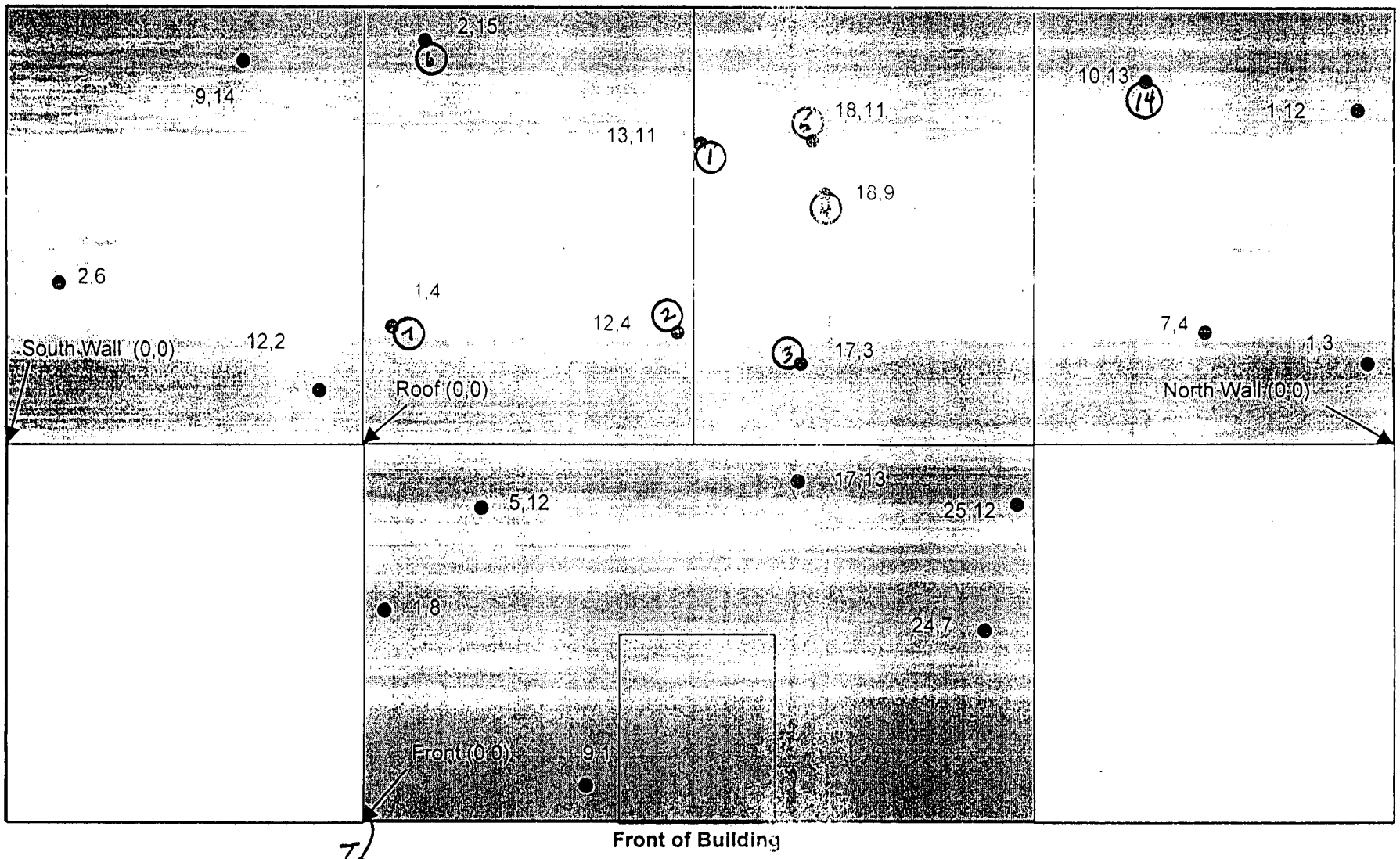
[redacted] 1585 3-4-03
HP# Date

[redacted] 2857 3/4/03
Data Verification HP# Date

9 of 12

G-99 of 161

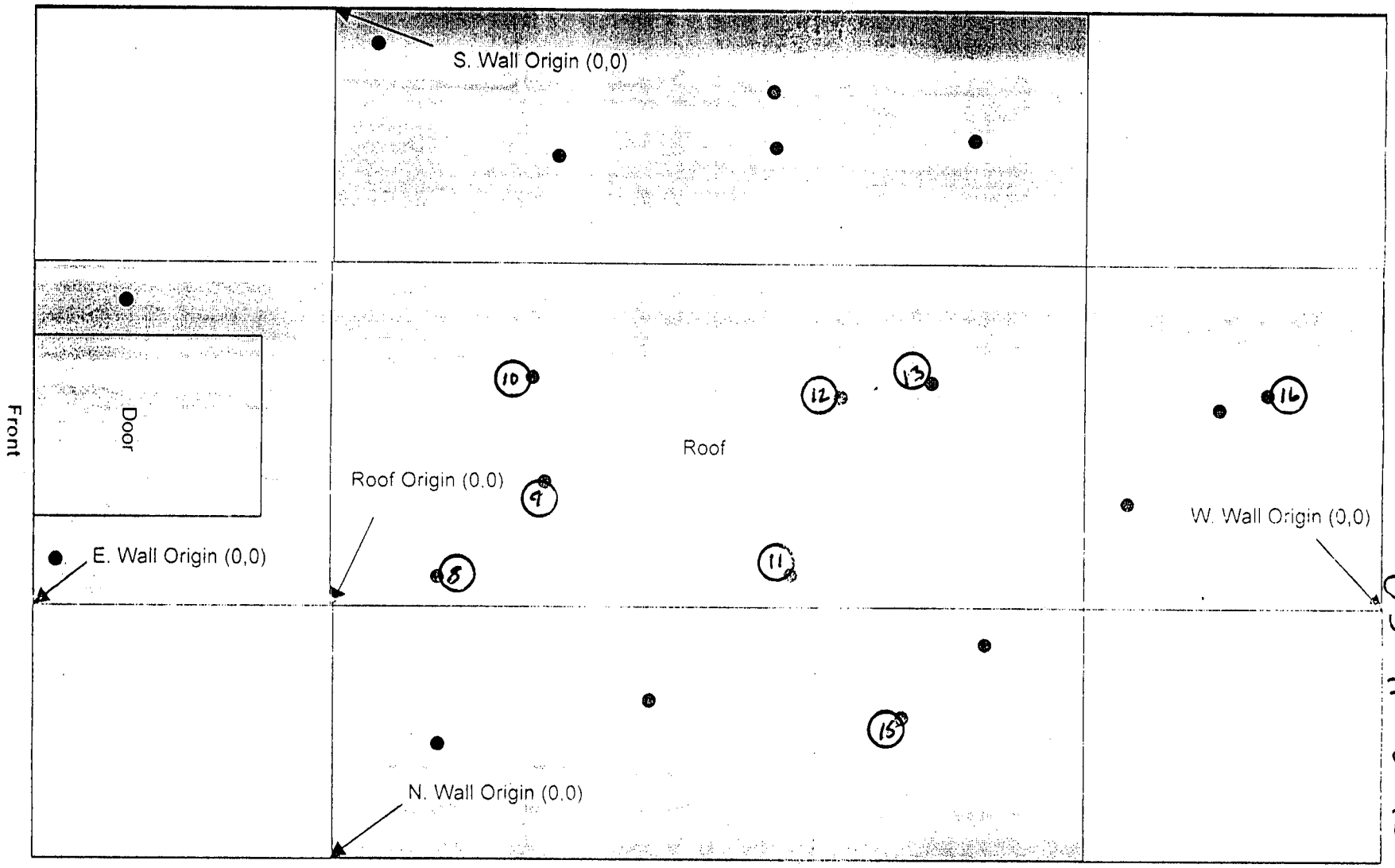
Survey Unit 3



03-TF-0043

Attachment 2

Survey Unit 5 Room 4 Exterior



34-BLDG CHARACTERIZATION BETA SURVEY QC CHECKS

RSDS# 03-TF-0043 RCT: DJH RCT:_____

LOCATION	2360	RCT ID	PROBE	ITEM #	DATE	gross count	CT TIME	dpm/100cm2
SU2 QC-09	5704	6178	5714	1	2/18/03	182	60	84
SU2 QC-11	5704	6178	5714	2	2/18/03	155	60	-24
SU3 QC-13	5704	6178	5714	3	2/18/03	209	60	192
SU3 QC-06	5704	6178	5714	4	2/18/03	133	60	-112
SU4 QC-03	5704	6178	5714	5	2/18/03	126	60	-140
SU4 QC-11	5704	6178	5714	6	2/18/03	114	60	-188
SU6 QC-02	5704	6178	5714	7	2/18/03	220	60	236
SU6 QC-10	5704	6178	5714	8	2/18/03	195	60	136
SUJ QC-01	5704	6178	5714	9	2/18/03	168	60	28
SUJ QC-02	5704	6178	5714	10	2/18/03	168	60	28
SU1 QC-01	5704	6178	5714	11	2/18/03	206	60	180
SU1 QC-10	5704	6178	5714	12	2/18/03	243	60	328
SU7 QC-17	5704	6178	5714	13	2/18/03	225	60	256
SU7 QC-04	5704	6178	5714	14	2/18/03	250	60	356
SU8 QC-16	5704	6178	5714	15	2/18/03	255	60	376
SU8 QC-04	5704	6178	5714	16	2/18/03	191	60	120
SU5 QC-01	5704	6178	5714	17	2/18/03	179	60	72
SU5 QC-10	5704	6178	5714	18	2/18/03	232	60	284
BETA BACKGROUNG FOR 2-18-2003 WAS——————>								161

 G-10206 161

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) 34 ALL AREAS	SURVEY NO 03-TF-0079
PURPOSE: MARISSM SURVEY PLAN 34-01	RWP NO. N/A
	DATE: 4-1-2003
	TIME 1430

MAP / DRAWING

Sample FDS-02 from floor drain in room 2

Sample FS-04 is follow-up from RSDS # 03-TF-0021

Sample 04-S is follow-up from RSDS # 03-TF-0028

Samples 12,14,16 and 17 follow-up from RSDS # 03-TF-0031

Samples 1,2,3,4, and 5 are characterization of room 1

COPY

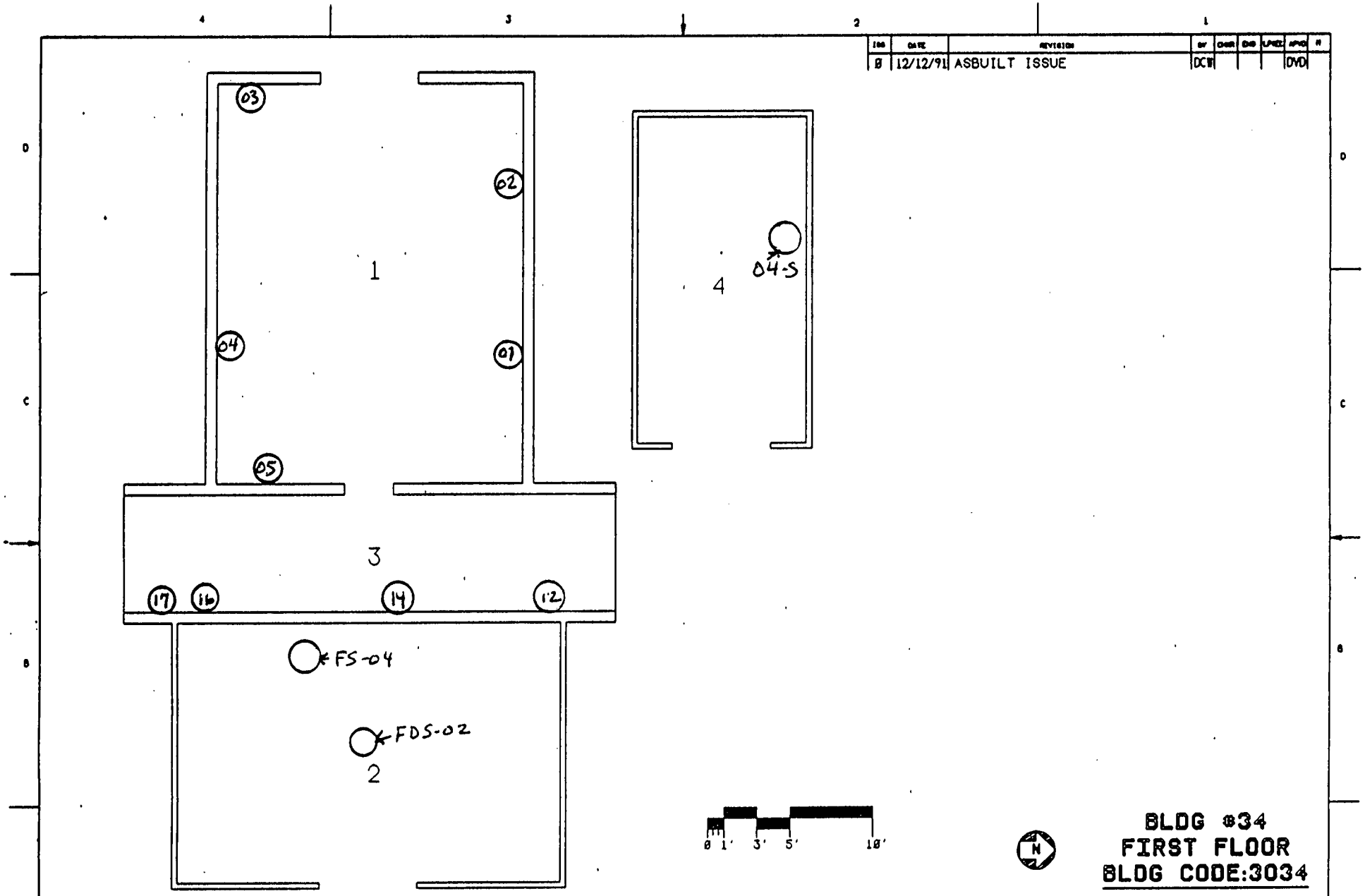
LEGEND:
= mrem/hr (γ) whole body
#E = mrem/hr (β+η+γ) extremity on contact
K = factor of 1000
— · — · · = radiological boundary
△# = mrem/hr neutron
(#) = swipe number
[#] = air sample number
(#/α) or /β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2360	5775/5720	9-25-2003
	N/A	

Completed by: (Signatu[redacted]7474		Date: 4-1-2003
Completed by: (Print Name) [redacted]		
Counted by: (Signature) RECORD ON FILE	HP# NA	Date: NA
Counted by: (Print Name) NA [redacted]	HP# 6178	Date: 4-1-2003

ISS	DATE	REVISION	BY	CHKR	DWD	UPKEEP	APVD	N
0	12/12/91	ASBUILT ISSUE	DCW				DVD	



BLDG #34
FIRST FLOOR
BLDG CODE:3034

APPROVALS: DATE:
SAFETY COMMITTEE REQUIRED:
___ NONE ___ TRUEDOC ___ TEDOC ___ EVDOC
TECH. REDP. ___
SR. MGR. ___
TRUEDOC ___
TEDOC ___
EVDOC ___

03-TF-0079

DESIGN DWG	PROJ NUM		
SPECS	DWG SUPV		
LP & DZ	FLOOR REV		
DWG NUM			
APVD	DATE		

SHEET	1	2	3	4	5	6
ISSUE	0					

FAST CLASSIFICATION

TITLE (U) TITLE CLASSIFICATION
BLDG #34
FLOOR PLANS

DRAWING CLASSIFICATION: UNCLASSIFIED
SIZE: C
DRAWING NUMBER: FSC911245
JOB NUMBER: 12335
DWG TYPE: SFP
PROJ: BLDG #34
CODE: 14865
SCALE: AS NOTED
SHEET 1 OF 1
STATUS: MD-REL.-12/12/91
ORIGIN: MD-BRJ-V3.0

C-104 of 161

1 of 2

Field Sample Data Collection Sheet

Attachment 1

03-TF-0079

Sheet ___ of ___

Sample Number	Sample Date	Sample Time	Sample Volume /Weight	Sample Description	Sampled By	Chain of Custody Relinquished to Lab			
						Date	Time	Initials	Rec'd By
34-01- 01	3-12-03	0910	NA	ACID ETCH	Hop	3-12-03	1030	KA	Hop
34-01- 02	3-12-03	0925	NA	ACID ETCH	Hop	3-12-03		KA	
34-01- 03	3-12-03	0940	NA	ACID ETCH	Hop	3-12-03		KA	
34-01- 04	3-12-03	0955	NA	ACID ETCH	Hop	3-12-03		KA	
34-01- 05	3-12-03	1010	NA	ACID ETCH	Hop	3-12-03		KA	
34-01- 04-S	3-12-03	1020	NA	ACID ETCH	Hop	3-12-03		KA	
34-01- 12	3-12-03	1030	NA	ACID ETCH	Hop	3-12-03		KA	
34-01- 14	3-12-03	1030	NA	ACID ETCH	Hop	3-12-03		KA	
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									

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~~Page 4 of 11~~

G-1050 161

Field Sample Data Collection Sheet

Sheet ___ of ___

Attachment 1

Sample Number	Sample Date	Sample Time	Sample Volume /Weight	Sample Description	Sampled By	Chain of Custody Relinquished to Lab			
						Date	Time	Initials	Rec'd By
34-01- 17	2-26-03	0825	NA	ACID ETCH	Hop	2-26-03	0845	KA	Hop
34-01- 16	2-26-03	0830	NA	ACID ETCH	Hop	2-26-03	0845	KA	Hop
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									

N A

03-TF-0079

KA

Page 161 of 169

Laboratory ID#: 0302264 - 0302265 & 0302762 - 0302769
Project/function: TFV
Submitted: Mar 13, 2003
Submitted by: L. Hopkins
Point of Contact: L. Hopkins
RSDS#: NA 03-TF-0079
Date: Mar 24, 2003

Lab ID 0302762
Sample Location Bldg 34 #01

Isotope	pCi/sample	Uncertainty +/-	LDL
Pu-238	0.479	0.287	0.384
Pu-239/240	<LDL	<LDL	0.300
Th-227	0.107	0.054	0.072
Th-228	0.266	0.095	0.196
Th-230	0.399	0.108	0.072
Th-232	0.213	0.077	0.072
U-233/234	0.445	0.215	0.063
U-235	<LDL	<LDL	0.224
U-238	1.312	0.402	0.063

Lab ID 0302763
Sample Location Bldg 34 #02

Isotope	pCi/sample	Uncertainty +/-	LDL
Pu-238	0.263	0.171	0.071
Pu-239/240	<LDL	<LDL	0.072
Th-227	0.212	0.085	0.195
Th-228	0.291	0.098	0.195
Th-230	0.661	0.142	0.072
Th-232	<LDL	<LDL	0.195
U-233/234	0.957	0.338	0.217
U-235	<LDL	<LDL	0.065
U-238	2.450	0.606	0.217

Lab ID 0302764
Sample Location Bldg 34 #03

Isotope	pCi/sample	Uncertainty +/-	LDL
Pu-238	0.522	0.308	0.346
Pu-239/240	<LDL	<LDL	0.102
Th-227	<LDL	<LDL	0.195
Th-228	0.185	0.071	0.072
Th-230	0.529	0.136	0.246
Th-232	0.397	0.107	0.072
U-233/234	0.880	0.314	0.063
U-235	0.095	0.096	0.064
U-238	5.671	1.116	0.215

Lab ID 0302765
Sample Location Bldg 34 #04

Isotope	pCi/sample	Uncertainty +/-	LDL
Pu-238	<LDL	<LDL	0.339
Pu-239/240	<LDL	<LDL	0.343
Th-227	0.132	0.060	0.071
Th-228	<LDL	<LDL	0.283
Th-230	0.448	0.114	0.071
Th-232	0.184	0.071	0.071
U-233/234	3.123	0.692	0.058
U-235	0.308	0.171	0.060
U-238	24.190	3.839	0.058

Lab ID 0302766
Sample Location Bldg 34 #05

Isotope	pCi/sample	Uncertainty +/-	LDL
Pu-238	0.552	0.265	0.079
Pu-239/240	<LDL	<LDL	0.079
Th-227	<LDL	<LDL	0.244
Th-228	0.448	0.114	0.071
Th-230	0.632	0.138	0.071
Th-232	<LDL	<LDL	0.283
U-233/234	1.258	0.407	0.070
U-235	0.079	0.092	0.071
U-238	2.464	0.631	0.238

03-TF-0079

Lab ID 0302767
Sample Location Bldg 34 #04-S

Isotope	pCi/sample	Uncertainty +/-	LDL
Pu-238	82.870	11.940	0.067
Pu-239/240	<LDL	<LDL	0.231
Th-227	0.473	0.123	0.193
Th-228	2.049	0.280	0.071
Th-230	1.681	0.247	0.071
Th-232	0.972	0.176	0.071
U-233/234	0.757	0.345	0.093
U-235	<LDL	<LDL	0.329
U-238	1.239	0.459	0.093

Lab ID 0302768
Sample Location Bldg 34 #12

Isotope	pCi/sample	Uncertainty +/-	LDL
Pu-238	<LDL	<LDL	0.240
Pu-239/240	<LDL	<LDL	0.242
Th-227	<LDL	<LDL	0.221
Th-228	<LDL	<LDL	0.175
Th-230	0.285	0.085	0.064
Th-232	<LDL	<LDL	0.175
U-233/234	<LDL	<LDL	0.641
U-235	<LDL	<LDL	0.659
U-238	0.276	0.281	0.187

Lab ID 0302769
Sample Location Bldg 34 #14

Isotope	pCi/sample	Uncertainty +/-	LDL
Pu-238	<LDL	<LDL	0.422
Pu-239/240	<LDL	<LDL	0.280
Th-227	<LDL	<LDL	0.169
Th-228	<LDL	<LDL	0.169
Th-230	<LDL	<LDL	0.169
Th-232	<LDL	<LDL	0.062
U-233/234	0.150	0.125	0.068
U-235	<LDL	<LDL	0.070
U-238	0.100	0.101	0.068

Lab ID 0302264
Sample Location Bldg 34 #16

Isotope	pCi/sample	Uncertainty +/-	LDL
Pu-238	<LDL	<LDL	0.064
Pu-239/240	<LDL	<LDL	0.219
Th-227	<LDL	<LDL	0.072
Th-228	<LDL	<LDL	0.196
Th-230	0.080	0.046	0.072
Th-232	<LDL	<LDL	0.072
U-233/234	<LDL	<LDL	0.419
U-235	<LDL	<LDL	0.257
U-238	<LDL	<LDL	0.257

03-TF-0079

Lab ID 0302265
Sample Location Bldg 34 #17

Isotope	pCi/sample	Uncertainty +/-	LDL
Pu-238	<LDL	<LDL	0.163
Pu-239/240	<LDL	<LDL	0.163
Th-227	<LDL	<LDL	0.198
Th-228	<LDL	<LDL	0.198
Th-230	0.162	0.067	0.073
Th-232	<LDL	<LDL	0.198
U-233/234	<LDL	<LDL	0.241
U-235	<LDL	<LDL	0.241
U-238	<LDL	<LDL	0.352

[redacted] 1585 3-26-03
Analyst HP# Date

[redacted] 6195 3/26/03
HP# Date

Field Sample Data Collection Sheet

Attachment 1

Sheet ___ of ___

Sample Number	Sample Date	Sample Time	Sample Volume Weight	Sample Description	Sampled By	Chain of Custody Relinquished to Lab Date	Time	Initials	Rec'd By
* 34-01-SS-01	1-27-03	1000	250 ML	Soil Sample From Bldg 34	[redacted] 7474	1/28/03	08:24	ST	ST
34-01-FDS-02	1-27-03	1015	250 ML	WATER Sample From Floor Drain Bldg 34	[redacted] 7474	"	"	ST	ST
34-01-FS-04	1-28-03	1345		I/S Floor Acid Etch	HOP	1-28-03	1:50	KA	HOP
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									
34-01-									

N A

* NOTE: NOT ENOUGH MATERIAL FOR ANALYSIS

03-TF-0079

GAMMA ANALYSIS REPORT

Field Sample ID:
Lab Sample ID: ML15211
File ID: MB100017
Priority: No

34-01-FDS-02

Description\Location

Water Sample from Floor Drain Bldg 34

Room 2

Collector: 7474
Date Received: 1/28/03
Date Collected: 1/27/03

Radionuclide	Activity (pCi/ml)	MDA
Co-60	0	0
Cs-137	0	0.14
Pb-210	0.15	0.77
Ra-226	0.23	1
Ac-227	0	0.36
Th-230	0	5.87
Th-232	0	1.03
Pu-238	0	7.42
Am-241	0	0.1

Comments

03-TF-0979

Date: 1/28/03 Counted By: 5288 Analyzed By: 7559 Initials [redacted]

Laboratory ID#:	**0300921**
Project/function:	**TFV**
Submitted:	**Jan 28, 2003**
Submitted by:	**L. Hopkins**
Point of Contact:	**D. Harvey**
RSDS#:	**N/A** 03-TF-0079
Date:	**Jan 30, 2003**

Lab ID	0300921		
Sample Location	Bldg. 34 #04	34-01-FS-04	
Isotope	**dpm/sample**	**Uncertainty +/-**	**LDL**
Pu-238	208.40	35.73	0.56
Pu-239/240	0.65	0.39	0.15
Th-232	0.26	0.16	0.07
Th-230	1.76	0.49	0.07
Th-228	1.67	0.48	0.20
Th-227	0.29	0.17	0.07
U-238	4.11	2.44	0.70
U-235	0.26	0.53	0.72
U-233/234	3.08	2.03	0.70

[redacted]

1585 — HP # — 1-30-03 — Date

[redacted]

Data Verification — 2857 — HP # — 1/30/2003 — Date

G-12 of 161

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) 34-FLOOR-4	SURVEY NO. 03-TF-0088
PURPOSE: MARSSIM SURVEY PLAN 34-02 UNIT 8 FLOOR SCAN	RWP NO. N/A
	DATE: 4-15-03
	TIME: 1230

MAP/DRAWING

SEE ATTACHED

COPY

* NO ALARMS OR AUDIBLE DETECTED DURING FLOOR SCAN

LEGEND: # = mrem/hr (γ) whole body
E = mrem/hr (β+η+γ) extremity on contact
△# = mrem/hr neutron
(#) = swipe number
#/α or /β = direct cont. measurement in dpm/100cm²

[redacted]

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
~~RO-2350~~	5673/5676	8-13-03
	N/A	

Con[redacted]		HP# 5214	Date: 4-15-03
Con[redacted]			
Counted by: (Signature) N/A		HP# N/A	Date: N/A
Counted by: (Print Name) [redacted]			
Rev[redacted]		HP# 1492	Date: 4-16-03
Revie[redacted]			

ML-9620 (2-98)

G1356 161

Survey No. 03-TF-0088

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments

N/A

COMMENTS: N/A

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

ML-9620 (4-98)

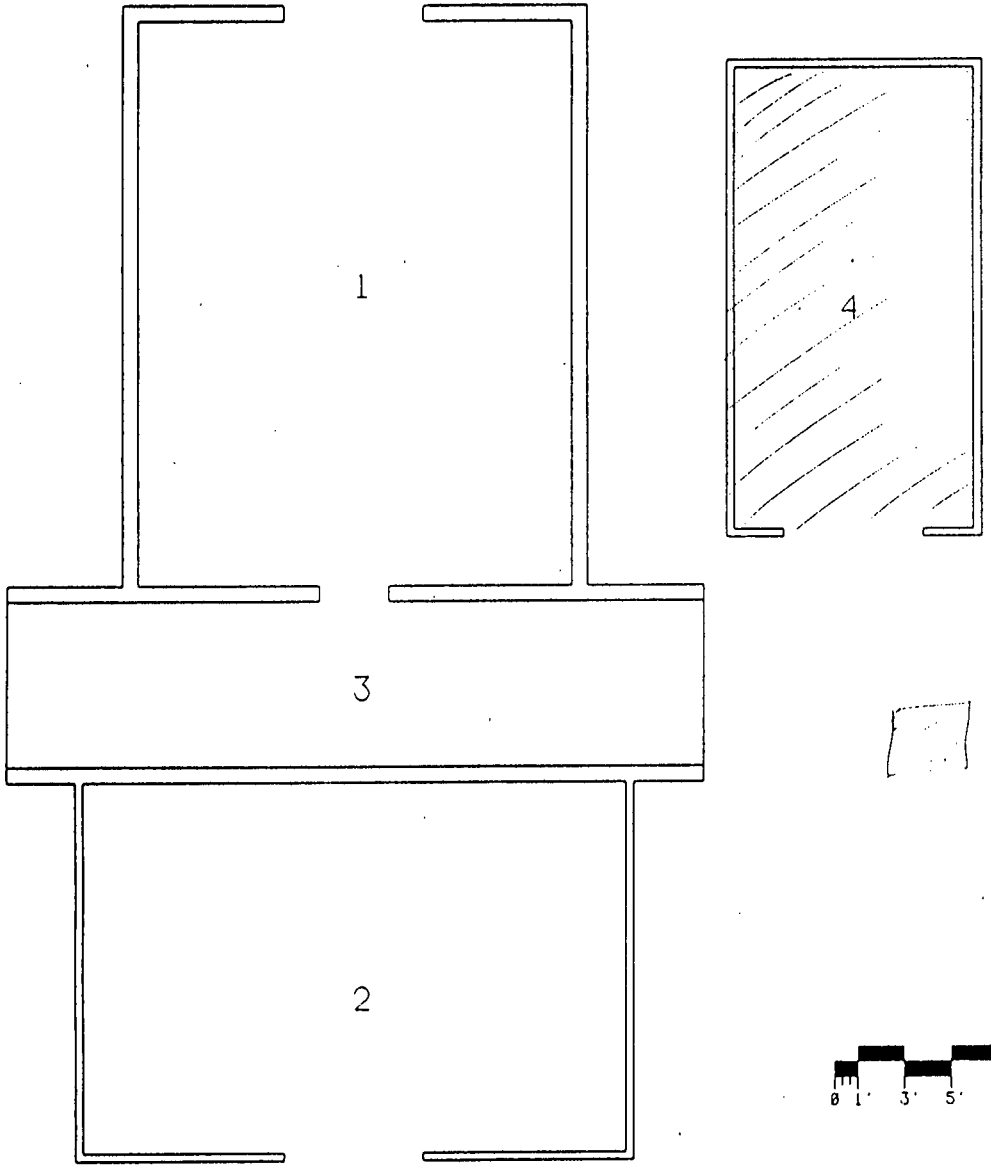
34 BUILDING CHARACTERIZATION ALPHA SURVEY FLOOR SCAN

UNIT 8

RSDS# 03-TF-0088 RCT:_____ RCT:_____

43-20 BKG:	0	EFF:	0.172	PROBE AREA:	181	cm2	Surface Eff:		0.5	Detector # : 2
43-37 BKG:	0	EFF:	0.212	PROBE AREA:	584	cm2	Surface Eff:		0.5	Detector # : 3
LOCATION	2350#	RCT ID	PROBE	DET #	ITEM #	DATE	TIME	CNTS	CT TIME	dpm/100cm2
SRC BKG	5673	5214	5676	3		4/15/03	9:01	32	300	10
SRC CHECK	5673	5214	5676	3		4/15/03	9:23	2003	60	3236
SRC CHECK	5673	5214	5676	3		4/15/03	9:24	1995	60	3223
SRC CHECK	5673	5214	5676	3		4/15/03	9:26	2026	60	3273
SRC CHECK	5673	5214	5676	3		4/15/03	9:27	1846	60	2982
SRC CHECK	5673	5214	5676	3		4/15/03	9:29	2026	60	3273
SRC CHECK	5673	5214	5676	3		4/15/03	9:31	2099	60	3391

ISS	DATE	REVISION	BY	CHKD	DWN	UPDT	APVD	R
0	12/12/91	ASBUILT ISSUE	DCW				DVD	



= 100% SCANNED

0 1' 3' 5' 10'

N

BLDG #34
FIRST FLOOR
BLDG CODE:3034

G-11608 191

03-TF-0088 4 of 4

APPROVALS: DATE:
SAFETY COMMITTEE REQUIRED:
___NONE ___TRUEDOC ___TEDOC ___EWDOC
TECH. REVIEW. _____ _____
GR. MGR. _____ _____
TRUEDOC _____ _____
TEDOC _____ _____
EWDOC _____ _____

DESIGN DM | PROJ MGR
BROKER | CHG SUPV
LP & CC | PROJ REV
CHG MGR
APVD | DATE

SHEET	1	2	3	4	5	6
ISSUE	0					

FINAL CLASSIFICATION

TITLE (U) TITLE CLASSIFICATION
BLDG #34
FLOOR PLANS

DRAWING CLASSIFICATION: UNCLASSIFIED
SIZE: C
DRAWING NUMBER: FSC911245
JOB NUMBER: 12335
DWG TYPE: SFP
PROJ: BLDG #34
CHKD: 14865
SCALE: AS NOTED
SHEET 1 OF 1
STATUS: MD-REL-12/12/91
ORIGIN: MD-BRJ-V3.3

Building 34 Survey Data

		Loose(dpm/100cm^2)			ed (dpm/100cn		Samp
Location	RSDS	α	β	H	α	β	Po210(dpn
SU1-01	0020	0	0	7.57	6	760	
SU1-02	0020	2.19	1.21	13.71	32	804	
SU1-03	0020	4.37	1.06	6.63	39	664	
SU1-04	0020	2.19	1.21	7.71	58	892	
SU1-05	0020	0	2.74	1.83	45	988	
SU1-06	0020	0	1.37	0.47	45	968	
SU1-07	0020	2.18	6.69	2.73	32	948	
SU1-08	0020	0	0	0	26	612	
SU1-09	0020	0	1.37	1.27	19	552	
SU1-10	0020	2.19	0	0	96	916	
SU1-11	0020	0	0	4.92	39	904	
SU1-12	0020	0	2.74	0	13	972	
SU1-13	0020	2.18	2.58	0	13	536	
SU1-14	0020	0	2.74	1.74	6	848	
SU1-15	0020	0	1.37	0	58	968	
SU1-16	0020	0	1.37	1.61	39	928	
SU1-17	0020	2.18	2.58	0	26	932	
SU1-18	0020	2.18	2.58	5.46	13	504	
SU1-19	0020	0	4.11	4.57	13	552	
SU1-20	0020	6.55	9.12	5.71	13	548	
SU2 -01	0024	0	0	7.68	13	668	
SU2 -02	0024	0	1.37	9.28	19	612	
SU2 -03	0024	2.19	1.21	0	39	640	
SU2 -04	0024	0	0	0	19	784	
SU2 -05	0024	0	2.74	1.43	13	596	
SU2 -06	0024	0	6.85	8.93	6	492	
SU2 -07	0024	0	0	6.47	32	536	
SU2 -08	0024	0	0	15.43	13	488	
SU2 -09	0024	2.18	2.58	12.89	77	460	
SU2 -10	0024	0	1.37	13.91	13	472	
SU2 -11	0024	0	1.37	6.13	6	480	
SU2 -12	0024	2.19	0	6.07	26	424	
SU2 -13	0024	0	0	1.28	26	452	
SU2 -14	0024	0	5.48	9.7	19	416	
SU2 -15	0024	0	4.11	12.5	13	412	
SU2 -16	0024	0	1.37	8.19	45	424	
SU2 -17	0024	2.18	3.95	14.33	19	388	
SU2 -18	0024	0	1.37	10.26	26	412	
SU2 -19	0024	2.19	1.21	5.23	13	436	
SU2 -20	0024	0	1.37	0	19	472	
SU3 -01	0039	1.6	0	1.13	58	516	
SU3 -02	0039	8.16	0	0	39	572	
SU3 -03	0039	0	0	0	32	584	
SU3 -04	0039	1.59	2.31	6.19	64	608	
SU3 -05	0039	0	0	2.94	71	516	

Location	RSDS	α	β	H	α	β	Po210(dpm
SU3 -06	0039	1.6	0.94	1.07	6	560	
SU3 -07	0039	3.78	0.79	4.03	39	560	
SU3 -08	0039	3.78	0.79	3	71	560	
SU3 -09	0039	1.59	3.69	8.15	45	564	
SU3 -10	0039	0	0	11.4	39	480	
SU3 -11	0039	1.6	0	4.39	90	584	
SU3 -12	0039	1.6	0.94	0	84	588	
SU3 -13	0039	3.78	3.53	3.21	109	532	14
SU3 -R01-1	0043	0	14.08		103	620	54
SU3 -R02-2	0043	2.01	1.16		109	700	67
SU3 -R03-3	0043	2.01	1.16		90	636	62
SU3 -R04-4	0043	4	3.6		109	684	38
SU3 -R05-5	0043	1.99	2.44		103	700	38
SU3 -R06-6	0043	6.06	0.92		135	608	43
SU3 -R07-7	0043	0	3.84		90	656	29
SU4 -01	0028	0	1.37	21.9	39	464	
SU4 -02	0028	0	0	5.13	19	864	
SU4 -03	0028	4.36	9.28	50.12	109	472	
SU4 -04	0028	2.18	2.58	46.24	51	456	
SU4 -05	0028	0	5.48	51.96	19	460	
SU4 -06	0028	4.37	5.17	6.61	6	504	
SU4 -07	0028	2.18	6.69	16.73	0	752	
SU4 -08	0028	0	1.37	14.12	13	496	
SU4 -09	0028	0	2.74	6.38	13	508	
SU4 -10	0028	0	2.74	9.55	26	472	
SU4 -11	0028	0	0	36.24	0	500	
SU4 -12	0028	4.37	2.43	13.96	26	448	
SU4 -13	0028	0	0	0	6	480	
SU4 -14	0028	1.31	2.67	0	0	464	
SU4 -15	0028	0	1.91	0	6	824	
SU4 -16	0028	0	1.09	0	6	572	
SU4 -17	0028	0	1.37	10.95	6	852	
SU4 -18	0028	0	2.74	21.85	0	492	
SU4 -19	0028	0	4.11	23.31	0	524	
SU4 -20	0028	2.18	3.39	70.3	6	520	
SU5 -01	0026	2.18	2.58	0	19	616	
SU5 -02	0026	4.37	1.06	0	32	556	
SU5 -03	0026	0	5.48	0	90	652	
SU5 -04	0026	6.55	7.75	13.02	90	684	
SU5 -05	0026	0	1.37	5.68	84	684	
SU5 -06	0026	4.37	1.06	9.26	39	624	
SU5 -07	0026	2.19	0	1.15	90	704	
SU5 -08	0026	0	1.37	9.61	39	616	
SU5 -09	0026	4.37	2.43	0	77	616	
SU5 -10	0026	2.19	0	0	103	716	13
SU5 -11	0026	0	1.37	0	32	1040	
SU5 -12	0026	2.18	5.32	0	103	604	10
SU5 -13	0026	4.37	2.43	0	58	772	
SU5 -14	0026	2.19	1.21	0	84	720	

G11806 161

Building 34 Data Worksheet

Location	RSDS	α	β	H	α	β	Po210(dpm
SU5 -R01-8	0043	1.97	3.72		321	1072	459
SU5 -R02-9	0043	2.01	1.16		103	652	170
SU5 -R03-10	0043	0	3.84		244	988	418
SU5 -R04-11	0043	1.99	2.44		263	844	273
SU5 -R05-12	0043	5.99	6.04		251	756	63
SU5 -R06-13	0043	1.97	3.72		257	760	194
SU6 -01	0031	2.19	0	13.3	51	892	
SU6 -02	0031	0	1.37	37.56	116	884	
SU6 -03	0031	0	2.74	16.4	71	972	
SU6 -04	0031	2.19	0	25.94	58	892	
SU6 -05	0031	2.18	2.58	17.48	39	968	
SU6 -06	0031	2.19	1.21	33.67	84	828	
SU6 -07	0031	2.18	2.58	24.63	58	1040	
SU6 -08	0031	0	1.37	9.41	19	880	
SU6 -09	0031	0	1.37	7.42	19	928	
SU6 -10	0031	0	4.11	0	13	928	
SU6 -11	0031	0	2.74	0.37	64	884	
SU6 -12	0031	0	1.37	15.51	109	1040	
SU6 -13	0031	0	4.11	38.26	84	896	
SU6 -14	0031	0	4.11	20.07	103	968	
SU6 -15	0031	2.18	2.58	21.36	71	888	
SU6 -16	0031	0	2.74	10.93	116	1020	
SU6 -17	0031	0	1.37	0	109	940	
SU6 -18	0031				77	816	
SU6 -19	0031				58	872	
SU6 -20	0031				51	888	
SU-J 01	5673	2.17	16.29	0	6	524	
SU-J 02	5673	0	0	10.63	64	600	
SU-J 03	5673	2.19	0	7.85	19	540	
SU-J 04	5673	0	4.11	4.93	45	712	
SU-J 05	5673	0	2.74	14.96	51	620	
SU-J 06	5673	2.19	1.21	8.1	26	472	
SU-J 07	5673	2.18	2.58	1.84	32	636	
SU-J 08	5673	0	1.37	0	39	588	
SU-J 09	5673	0	1.37	2.27	32	408	
SU-J 10	5673	0	2.74	0	26	468	
	Avg	1.369843	2.374961	9.193947368	53.9461538	672.923	
	S/D	1.750716	2.526806	12.30817986	54.9572507	187.307	
	Max	8.16	16.29	70.3	321	1072	
	#	127	127	114	130	130	

Sign Test
a dpm/100cm2 Critical Value = 14
SU 8

SU-8 01	0032	26	74	1
SU-8 02	0032	64	36	1
SU-8 03	0032	77	23	1
SU-8 04	0032	116	-16	
SU-8 05	0032	64	36	1
SU-8 06	0032	39	61	1
SU-8 07	0032	51	49	1
SU-8 08	0032	58	42	1
SU-8 09	0032	39	61	1
SU-8 10	0032	26	74	1
SU-8 11	0032	90	10	1
SU-8 12	0032	19	81	1
SU-8 13	0032	6	94	1
SU-8 14	0032	64	36	1
SU-8 15	0032	71	29	1
SU-8 16	0032	0	100	1
SU-8 17	0032	45	55	1
SU-8 18	0032	39	61	1
SU-8 19	0032	16	84	1
SU-8 20	0032	51	49	1
			S+ =	19

passes

Instrument Data

Adj	RSDS	Inst	Probe	CDD	Bkg α	Bkg β
	0020	L2350	5704/5714	9/26/03	8	
	0020	L2360	5673/5143	8/13/03		146
	0021	L2350	5673/5143	8/13/03	10	
	0024	L2350	5673/5143	8/13/03	5	
	0024	L2360	5760/5800	10/16/03		145
	0039	L2360	5709/5795	8/2/03		165
	0039	L2350	5676/5143	8/13/03	9	
	0027	L2360	5704/5714	9/26/03		141
	0027	L2350	5673/5143	8/13/03	6	
	0031	L2350	5673/5143	8/13/03	14	
	0031	L2360	5109/5795	8/2/03		138
	0028	L2350	5673/5143	8/13/03	15	
	0028	L2360	5760/5800	10/16/03		141
	0032	L2350	5673/5143	8/13/03	5	
	0032	L2360	5760/5800	10/16/03		138
	0026	L2360	5704/5714	9/26/03		155
	0026	L2350	5673/5143	8/13/03	3	
	0043	L2360	5704/5714	9/26/03		161
	0043	L2350	5673/5143	8/13/03	15	
	0088	L2350	5673/5676	8/13/03	10	

Graph Data Alpha

	Survey Ur	Survey Uni	Survey Uni	Survey Uni	Survey Uni	Survey Uni	Survey Uni	Survey Uni
avg	31.55	22.8	57.05	17.55	69.07692	40.31579	28.95	44.35
max	96	77	95	26	93	84	77	90

Graph Data Beta

	Survey Ur	Survey Uni	Survey Uni	Survey Uni	Survey Uni	Survey Uni	Survey Uni	Survey Uni
avg	789.8	503.2	591.4	556.2	740	902.8	537.8	537.8
max	988	784	700	864	1072	1040	772	720

Graph Data Alpha

	Room 2 F	Room 2 W.	Room 2 Ex	Room 4 Fl	Room 4 W.	Room 4 External
avg	28.95	22.8	57.05	44.35	17.55	69.07692
max	77	77	95	90	26	93

Graph Data Beta

	Room 2 F	Room 2 W.	Room 2 Ex	Room 4 Fl	Room 4 W.	Room 4 External
avg	537.8	503.2	591.4	537.8	556.2	740
max	772	784	700	720	864	1072

58
39
32
64
71

Adj			
6	Scan data	RSDS 0021	
39	SU1	dpm/100cm^2	
71	SCANW 01	51	wall
45	SCANW 02	13	wall
39	SCANW 03	90	wall
90	SCANW 04	0	wall
84	SCANW 05	13	wall
95	SCANW 06	0	wall
49	SCANW 07	0	wall
42	SCANW 08	13	wall
28	SCANW 09	0	wall
71	SCANW 10	0	wall
65	SCANW 11	39	wall
92	SCANW 12	13	wall
61	SCANF 01	19	floor
	SCANF 02	16	floor
	SCANF 03	74	floor
	SCANF 04	110	floor
	RCFO3-F04	668	floor
19			
6			
0			
13			
13			
26			
0			
26			
6			
0			
6			
6			
6			
0			
0			
6			
19			
32			
90			
90			
84			
39			
90			
39			
77			
90			
32			
93			
58			
84			

95% Confidence Interval Calculator

N =	114	Min	Max	+/-
M =	538	535.7421	540.2579	2.257921
s =	12.3			

1.96 X σ / sqrt n

Adj								
-138								
-67		RSDS	α	β	H3	α	β	
-174	SU-7 01	0032	0	1.37	0	19	480	
-10	SU-7 02	0032	0	1.37	8.61	19	416	
188	SU-7 03	0032	0	2.74	12.66	26	508	
63	SU-7 04	0032	2.19	0	0	13	512	
51	SU-7 05	0032	0	0	0.78	32	592	
0	SU-7 06	0032	0	4.11	7.69	32	484	
71	SU-7 07	0032	0	1.37	8.05	19	468	
58	SU-7 08	0032	0	1.37	9.47	26	772	
39	SU-7 09	0032	0	0	5.33	26	612	
84	SU-7 10	0032	2.19	1.21	2.07	32	596	
58	SU-7 11	0032	0	1.37	3.36	45	524	
19	SU-7 12	0032	0	1.37	0	39	580	
19	SU-7 13	0032	0	0	15.12	19	504	
13	SU-7 14	0032	6.56	2.27	18.24	19	576	
64	SU-7 15	0032	0	2.74	15.94	19	424	
0	SU-7 16	0032	15.3	8.5	5.77	45	580	
84	SU-7 17	0032	0	2.74	12.6	58	472	
0	SU-7 18	0032	0	0	12.5	26	532	
71	SU-7 19	0032	0	1.37	4.2	39	468	
0	SU-7 20	0032	0	0	0	19	508	
0	SU-8 01	0032	4.67	0	0	26	720	26
77	SU-8 02	0032	2.19	1.21	7.06	64	484	64
58	SU-8 03	0032	0	0	7.48	77	668	77
51	SU-8 04	0032	0	0	19.42	116	528	42
	SU-8 05	0032	0	2.74	7.11	64	528	64
	SU-8 06	0032	0	1.37	7.79	39	640	39
	SU-8 07	0032	0	1.37	18.19	51	358	51
	SU-8 08	0032	0	1.37	25.81	58	524	58
	SU-8 09	0032	0	2.74	0	39	576	39
	SU-8 10	0032	0	6.85	0	26	500	26
	SU-8 11	0032	0	1.37	0.83	90	556	90
	SU-8 12	0032	0	1.37	0	19	548	19
	SU-8 13	0032	0	1.37	6.23	6	500	6
	SU-8 14	0032	6.56	0.9	0.76	64	576	64
	SU-8 15	0032	2.19	1.21	7.2	71	620	71
	SU-8 16	0032	0	1.37	6.67	0	584	0
	SU-8 17	0032	0	4.11	15.24	45	346	45
	SU-8 18	0032	0	1.37	6.11	39	532	39
	SU-8 19	0032	2.18	5.32	24.03	16	504	16
	SU-8 20	0032	0	1.37	3.59	51	464	51
	Avg		1.10075	1.78275	7.64775	38.325	534.1	
	S/D		2.852965	1.840114	7.020045	23.83102	84.3934	
	Max		15.3	8.5	25.81	116	772	
	#		40	40	40	40	40	

Sample Data RSDS# 0079 pCi/sample

	Pu238	Th227	Th228	Th230	Th232	U233-4	U235	U238
34-01-01	0.479	0.107	0.266	0.399	0.213	0.445	<LDL	1.312
34-01-02	0.263	0.212	0.291	0.661	<LDL	0.957	<LDL	2.45
34-01-03	0.522	<LDL	0.185	0.529	0.397	0.88	0.095	5.671
34-01-04	<LDL	0.132	<LDL	0.448	0.184	3.123	0.308	24.19
34-01-05	0.552	<LDL	0.448	0.632	<LDL	1.258	0.079	2.464
34-01-04-S	82.87	0.473	2.049	1.681	0.972	0.757	<LDL	1.239
34-01-12	<LDL	<LDL	<LDL	0.285	<LDL	<LDL	<LDL	0.276
34-01-14	<LDL	<LDL	<LDL	<LDL	<LDL	0.15	<LDL	0.1
34-01-17	<LDL	<LDL	<LDL	0.162	<LDL	<LDL	<LDL	<LDL
34-01-16	<LDL	<LDL	<LDL	0.08	<LDL	<LDL	<LDL	<LDL
34-01-FS-04	208.4	0.29	1.67	1.76	0.26	3.08	0.26	4.11
Screen levels	55	0.56	10	10	1.47	10.5	1.7	1.3
	Pb210	Ra226						
34-01-FDS-0.	0.15	0.23						

%	dpm
74	7.0862
84	10.6348
91	18.2138
100	62.447
82	11.9526
92	198.0902
100	1.2342
100	0.55
	0.3564
	0.176
95	483.626

Replicate Fixed Point QC

	alpha (dpm/100cm2)			beta (dpm/100cm2)		
Location #	initial	2σ	replicate	initial	2σ	replicate
SU2QC-09	77	17.55	13	-104	20.40	84
SU2QC-11	6	4.90	6	-84	18.33	-24
SU3QC 13	109	20.88	58	-32	11.31	192
SU3QC 06	6	4.90	51	-4	4.00	-112
SU4QC3	109	20.88	128	-92	19.18	-140
SU4QC11	0	0.00	6	-64	16.00	-188
SU6 QC02	116	21.54	32	320	35.78	236
SU6QC10	13	7.21	77	364	38.16	136
SUJQC 01	6	4.90	19	-40	12.65	28
SUJQC 02	64	16.00	13	36	12.00	28
SU1 QC1	6	4.90	26	196	28.00	180
SU1 QC10	96	19.60	32	352	37.52	328
SU7 QC17	58	15.23	19	472	43.45	256
SU7 QC04	13	7.21	26	512	45.25	356
SU8 QC16	0	0.00	51	584	48.33	376
SU8 QC04	116	21.54	116	528	45.96	120
SU5 QC 01	19	8.72	32	52	14.42	72
SU5 QC10	103	20.30	77	152	24.66	284
Variance (S2) =	2435.156		1536.9	28918.22		20220.44
Ratio			1.584459			1.430148
Agreement			YES			YES

Replicate Data

	α	β
SU2QC-09	13	84
SU2QC-11	6	-24
SU3QC 13	58	192
SU3QC 06	51	-112
SU4QC3	128	-140
SU4QC11	6	-188
SU6 QC02	32	236
SU6QC10	77	136
SUJQC 01	19	28
SUJQC 02	13	28
SU1 QC1	26	180
SU1 QC10	32	328
SU7 QC17	19	256
SU7 QC04	26	356
SU8 QC16	51	376
SU8 QC04	116	120
SU5 QC 01	32	72
SU5 QC10	77	284

Survey Unit 1 Room 2 Floor & Walls <6'

	α	β	H	α	β	Init α
Number	20	20	20	20	20	20
Average	1.3105	2.242	3.2965	31.55	789.8	31.55
StDev	1.792515	2.275068	3.678487	22.15609	179.0806	22.15609
Max	6.55	9.12	13.71	96	988	96

Survey Unit 2 Room 2 Ceiling 7 Walls>6'

	α	β	H	α	β	α
Number	20	20	20	20	20	20
Average	0.5465	1.8175	7.4855	22.8	503.2	22.8
StDev	0.971159	1.943071	5.011923	16.2565	104.6667	16.2565
Max	2.19	6.85	15.43	77	784	77

Survey Unit 3 Room 2 Exterior Walls & Roof

	α	β	H	α	β	α
Number	20	20	13	20	20	20
Average	2.2575	2.0095	3.500769	57.05	591.4	74.3
StDev	2.147027	3.154862	3.431	23.70537	61.21954	33.42092
Max	8.16	14.08	11.4	95	700	135

Survey Unit 4 Room 4 Interior

	α	β	H	α	β	α
Number	20	20	20	20	20	20
Average	1.0475	2.8565	20.2675	17.55	556.2	17.55
StDev	1.642071	2.35647	20.37329	25.61964	141.2037	25.61964
Max	4.37	9.28	70.3	26	864	109

Survey Unit 5 Room 4 Exterior

	α	β	H	α	β	α
Number	19	19	13	13	19	20
Average	2.458421	2.724737	2.978462	69.07692	740.00	118.95
StDev	2.044506	2.16911	4.707078	25.02153	148.1021	92.5649
Max	6.55	7.75	13.02	93	1072	321

Survey Unit 6 Room 3 Block Wall Exterior

	α	β	H	α	β	α
Number	17	17	17	20	20	20
Average	0.77	3.096471	16.41235	40.31579	902.8	66.25
StDev	1.07468	3.6476	11.69787	31.36732	128.5598	32.65171
Max	2.19	16.29	38.26	84	1040	116

Survey Unit 7 Room 2 Floor

	α	β	H	α	β	α
Number	20	20	20	20	20	20
Average	1.5455	1.6265	7.1195	28.95	542.4	28.95
StDev	3.688819	2.009709	5.884295	13.59024	85.91281	13.59024
Max	15.3	8.5	18.24	77	772	77

Survey Unit 8 Room 4 Floor

	α	β	H	α	β	α
Number	20	20	20	20	20	20
Average	0.8895	1.8705	8.176	44.35	537.8	48.05
StDev	1.826168	1.743968	8.112973	23.99841	90.23688	28.83433
Max	6.56	6.85	25.81	90	720	116

Sign Test

a dpm/100cm2		Critical Value = 14		
SU3				
SU3 -01	0039	58	42	1
SU3 -02	0039	39	61	1
SU3 -03	0039	32	68	1
SU3 -04	0039	64	36	1
SU3 -05	0039	71	29	1
SU3 -06	0039	6	94	1
SU3 -07	0039	39	61	1
SU3 -08	0039	71	29	1
SU3 -09	0039	45	55	1
SU3 -10	0039	39	61	1
SU3 -11	0039	90	10	1
SU3 -12	0039	84	16	1
SU3 -13	0039	109	-9	
SU3 -14R1	0043	103	-3	
SU3 -15R2	0043	109	-9	
SU3 -16R3	0043	90	10	1
SU3 -17R4	0043	109	-9	
SU3 -18R5	0043	103	-3	
SU3 -19R6	0043	135	-35	
SU3 -20R7	0043	90	10	1
			S+ =	14
			passes	
SU4		Critical Value = 14		
SU4 -01	0028	39	61	1
SU4 -02	0028	19	81	1
SU4 -03	0028	109	-9	
SU4 -04	0028	51	49	1
SU4 -05	0028	19	81	1
SU4 -06	0028	6	94	1
SU4 -07	0028	0	100	1
SU4 -08	0028	13	87	1
SU4 -09	0028	13	87	1
SU4 -10	0028	26	74	1
SU4 -11	0028	0	100	1
SU4 -12	0028	26	74	1
SU4 -13	0028	6	94	1
SU4 -14	0028	0	100	1
SU4 -15	0028	6	94	1
SU4 -16	0028	6	94	1
SU4 -17	0028	6	94	1
SU4 -18	0028	0	100	1
SU4 -19	0028	0	100	1
SU4 -20	0028	6	94	1
			S+ =	19
			passes	

SU6		Critical Value = 14		
SU6 -01	0031	51	49	1
SU6 -02	0031	116	-16	
SU6 -03	0031	71	29	1
SU6 -04	0031	58	42	1
SU6 -05	0031	39	61	1
SU6 -06	0031	84	16	1
SU6 -07	0031	58	42	1
SU6 -08	0031	19	81	1
SU6 -09	0031	19	81	1
SU6 -10	0031	13	87	1
SU6 -11	0031	64	36	1
SU6 -12	0031	109	-9	
SU6 -13	0031	84	16	1
SU6 -14	0031	103	-3	
SU6 -15	0031	71	29	1
SU6 -16	0031	116	-16	
SU6 -17	0031	109	-9	
SU6 -18	0031	77	23	1
SU6 -19	0031	58	42	1
SU6 -20	0031	51	49	1
			S+ =	15
			passes	

SURVEY PLAN FORM

SP NUMBER	34-02	DATE OF REQUEST	January 30, 2003
TYPE OF SP	☐ FSS ☐ CHARACTERIZATION ☐ REFERENCE ☒ OTHER: Post Remediation		
AREA/LOCATION	Building 34		
PURPOSE	Rooms 2 and 4 floors are reclassified to Class 1. Measure residual activity following remediation of floor in Room 2. Perform resurvey of entire floor in Room 1.		
SURVEY UNIT # 7	Room 2 Floor	SURVEY UNIT	
SURVEY UNIT # 8	Room 4 Floor	SURVEY UNIT	
SURVEY UNIT		SURVEY UNIT	

SAMPLE TYPE

☐ SURFACE SOIL SAMPLE:

☐ SUB-SURFACE SOIL SAMPLE:

☐ SEDIMENT SAMPLE:

☐ Rubbelized Material:

☐ OTHER:

SURVEY TYPE

SURFACE SCAN	☐ BETA ☐ GAMMA ☒ ALPHA	INST. TYPE	L-2350	SCAN RATE & DETECTOR DISTANCE FROM SURFACE	Scan surface at a rate of 1" per second at a distance of not more than ¼" from surface
		PROBE TYPE	43-37 Floor Monitor		
STATIC MEASURE-MENT	☐ BETA ☐ GAMMA ☒ ALPHA	INST. TYPE	L-2350	COUNT TIME & DETECTOR DISTANCE FROM SURFACE	Perform 1 minute counts at specified locations not more than ¼" from surface
		PROBE TYPE	43-20		
STATIC MEASURE-MENT	☐ BETA ☐ GAMMA ☐ ALPHA	INST. TYPE		COUNT TIME & DETECTOR DISTANCE FROM SURFACE	
		PROBE TYPE			
DOSE RATE MEASURE-MENT	☐ BETA ☐ GAMMA ☐ ALPHA	INST. TYPE		DETECTOR DISTANCE FROM SURFACE	
		PROBE TYPE			

OTHER SURVEY TYPES OR COMMENTS

All surveys shall be performed and documented in accordance with Mound Radiological Control procedures.

Do not perform fixed-point surveys until all remediation is complete.

SP NUMBER	34-02	DATE OF REQUEST	January 30, 2003

SPECIFIC SAMPLING / SURVEY INSTRUCTIONS

Surface Scan Using a Ludlum 2350-1 with a 43-37 Floor Monitor

1. Set the Ludlum 2350-1 datalogger to alarm at 75dpm/100cm^2 in the ratemeter mode.
2. Scan 100% of the floor in Survey Units 7 & 8 at a slow rate not to exceed 1" per second.
3. Perform a 30 second integrated count at every location where an alarm is obtained.
4. Record location and results of each integrated count on RSDS map in accordance with Mound Rad Con procedures.

Data Point Location

1. Locate the data points in each survey unit using the coordinates shown in Attachment 1.
2. Mark each data point with tape or other non-permanent marking.
3. Document locations on the appropriate RSDS Map.

Static Measurements Using L 2350 With a 43-20 probe (alpha)

1. Perform a 1 minute integrated alpha count at each data point in Survey Units 7and 8.
2. Record location and results on RSDS map in accordance with Mound Rad Con procedures.
3. Document gross activity for each location (No "<" values). Record instrument background at survey location.

Quality Control

1. QC measurements will be performed by re-surveying 2 data points in each survey unit. Select the highest and lowest measurement in each survey unit for replicate survey.
2. Record location and results on RSDS in accordance with Mound Rad Con procedures.

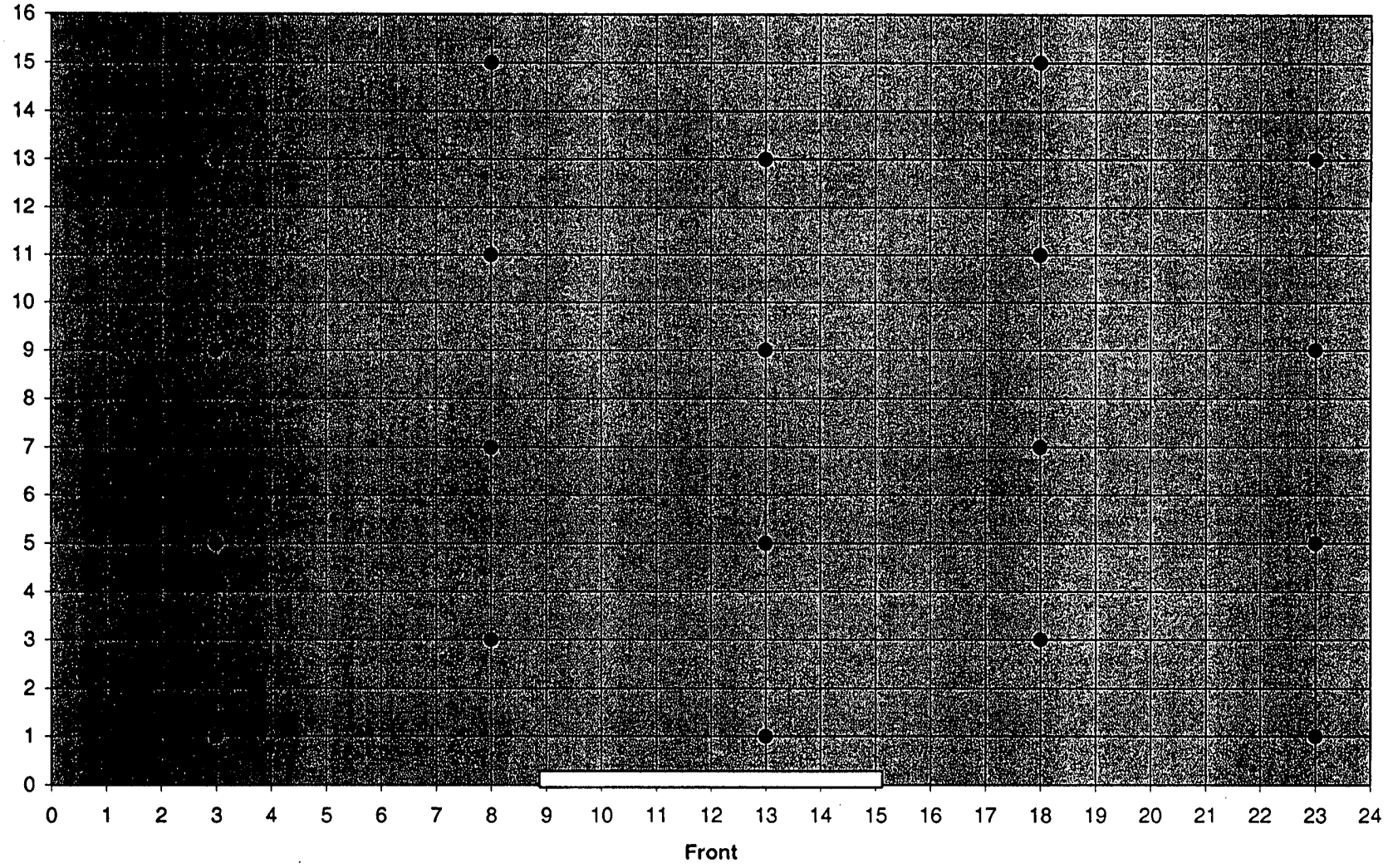
APPROVAL SIGNATURES			
MARISSM Engineer	R. Case	DATE	January 30, 2003
Technical Reviewer	R. Coblentz	DATE	January 30, 2003
Rad Con Manager	D. Riley	DATE	January 30, 2003

SP CLOSE-OUT SIGNATURES			
MARISSM Engineer	R. CASE	DATE	4-17-03
Technical Reviewer	RMCoblentz	DATE	04/23/03
Rad Con Manager		DATE	

COMMENTS

Building 34 Sample Plan Form 34-02
Attachment 1

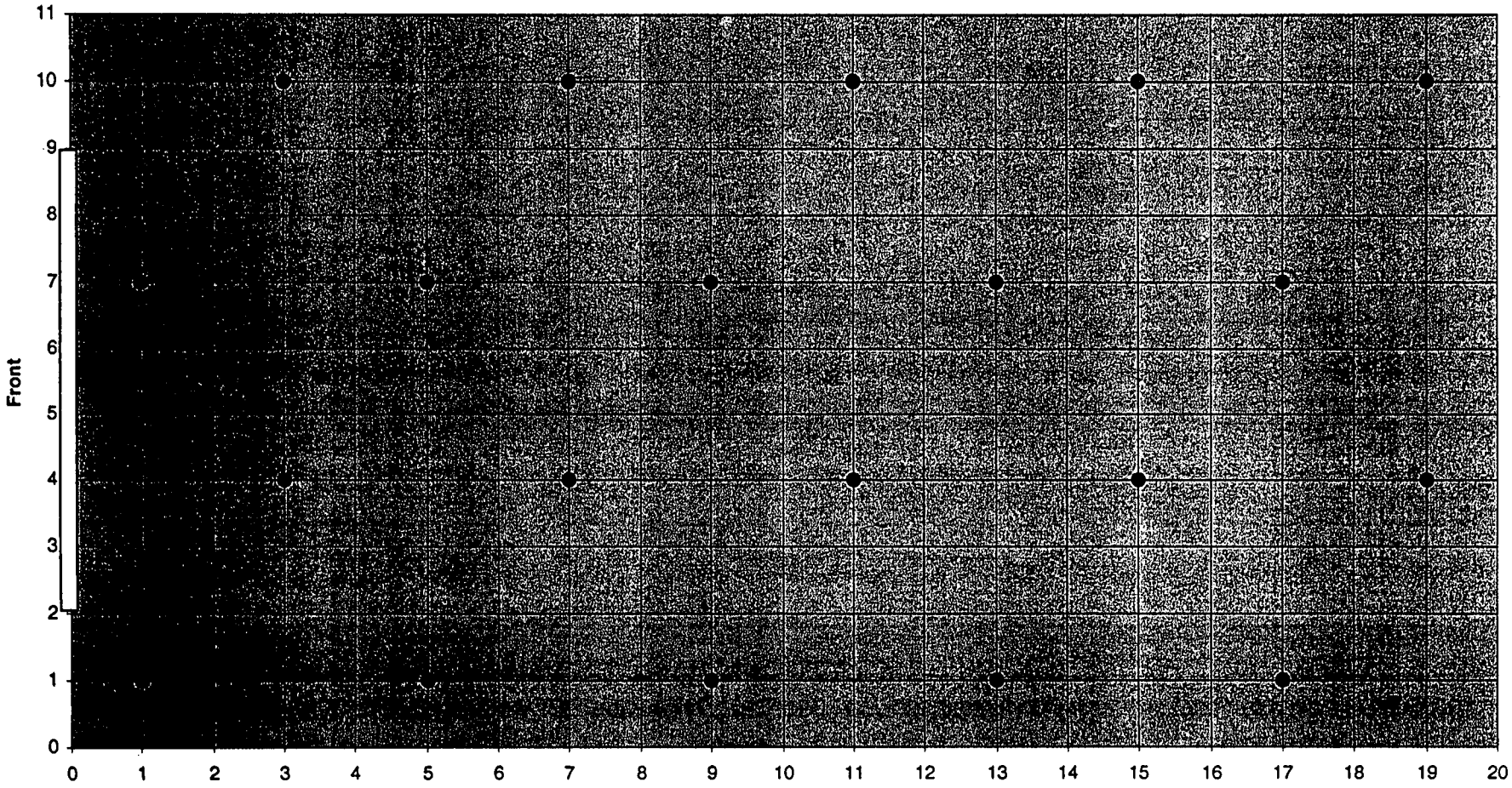
Survey Unit 7 Room 2 Floor
(feet)



G-131 of 161

Building 34 Sample Plan Form 34-02
Attachment 1

Survey Unit 8 Room 4 Floor
(feet)



G132of161

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) Bldg 34 Room 2&4	SURVEY NO. 03-TT-0032
PURPOSE: MARISSM Survey PLAN 34-02	RWP NO. NA
	DATE: 2-4-03
	TIME: 1100

MAP/DRAWING

SEE ATTACHMENTS

LEGEND: # = mrem/hr (γ) whole body
E = mrem/hr (β+η+γ) extremity on contact
△# = mrem/hr neutron
[#] = air sample number
(#) = swipe number
(#/α) or /β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5673/5143/5876	8-13-03
2360	5709/5795	8-2-03
	N A	

[redacted]	HP# 6178 7474	Date: 2-7-03
Counted by: (Signature) See	HP#	Date:
Counted by: (Print Name) Attached		
Reviewed/A [redacted]	HP# 7707	Date: 02/11/03
Reviewed/A [redacted]		

ML-9620 (2-98)

Survey No. 03-TF-0032

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	See ATTACHed			FloOR
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35	See ATTACHed			FloOR

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
36	See ATTACHed			FloOR
37				
38				
39				
40	See ATTACHed			FloOR
	N		A	

COMMENTS: N/A

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

ML-9620 (4-98)

34 BUILDING FLOOR CHARACTERIZATION SURVEY UNIT 7 and 8

RSDS# 02-TF-0032 RCT: KA RCT: DGA

43-20 BKG:	0	EFF:	0.172	PROBE AREA:	181	cm2	Surface Eff:		0.5	Detector # :	2
43-37 BKG:	0	EFF:	0.212	PROBE AREA:	584	cm2	Surface Eff:		0.5	Detector # :	3
LOCATION	2350#	RCT ID	PROBE	DET #	ITEM #	DATE	TIME	CNTS	CT TIME	dpm/100cm2	
SRC BKG	5673	6178	5676	3		2/4/03	8:45	15	300	5	
SRC CHECK	5673	6178	5676	3		2/4/03	8:47	2138	60	3454	
SRC CHECK	5673	6178	5676	3		2/4/03	8:49	1975	60	3190	
SRC CHECK	5673	6178	5676	3		2/4/03	8:51	2189	60	3536	
SRC CHECK	5673	6178	5676	3		2/4/03	8:53	2129	60	3439	
SRC CHECK	5673	6178	5676	3		2/4/03	8:56	2221	60	3588	
SRC CHECK	5673	6178	5676	3		2/4/03	8:57	2163	60	3494	
SRC BKG	5673	6178	5143	2		2/4/03	9:03	6	300	8	
SRC CHECK	5673	6178	5143	2		2/4/03	9:05	2040	60	13105	
SRC CHECK	5673	6178	5143	2		2/4/03	9:06	2098	60	13478	
SRC CHECK	5673	6178	5143	2		2/4/03	9:08	1944	60	12489	
SRC CHECK	5673	6178	5143	2		2/4/03	9:09	2117	60	13600	
SU-7 01	5673	6178	5143	2	1	2/4/03	9:14	3	60	19	
SU-7 02	5673	6178	5143	2	2	2/4/03	9:15	3	60	19	
SU-7 03	5673	6178	5143	2	3	2/4/03	9:16	4	60	26	
SU-7 04	5673	6178	5143	2	4	2/4/03	9:18	2	60	13	
SU-7 05	5673	6178	5143	2	5	2/4/03	9:19	5	60	32	
SU-7 06	5673	6178	5143	2	6	2/4/03	9:21	5	60	32	
SU-7 07	5673	6178	5143	2	7	2/4/03	9:22	3	60	19	
SU-7 08	5673	6178	5143	2	8	2/4/03	9:25	4	60	26	
SU-7 09	5673	6178	5143	2	9	2/4/03	9:26	4	60	26	
SU-7 10	5673	6178	5143	2	10	2/4/03	9:27	5	60	32	
SU-7 11	5673	6178	5143	2	11	2/4/03	9:28	7	60	45	
SU-7 12	5673	6178	5143	2	12	2/4/03	9:30	6	60	39	
SU-7 13	5673	6178	5143	2	13	2/4/03	9:31	3	60	19	
SU-7 14	5673	6178	5143	2	14	2/4/03	9:33	3	60	19	
SU-7 15	5673	6178	5143	2	15	2/4/03	9:34	3	60	19	
SU-7 16	5673	6178	5143	2	16	2/4/03	9:35	7	60	45	
SU-7 17	5673	6178	5143	2	17	2/4/03	9:37	9	60	58	
SU-7 18	5673	6178	5143	2	18	2/4/03	9:38	4	60	26	
SU-7 19	5673	6178	5143	2	19	2/4/03	9:39	6	60	39	
SU-7 20	5673	6178	5143	2	20	2/4/03	9:40	3	60	19	
QC 17	5673	6178	5143	2		2/4/03	9:42	3	60	19	

34 BUILDING FLOOR CHARACTERIZATION SURVEY UNIT 7 and 8

RSDS# 02-TF-0032 RCT: KA RCT: DJA

LOCATION	2350#	RCT ID	PROBE	DET #	ITEM #	DATE	TIME	CNTS	CT TIME	dpm/100cm2
QC 04	5673	6178	5143	2		2/4/03	9:43	4	60	26
FSCAN 01	5673	6178	5676	3		2/4/03	10:00	13	30	42
SU-8 01	5673	6178	5143	2	21	2/4/03	10:16	4	60	26
SU-8 02	5673	6178	5143	2	22	2/4/03	10:17	10	60	64
SU-8 03	5673	6178	5143	2	23	2/4/03	10:19	12	60	77
SU-8 04	5673	6178	5143	2	24	2/4/03	10:21	18	60	116
SU-8 05	5673	6178	5143	2	25	2/4/03	10:23	10	60	64
SU-8 06	5673	6178	5143	2	26	2/4/03	10:24	6	60	39
SU-8 07	5673	6178	5143	2	27	2/4/03	10:25	8	60	51
SU-8 08	5673	6178	5143	2	28	2/4/03	10:27	9	60	58
SU-8 09	5673	6178	5143	2	29	2/4/03	10:28	6	60	39
SU-8 10	5673	6178	5143	2	30	2/4/03	10:30	4	60	26
SU-8 11	5673	6178	5143	2	31	2/4/03	10:31	14	60	90
SU-8 12	5673	6178	5143	2	32	2/4/03	10:33	3	60	19
SU-8 13	5673	6178	5143	2	33	2/4/03	10:34	1	60	6
SU-8 14	5673	6178	5143	2	34	2/4/03	10:36	10	60	64
SU-8 15	5673	6178	5143	2	35	2/4/03	10:37	11	60	71
SU-8 16	5673	6178	5143	2	36	2/4/03	10:38	0	60	0
SU-8 17	5673	6178	5143	2	37	2/4/03	10:39	7	60	45
SU-8 18	5673	6178	5143	2	38	2/4/03	10:41	6	60	39
SU-8 19	5673	6178	5143	2	39	2/4/03	10:43	2	60	13
SU-8 20	5673	6178	5143	2	40	2/4/03	10:44	8	60	51
QC 16	5673	6178	5143	2		2/4/03	10:45	8	60	51
QC 04	5673	6178	5143	2		2/4/03	10:46	18	60	116

34-BLDG CHARACTERIZATION BETA SURVEY UNIT 7

RSDS# 03-TF-0032 RCT: KA RCT: DGA

LOCATION	2360	RCT ID	PROBE	ITEM #	DATE	gross count	CT TIME	dpm/100cm2
1	5709	7474	5795	1	2/4/03	258	60	480
2	5709	7474	5795	2	2/4/03	242	60	416
3	5709	7474	5795	3	2/4/03	265	60	508
4	5709	7474	5795	4	2/4/03	266	60	512
5	5709	7474	5795	5	2/4/03	286	60	592
6	5709	7474	5795	6	2/4/03	259	60	484
7	5709	7474	5795	7	2/4/03	255	60	468
8	5709	7474	5795	8	2/4/03	331	60	772
9	5709	7474	5795	9	2/4/03	291	60	612
10	5709	7474	5795	10	2/4/03	287	60	596
11	5709	7474	5795	11	2/4/03	269	60	524
12	5709	7474	5795	12	2/4/03	283	60	580
13	5709	7474	5795	13	2/4/03	264	60	504
14	5709	7474	5795	14	2/4/03	282	60	576
15	5709	7474	5795	15	2/4/03	244	60	424
16	5709	7474	5795	16	2/4/03	283	60	580
17	5709	7474	5795	17	2/4/03	256	60	472
18	5709	7474	5795	18	2/4/03	271	60	532
19	5709	7474	5795	19	2/4/03	255	60	468
20	5709	7474	5795	20	2/4/03	265	60	508
BETA BACKGROUNG FOR 2-4-2003 WAS——————>								138

34-BLDG CHARACTERIZATION BETA SURVEY UNIT 8

RSDS# 03-TF-0032 RCT: KA RCT: DJH

LOCATION	2360	RCT ID	PROBE	ITEM #	DATE	gross count	CT TIME	dpm/100cm2
21	5709	7474	5795	21	2/4/03	318	60	720
22	5709	7474	5795	22	2/4/03	259	60	484
23	5709	7474	5795	23	2/4/03	305	60	668
24	5709	7474	5795	24	2/4/03	270	60	528
25	5709	7474	5795	25	2/4/03	270	60	528
26	5709	7474	5795	26	2/4/03	298	60	640
27	5709	7474	5795	27	2/4/03	225	60	348
28	5709	7474	5795	28	2/4/03	269	60	524
29	5709	7474	5795	29	2/4/03	282	60	576
30	5709	7474	5795	30	2/4/03	263	60	500
31	5709	7474	5795	31	2/4/03	277	60	556
32	5709	7474	5795	32	2/4/03	275	60	548
33	5709	7474	5795	33	2/4/03	263	60	500
34	5709	7474	5795	34	2/4/03	282	60	576
35	5709	7474	5795	35	2/4/03	293	60	620
36	5709	7474	5795	36	2/4/03	284	60	584
37	5709	7474	5795	37	2/4/03	229	60	364
38	5709	7474	5795	38	2/4/03	271	60	532
39	5709	7474	5795	39	2/4/03	264	60	504
40	5709	7474	5795	40	2/4/03	254	60	464
BETA BACKGROUNG FOR 2-4-2003 WAS——————>								138

Alpha/Beta Analysis

Batch ID:	Smear Unit 1 - 200302041526	Count Date:	2/4/2003
Group:	G	Count Minutes:	1.5
Serial Number:	78218-1	Count Mode:	Simultaneous
Batch ID:	03-TF-0032 HARVEY (40) BSB	Operating Volts:	1440
Selected Geometry:	Swipe/Smear	Cal Due Dates:	6/19/2004

Efficiency (%)				Spillover (%)			
Alpha:	34.73	±	0.13	Alpha to Beta:	11.39	±	0.00
Beta:	46.13	±	0.13	Beta to Alpha:	0.07	±	0.00

Sample ID	Carrier ID	Alpha (dpm)	σ	Beta (dpm)	σ
1	5	0.00	0.00	1.37	1.45
2	65	0.00	0.00	1.37	1.45
3	40	0.00	0.00	2.74	2.04
4	6	2.19	1.92	0.00	0.16
5	52	0.00	0.00	0.00	0.00
6	27	-0.00	0.00	4.11	2.50
7	100	0.00	0.00	1.37	1.45
8	62	0.00	0.00	1.37	1.45
9	44	0.00	0.00	0.00	0.00
10	42	2.19	1.92	1.21	1.45
11	48	0.00	0.00	1.37	1.45
12	64	0.00	0.00	1.37	1.45
13	59	0.00	0.00	0.00	0.00
14	36	6.56	3.33	2.27	2.06
15	5	0.00	0.00	2.74	2.04
16	43	15.30	5.08	8.50	3.85
17	21	0.00	0.00	2.74	2.04
18	61	0.00	0.00	0.00	0.00
19	3	0.00	0.00	1.37	1.45
20	51	0.00	0.00	0.00	0.00
21	19	4.37	2.72	0.00	0.23
22	38	2.19	1.92	1.21	1.45
23	28	0.00	0.00	0.00	0.00
24	37	0.00	0.00	0.00	0.00
25	84	0.00	0.00	2.74	2.04
26	12	0.00	0.00	1.37	1.45
27	97	0.00	0.00	1.37	1.45
28	71	0.00	0.00	1.37	1.45
29	18	0.00	0.00	2.74	2.04
30	26	0.00	0.00	6.85	3.23
31	82	0.00	0.00	1.37	1.45
32	68	0.00	0.00	1.37	1.45
33	93	0.00	0.00	1.37	1.45
34	11	6.56	3.33	0.90	1.47
35	71	2.19	1.92	1.21	1.45
36	39	0.00	0.00	1.37	1.45
37	49	0.00	0.00	4.11	2.50
		KA	KA 2-7-03 ~~Page 1 of 2~~	KA	

BJBrown

Alpha/Beta Analysis

	Efficiency (%)			Spillover (%)		
Alpha:	34.73	±	0.13	Alpha to Beta:	11.39	± 0.00
Beta:	46.13	±	0.13	Beta to Alpha:	0.07	± 0.00

Sample ID	Carrier ID	Alpha (dpm)	σ	Beta (dpm)	σ
38	92	0.00	0.00	1.37	1.45
39	91	2.18	1.92	5.32	2.90
40	98	0.00	0.00	1.37	1.45
		KA		KA	

Batch ID: 03-TF-0032 HARVEY (40) BSB

KA 2-7-03

~~Page 2 of 2~~

Time: 2.00
Data Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
Background Subtract: 1st Vial

	LL	UL	LCR	2SI	BKG
Region A:	0.5	18.6	0	0.0	6.60
Region B:	2.0	18.6	0	0.0	6.44
Region C:	40.0	2000	0	0.0	9.23

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count
03-TF-0032 HARVEY (40) BSB
Luminescence Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: C:\DATA\PROT1.DAT
Count Data Filename: C:\DATA\SDATA1.DAT
Spectrum Data Drive & Path: C:\DATA

S#	TIME	CPMA	CPMB	LUM	FLAG	tSIE	DPM1	2SIGMA	CPMC
-1	10.00	6.60	6.44	0	B	604.27		0.000	9.23
0	2.00	233.20	220.84	0		470.85	474.50	51.042	1.77
1	2.00	0.00	0.00	0		537.64	0.00	0.000	4.27
2	2.00	4.30	3.70	0		483.88	8.61	9.907	0.00
3	2.00	6.40	4.79	0		496.89	12.66	10.610	1.27
4	2.00	0.00	0.00	0		526.32	0.00	0.000	1.94
5	2.00	0.40	0.44	0		513.04	0.78	7.960	6.77
6	2.00	3.90	3.36	0		501.43	7.69	9.591	5.77
7	2.00	4.18	3.05	0		527.83	8.05	9.489	7.27
8	2.00	4.90	3.42	0		524.12	9.47	9.800	1.27
9	2.00	2.90	2.56	0		585.14	5.33	8.554	2.83
10	2.00	1.10	0.00	0		556.45	2.07	7.992	0.00
11	2.00	1.72	1.37	0		508.47	3.36	8.602	0.27
12	2.00	0.00	0.00	13		495.67	0.00	0.000	0.00
13	2.00	7.90	7.74	0		535.52	15.12	10.798	11.27
14	2.00	9.40	9.30	0		519.87	18.24	11.457	3.77
15	2.00	8.03	6.44	0		493.66	15.94	11.239	10.27
16	2.00	2.98	2.86	0		524.44	5.77	9.029	0.77
17	2.00	6.61	5.22	0		540.19	12.60	10.301	22.27
18	2.00	6.70	6.43	0		567.44	12.50	10.104	4.27
19	2.00	2.36	1.53	0		626.26	4.20	8.070	3.27
20	2.00	0.00	0.00	0		487.65	0.00	0.000	2.34
21	2.00	0.00	0.00	0		641.74	0.00	0.000	3.77
22	2.00	3.90	3.27	0		604.80	7.06	8.804	0.27
23	2.00	4.09	2.54	0		589.97	7.48	8.980	6.27
24	2.00	10.13	10.13	0		534.04	19.42	11.562	10.77
25	2.00	3.90	2.53	0		594.72	7.11	8.875	6.27
26	2.00	4.30	4.45	0		602.87	7.79	8.966	4.27
27	2.00	10.08	8.48	0		607.99	18.19	10.869	18.27
28	2.00	14.57	13.73	0		631.51	25.81	11.957	8.27
29	2.00	0.00	0.00	0		571.73	0.00	0.000	0.77
30	2.00	0.00	0.00	0		594.84	0.00	0.000	1.27
31	2.00	0.47	0.63	7		642.66	0.83	7.195	2.27
32	2.00	0.00	0.00	0		550.24	0.00	0.000	2.27
33	2.00	3.37	3.52	0		577.12	6.23	8.794	2.27
34	2.00	0.40	0.06	0		540.03	0.76	7.780	2.27

KA

S#	TIME	CPMA	CPMB	LUM FLAG	tSIE	DPM1	2SIGMA	CPMC
35	2.00	3.90	2.58	0	579.31	7.20	8.986	5.27
36	2.00	3.59	3.33	0	573.61	6.67	8.909	5.74
37	2.00	8.22	7.65	0	573.72	15.24	10.568	4.27
38	2.00	3.40	3.26	0	614.14	6.11	8.551	3.27
39	2.00	13.42	8.33	0	617.77	24.03	11.766	1.77
40	2.00	1.90	1.56	0	551.15	3.59	8.377	2.77

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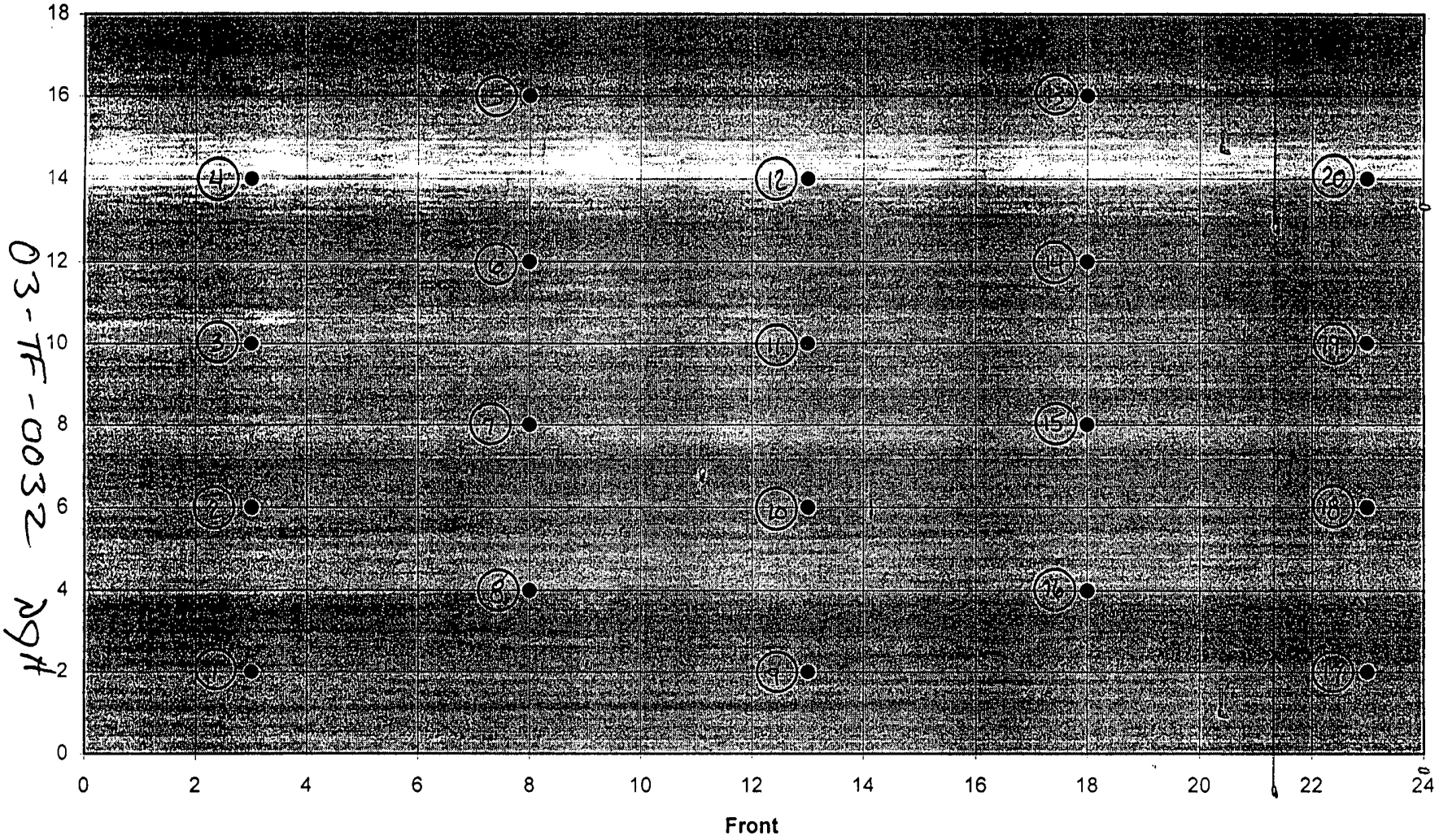
03-TF-0032

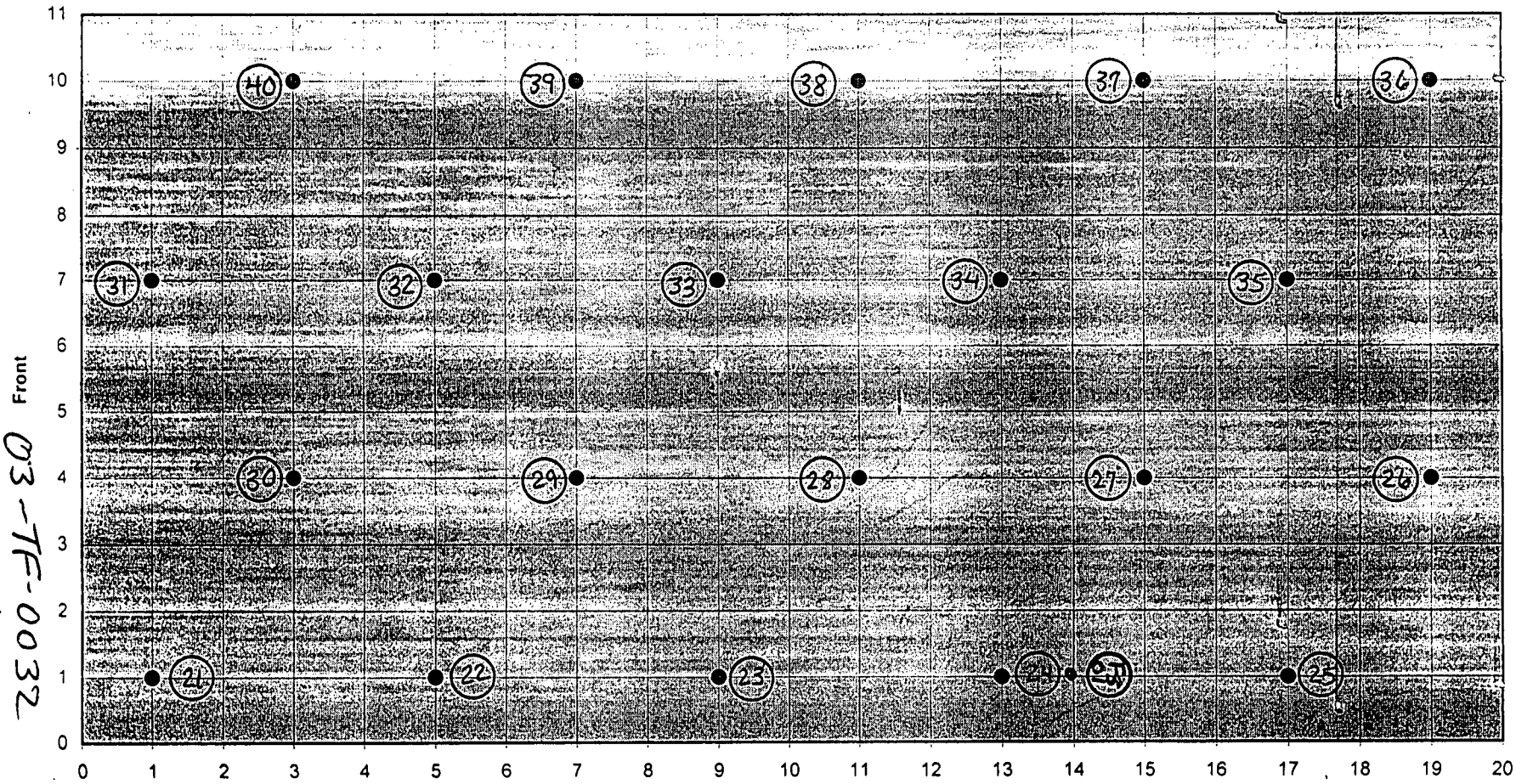
Survey Unit 7 (feet)



03-TF-0032 Dft

11 of 12 G4380161

Survey Unit 8 (feet)



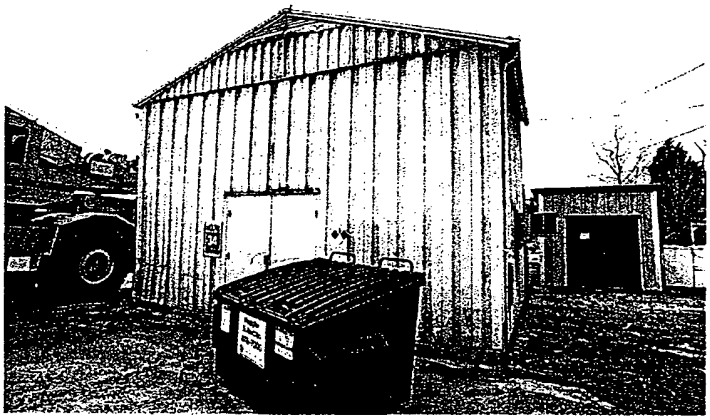
03-TF-0032
29H

12 of 12 G-4469 16

Final Status Survey Plan

For

Building 34



Prepared by: Roderick C. Case Date: 1-15-03

Reviewed by: GALEN TOMLINSON Date: 1-16-03

Approved by: DANNY K RILEY Date: 1-16-03

 G14508 161

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1.0 Historical Overview

Building 34, is a collection of three separate buildings located in the lower plant valley, on the extreme western end of the site near two of the site wastewater retention ponds.

Building 34 when initially placed in service was designated as the "Emergency Brigade Training Facility." Building 34 also became home to other functions, including administrative areas for the Container Testing Program and for a biodegradation project. The Building 34 complex-of-building's has been the home to or has been associated with a variety of processes and/or operations, including the following:

- Room 1, as a live fire training area for the Mound Emergency Brigade to practice with pyrophoric metal fires, including depleted Uranium (U-238) metals.
- Room 2 was used as an administrative area for the Emergency Brigade training program, the Container Testing Program, and the Biodegradation Facility. Other uses include Health Physics instrument repair facility and Environmental Restoration sampling. Process history indicates that the actual container testing activities took place in the outside areas around Building 34, and the building itself was used as an administrative area.
- Room 3 is an outdoor corridor between Rooms 1 and 2 and was used in conjunction with Emergency Brigade Training.
- Room 4 is a detached storage facility.
- Outside burning areas were used to dispose a number of materials including depleted uranium. The precise location of some of these areas is unknown, but believed to be within the Building 34 complex.

This survey plan is intended to assess the structural surfaces of Rooms 2, 3, and 4 only. Room 1 is known to be contaminated and will be removed as LSA waste. The surface and subsurface soils, foundations, piping, etc. associated with Building 34 will be evaluated separately.

A complete history of Building 34 can be found in Reference 1.

2.0 Data Quality Objectives

The Data Quality Objectives (DQO) process is a series of planning steps that have been defined by the EPA (USEPA, 1998) to ensure that the type, quantity, and quality of survey data used in decision making are appropriate for the intended application. The DQO's for this survey plan are derived from Mound procedures and consistent with the Mound 2000 Approach for building disposition (Reference 2).

2.1 Problem Statement

Building 34 is scheduled for demolition. The radiological status of all building surfaces must be determined to facilitate a free release of the structure consistent with project goals and site procedures. The impact of site operations on this building cannot be completely determined from available information. A thorough

characterization study of the radiological condition of this building will direct the appropriate decisions of its final status.

2.2 Decision Statement

The purpose of this survey plan is to determine whether or not the residual radioactivity of the surfaces of building materials associated with Building 34 satisfy the site release criteria by hypothesis testing. The null hypothesis is stated as:

> N_0 = The residual radioactivity on the survey unit surfaces does not meet the release criteria.

The alternate hypothesis is:

> N_a = The residual radioactivity on the survey unit surfaces does meet the release criteria.

If all the measurements are below the $DCGL_w$, the null hypothesis is rejected in favor of the alternate and the survey unit passes. Any measurement from the survey unit will be considered elevated if it exceeds the $DCGL_w$. However, the elevated measurement alone does not indicate that the survey unit fails to meet the release criterion, only that further investigation will be necessary to determine the extent and concentration of the elevated area.

This survey plan will provide the necessary data to make this decision.

2.3 Inputs to the Decision

The Historical Site Assessment and past survey data are initial inputs to determine area classifications. Gross surface activity measurements for alpha and beta activity will be performed. Removable alpha, beta, and tritium activity will be counted. Sediments will be analyzed for radioisotopes.

The instrumentation selected for this survey plan will be appropriate for the radionuclides typical for the Mound site.

Surface scanning will be performed to locate anomalies that might indicate elevated areas of residual activity and that require further investigation or remedial action. A floor scan for alpha contamination will be performed using a Ludlum 2350/43-37 Floor Probe at a scan speed of 1 inch per second, with the probe located within 1/4 inch to the surface being scanned. The MDA is 85dpm/100 cm^2 with 95% detection probability, at a background level equal to or less than 10 cpm. A 30 second integrated count will be performed at locations where elevated measurements are observed. The MDA in the integrated mode is 49dpm/100 cm^2 or 286 dpm/probe.

Direct field measurements will be made at fixed locations using a Ludlum 2350/43-20 scintillation probe (or equivalent) for alpha contamination. The integrated count time is one minute. The MDA is 45 dpm/100cm^2 (α) at a background of less than 3 cpm. Integrated beta measurements will be made at the same locations in accordance with MD-80036, Issue 29, Op. No. 30030, *Operation of the Ludlum 2360 Scaler/Ratemeter with Ludlum 43-89 Alpha/Beta Scintillator*, Section 6.3.

The presence of loose surface activity, including H^3 will be determined using coin smears. An area of 100cm^2 will be smeared at each data point. Smears will be counted in an alpha/beta counter. A liquid scintillation counter (LSC) will measure

removable tritium. Sediment from drains, ventilation systems, and roof will be sampled and analyzed for gross activity and nuclide determination using alpha or gamma spectroscopy.

All field and laboratory instrumentation will be specified on the Survey Plan Form and shall be operated in accordance with the appropriate Mound procedures.

All surveys and samples collected for this survey plan will be performed in accordance with the Quality Control requirements of Reference 3. Replicate surveys, sample recounts, instrument performance checks, chain of custody for samples, control of field survey data and databases, and QC investigations provide the highest level of confidence in the data collected to support the survey outcome. The Survey Plan Form (SPF) will specify the QC requirements for this survey.

2.4 Study Boundaries

Defining the study boundaries helps ensure the data taken during the final status survey are representative of the survey unit. The area under consideration is the physical surfaces inside and outside of Rooms 2 and 4. It will also include the block wall that forms the east wall of Room 3. Subsurface material (under-slab, footers, piping, etc) and associated soil is not evaluated in this survey, but will be assessed at a later date as part of a larger soil remediation effort. Because of its history, the initial classification of the Room 2 floor and walls up to 2 meters is a Class 2 area. The walls > 2 meters and ceiling are classified as a Class 3 area. Rooms 3 and 4 are initially classified as Class 3 areas. Statistical methods will be used to define the number and location of survey data points and the extent of surveys performed in accordance with Reference 5.

Interior building surfaces must be free of dirt, insulation, and loose paint at survey locations in order to ensure that paint or other coverings do not obscure any residual radioactive material present on the surfaces of the building materials. Obstacles such as insulation and false ceilings must be removed to provide access to building surfaces. Sampling of building materials will be limited to removable loose surface contamination (smears) and sediment sampling of floor drains and ventilation units. Smears (100cm2) will be collected at survey data point locations. Any areas of elevated activity above the $DCGL_w$ will be evaluated for isotopic content by intrusive sampling or insitu analysis.

Measuring residual radioactivity involves delineating discrete survey units, identifying the nature and number of measurements, and selecting measurement techniques. Survey data points will be randomly placed in each survey unit to satisfy the statistic. Professional judgment surveys will be performed to supplement the random survey data, but will not be combined with the statistical data. Judgmental survey data will be compared directly to the release criteria.

The greatest potential for residual radioactivity is expected on floor areas and walls up to 2 meters in personnel occupancy work areas. Utility and storage areas, interior walls above 2 meters, ceilings, and exterior surfaces are expected to have the least potential for residual activity. The following table shows the survey unit size and classification.

Survey Unit Number	Survey Unit Room Designation	Area (ft^2)	Survey Unit Classification	# Data Points	% Surface Scan
1	Room 2 Floor and Walls to 6'	864	2	20	50
2	Room 2 Walls above 6' and ceiling	1176	3	20	10
3	Room 2 Exterior walls and roof	1240	3	20	10
4	Room 4 interior surfaces	1060	3	20	10
5	Room 4 exterior surfaces	840	3	20	10
6	Room 3 Block Wall	540	3	20	10

Survey Unit 1 (Room 2 floors and walls to 6') will be given reference coordinates on a grid map with the origin at the southeast corner of the survey unit.

The number of data points is determined by calculating the relative shift (Δ/σ) from the DCGL value, the lower bound of the gray region (LBGR), and the standard deviation of the contaminant in the survey unit (Δ/σ = DCGL-LBGR/σ). The standard deviation is estimated to be 17dpm/100cm^2 and the relative shift is calculated as 2.95. The decision error percentiles are obtained from Table 5.2 and the number of data points (n) is calculated using Equation 5-2, Reference 5.

For survey planning, the number of data points (n = 20) in the survey unit was obtained from Table 5.5, Reference 5. The minimum number of samples required to meet the DQO's for this survey plan will be calculated retrospectively based on the actual σ in the survey unit. A calculated $n \leq 20$ indicates that sufficient power (probability) exists in the survey plan to demonstrate compliance.

A starting point is randomly selected and data points are located within the survey unit using the triangular grid method. The spacing of data points is determined by:

$$L = \sqrt{\frac{A}{0.866n}}$$

Where: A = Survey unit area
n = # of data points

For Survey Unit 1, L = 7'
The distance between each row is given as L X 0.866 = 6'

The remaining survey units are Class 3 areas. The location of each data point is determined by multiplying the east-west (Y) and the north-south (X) dimensions of each survey unit by a randomly generated number for each dimension. For consistency, the southeast corner of each survey unit will be the origin. A computer spreadsheet program was used to determine random numbers and plot data point

locations on a survey map. To facilitate field measurements, the calculated coordinates are rounded to the nearest whole number of feet. Attachment 1 shows the data point locations for each survey unit and specific coordinates. If additional surveys are required due to area reclassification or remediation, the survey design parameters will be specified as necessary in accordance with Reference 5 and incorporated into the Final Status Report.

Sediment sampling locations will be determined by the availability of material. At a minimum, a sediment sample will be collected from ventilation system openings and floor drains. A sample of roof material or roof gutter debris should be obtained if material is available. If sediment is not present in these areas a smear or swab will be obtained for analysis. The Survey Plan Form will delineate specific sampling requirements.

2.5 The Decision Rule

A decision rule relates the concentration of residual radioactivity in the survey unit to the release criterion so that decisions can be made based on the results of the final status survey. Reference 6, DOE Order 5400.5, Radiation Protection of the Public and the Environment, offers generic release criteria for building surfaces. Table 1 lists these permissible surface contamination guidelines which were adapted from NRC Regulatory Guide 1.86. Tritium at the Mound facility is an exception. For tritium, 10,000 dpm/100cm^2 was selected based on technical information presented in Reference 4. For purposes of this survey, these limits are considered to be the DCGL's for building and structure release.

Table 1

Allowable Total Residual Surface Contamination (dpm/100cm^2)*				
Radionuclides*		**Average***	**Maximum***	**Removable***
Group 1	Transuranics, I-125, I129, Ra-226, Ac-227, Ra-228, Th-228, Th-230, Pa-231	**100**	**300**	**20**
Group 2	Th-Natural, Sr-90, I-126, I-131, I-133, Ra-223, Ra-224, U-232, Th-232	**1,000**	**3,000**	**200**
Group 3	U-Natural, U-235, U-238 and associated decay products, alpha emitters	**5,000**	**15,000**	**1,000**
Group 4	Beta-gamma emitters (Radionuclides with decay modes other than alpha emission or spontaneous fission) except for Sr-90 and others noted above	**5,000**	**15,000**	**1,000**
Tritium		**N/A**	**N/A**	**10,000**

* Note: Refer to DOE Order 5400.5, Radiation Protection of the Public and the Environment, for specific information on surface contamination guidelines and additional notes.

The average activity levels shown in Table 1 assumes that the residual contamination is uniformly distributed across the survey unit and is designated as the $DCGL_w$ in this plan. Biased measurements will be taken and compared directly to the release criteria to support the statistical data. Radionuclide-specific measurements will be made to ensure the appropriate values in Table 1 are used. If the average of the measurements is above the $DCGL_w$, the survey unit will not meet the release criterion. If the average surface activity within each survey unit is < 50% of the DCGLw and the maximum activity is less than the $DCGL_w$, then it will be accepted as the Final Status Survey and no further survey action is required. If the average of the residual activity in the survey unit is less than the $DCGL_w$, but some areas are greater than the $DCGL_w$, the Sign test will be used to determine if the release criteria have been met. Each measured value, when subtracted from the DCGL, will yield a positive or negative number. If the sum of the positive signs (S+) is greater than the Critical Value (Table I.3, Reference 5), then the null hypothesis is rejected and survey unit passes. The power of the Sign test is given in Reference 5, I.9.1. A prospective power curve constructed using MARSSIM Power 2000 software demonstrates sufficient power exists at the LBGR to detect residual contamination (Attachment 2).

The maximum activity shown in Table 1 represents the $DCGL_{EMC}$. The decision rule for the elevated measurement comparison will be a two-stage process. In the first stage, areas will be flagged as potentially elevated if the direct measurement or scanning measurement indicates concentrations above the $DCGL_w$. If the flagged area is greater than the $DCGL_{EMC}$, the area will require remediation. Areas that are remediated will be reclassified as Class 1 areas and resurveyed in accordance with Reference 5.

2.6 The Limits on Decision Errors

A Type I error is made when the null hypotheses, H_0, is rejected when it is true. A Type II error is made when the null hypotheses is not rejected when it is false. The error rates are expressed as the probability that a survey unit passes when it should fail (α) or fails when it should pass (β). Because the measurement variability is expected to be small at the DCGL, the $\alpha = 0.05$ and $\beta = 0.01$ for this survey.

The concentration range between the Lower Bound of the Gray Region (LBGR) and the DCGL defines the gray region of residual radioactivity concentration in which the consequences of Type II decision errors are relatively minor. The statistical test uses the LBGR to define the level that, above which, false positive rates greater than that specified by the limits on decision errors are accepted. The LBGR is limited by the variability exhibited by the measurements and the decision errors chosen. Because the detection limits expected by the direct field measurements are low relative to the $DCGL_w$, it is estimated that an LBGR equal to one-half of the $DCGL_\omega$ can be achieved.

2.7Optimizing the Design

The DQO process is neither static nor sequential. As new information is gathered it will be incorporated into the planning process. In order to facilitate this process, a Survey Plan Form (SPF) is developed for field use, to direct the specific details

required by the overall survey plan. The SPF will specify the types of samples to be collected and the precise locations and analysis to be performed. It will define the specific instruments to be used for the survey and the exact location and type of surveys required. The SPF will specify the Quality Control (QC) requirements of the survey as required by Reference 3. Additional information and comments can be added to clarify or enhance the survey/sample process. The SPF is reviewed and approved prior to beginning the survey and is subsequently reviewed and approved after all data is collected to ensure completeness and accuracy. Data from initial survey efforts may result in altering area classifications. Additional SPF's may be required to complete the final status survey process for a survey unit.

Data reduction and analysis will result in graphical and numeric interpretation and lead to the acceptance or rejection of the hypotheses. A review of the DQO's will ensure that data have appropriately and adequately addressed the stated objectives, or require further investigation. If all of the initial characterization data supports the rejection of the null hypothesis, then no further survey data will be necessary.
It is critical to the DQO process that the survey units are isolated from the potential for recontamination or disturbances that could lead to invalidating the survey results. Access shall be restricted to all areas where surveys have been completed until such time as the survey unit is released. When all of the DQO's are satisfied, a report of the final status of the building is prepared and submitted for review. The Final Status Survey Report will summarize and document the results of the survey plan and the final disposition of the survey site.

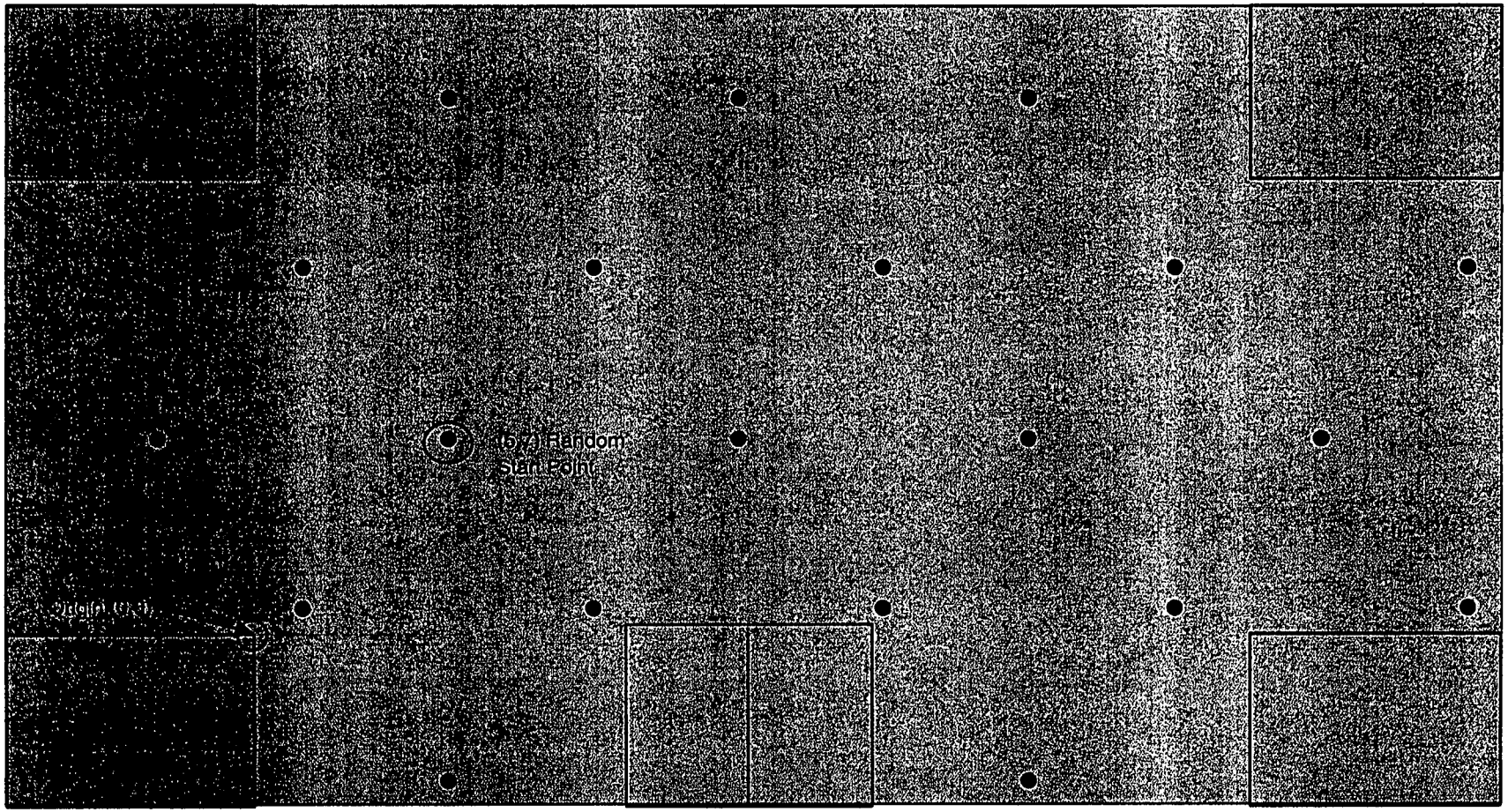
3.0 References

1. BWXTO, EC&AS Department, White Paper: *Building 34 Structural History and Process History Summary Background Document*, July 2002
2. Work Plan, *Mound 2000 Approach*, DOE/MEMP, 1995
3. MARSSIM Implementing Procedures, *Field Quality Control for Building Contamination Surveys*, MD-80046, Op 402
4. DOE, 1991, *Recommended Tritium Surface Contamination Release Guides,* DOE, EH, 0201T, March, 1991; Mound Tritium Committee, Appendix A, Health-Based Risk Assessment for Unconditional Release of Items Contaminated with Tritium
5. NUREG 1575, Rev 1, Aug 2000, *Multi-Agency Radiation Survey and Site Investigation Manual*, (MARSSIM)
6. DOE Order 5400.5, *Radiation Protection of the Public and the Environment*
7. NUREG 1507, Table 5.1, *Background Count Rates for Various Materials*

Attachments

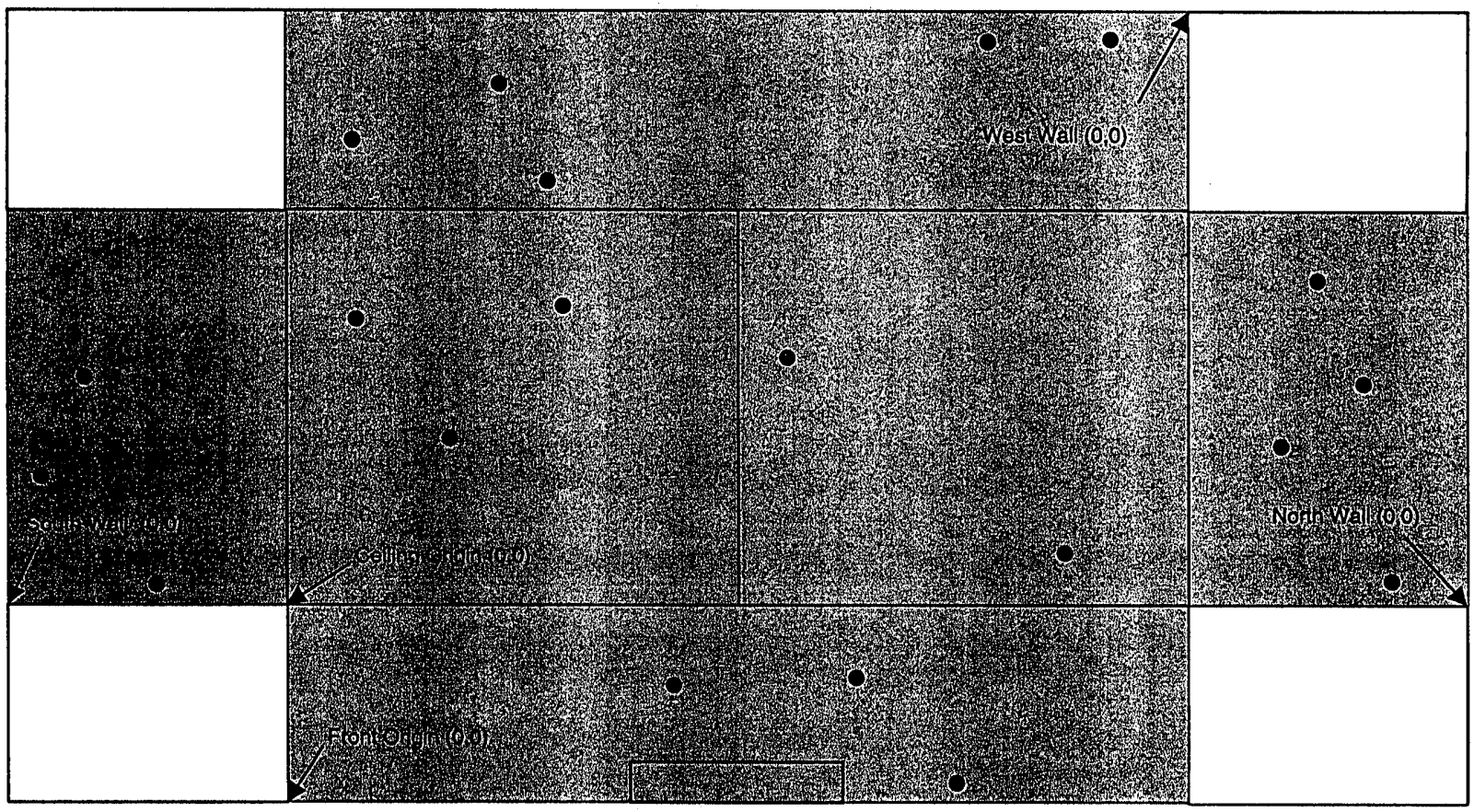
1. Survey Unit Grid Points
2. Sign Test Power Curve

Survey Unit 1Room 2



G-15428 161

Survey Unit 2 Room 2

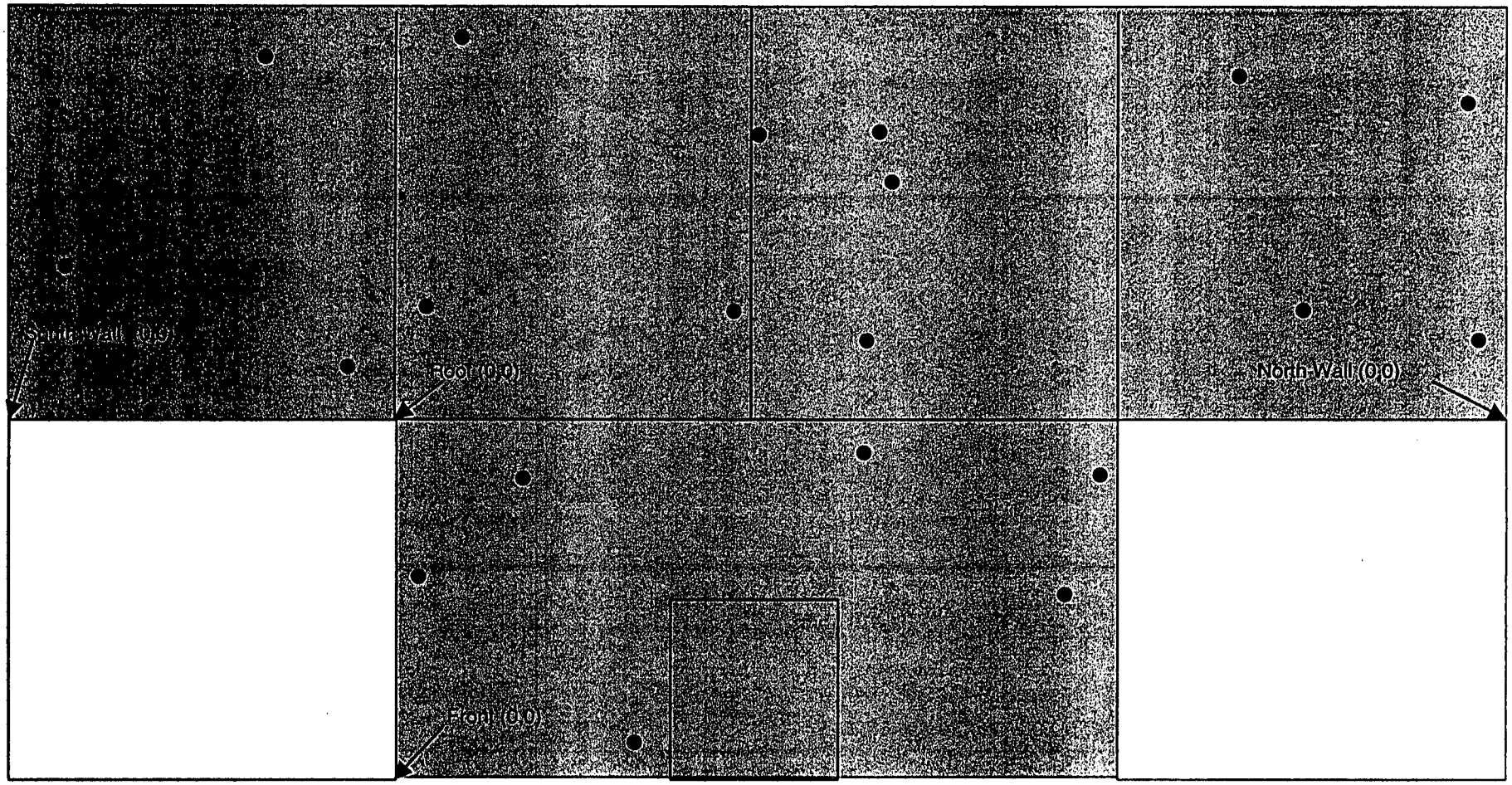


Front of Building

G-155 of 161

Building 34 Final Status Survey Plan
Attachment 1

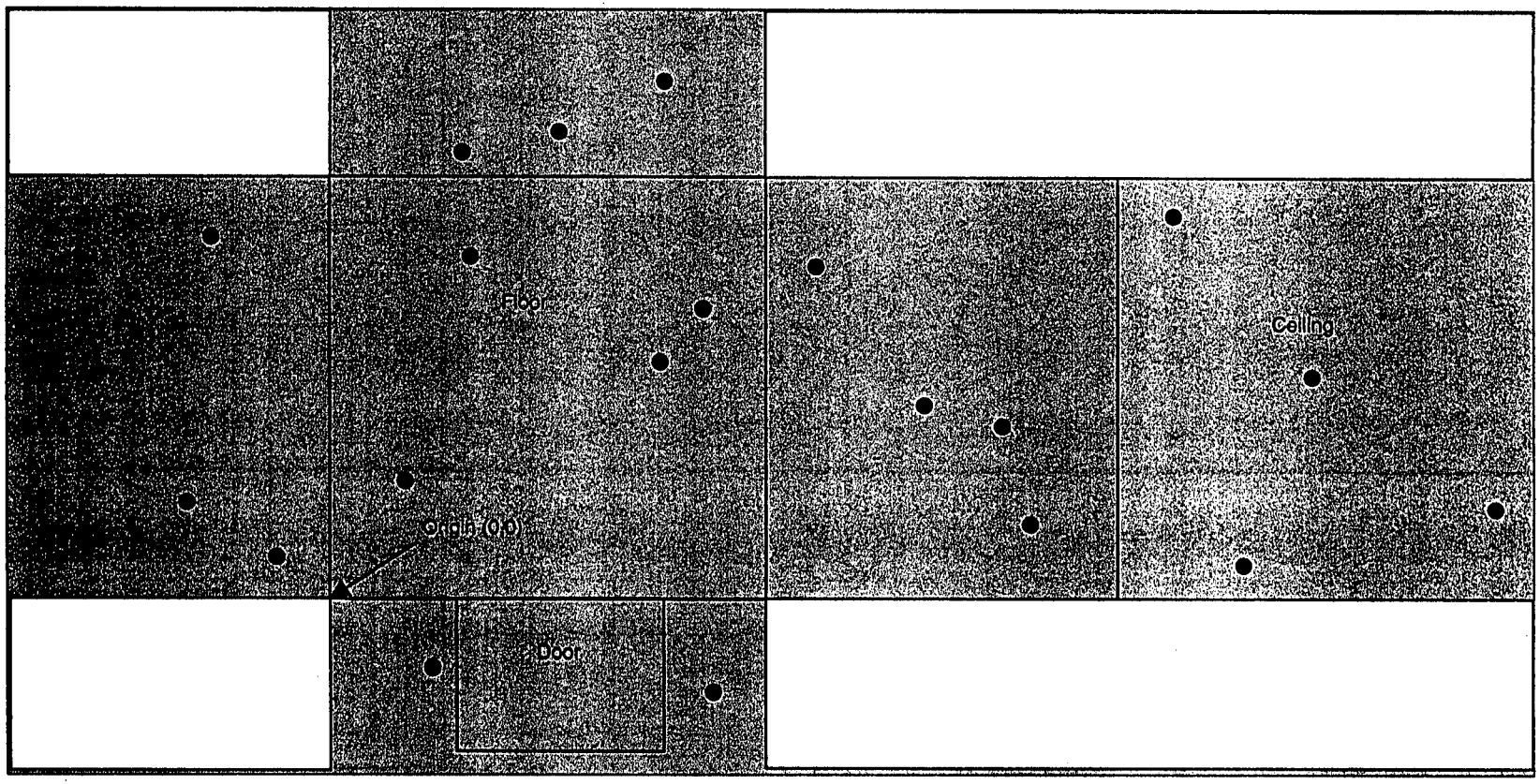
Survey Unit 3 Room 2



Front of Building

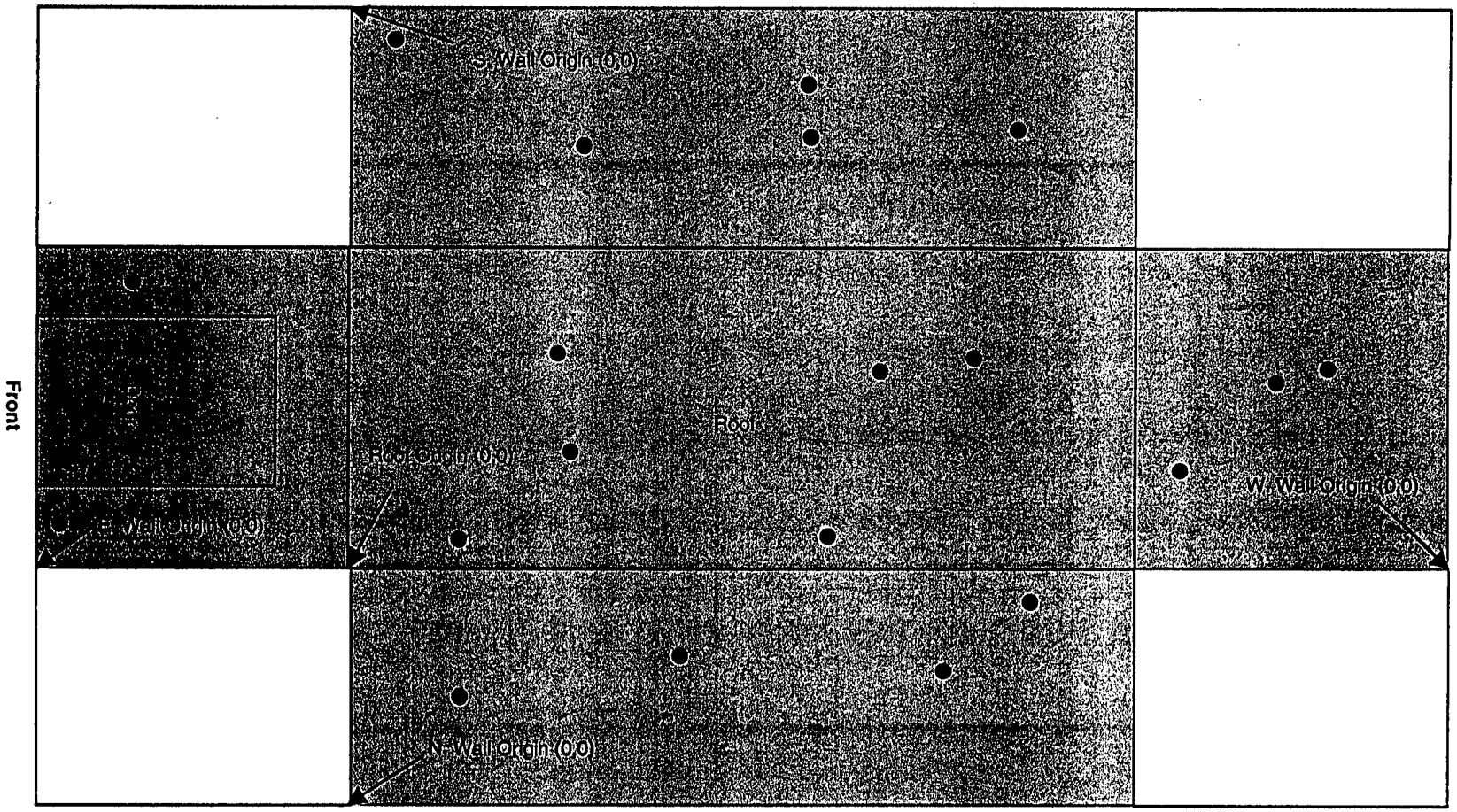
G156 of 161

Survey Unit 4 Room 4

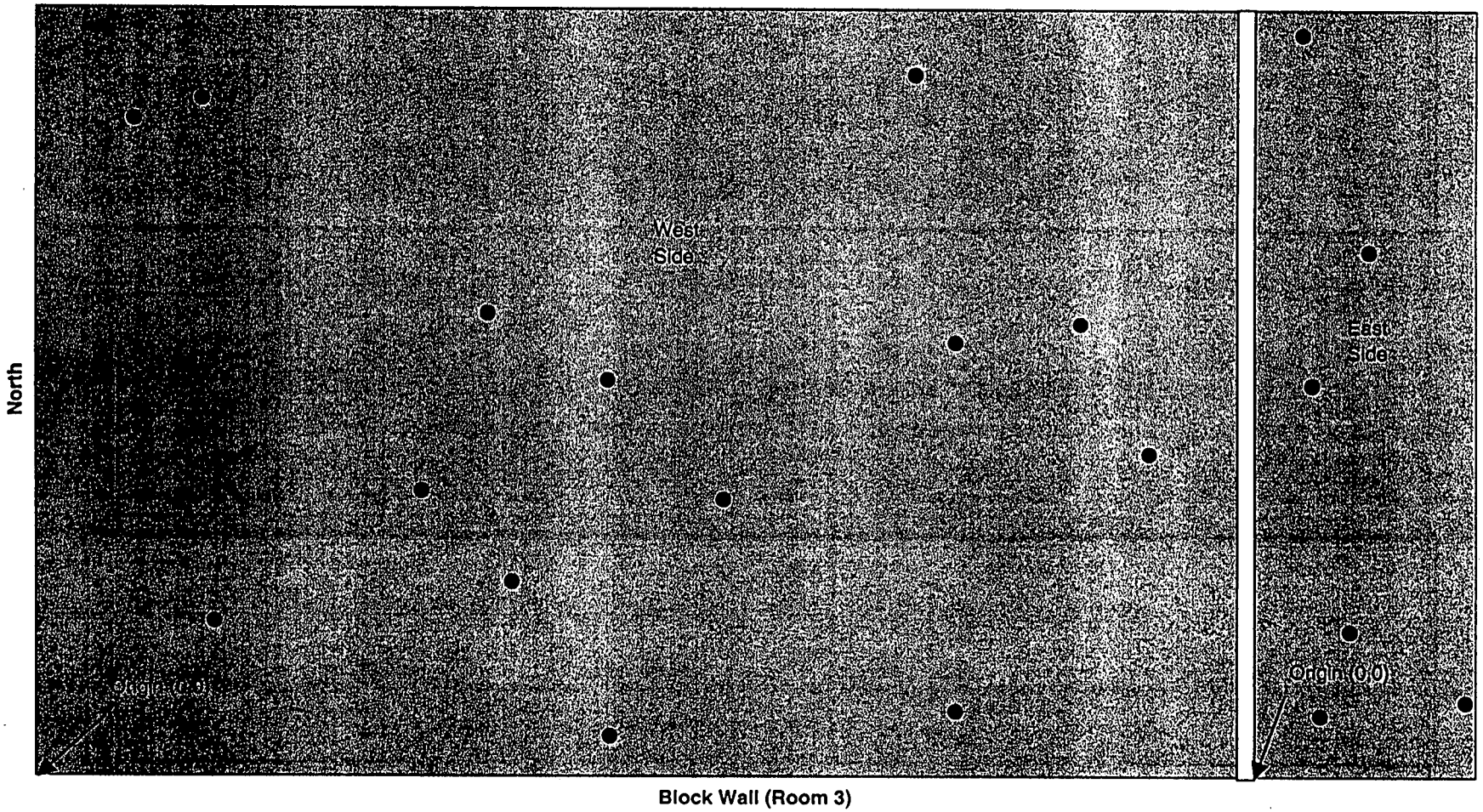


Front

Survey Unit 5 Room 4



Survey Unit 6



G-157 of 161

Data Point Coordinates

Survey Unit 1	
X	Y
5	19
12	19
19	19
1	13
8	13
15	13
22	13
29	13
-2	7
5	7
12	7
19	7
26	7
1	1
8	1
15	1
22	1
29	1
5	-5
19	-5

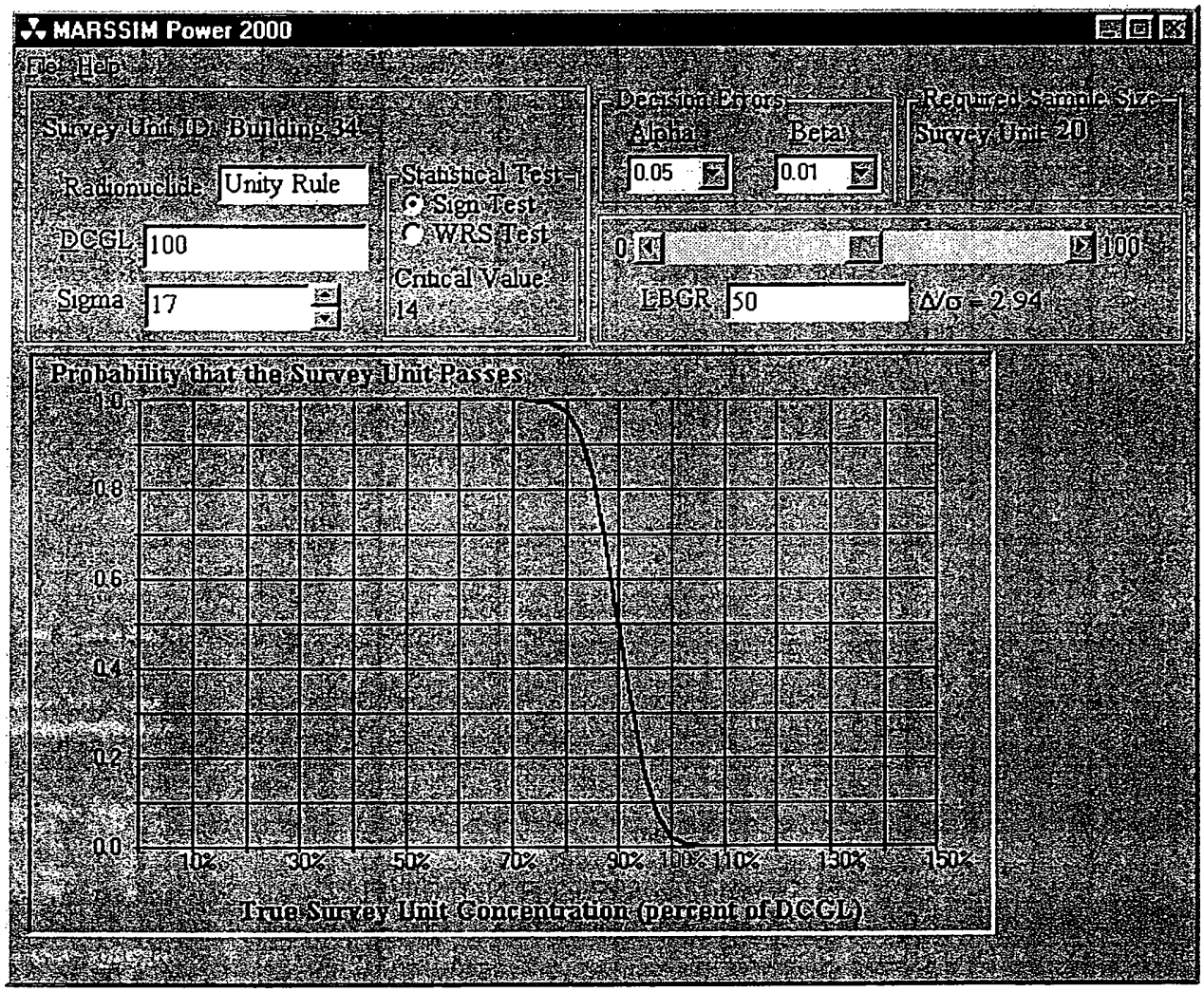
Survey Unit 2	
X	Y
20	3
2	1
1	5
5	7
18	7
2	12
4	1
2	1
3	9
4	13
24	5
11	5
14	10
16	5
6	1
19	1
2	9
5	6
22	2
8	12

Survey Unit 3	
X	Y
2	6
9	14
1	12
18	9
9	1
1	4
12	2
2	15
5	12
18	11
17	13
1	8
1	3
13	11
7	4
24	7
10	13
12	4
17	3
25	12

Survey Unit 4	
X	Y
8	25
2	6
3	21
-4	5
29	4
6	22
4	16
12	16
-3	17
24	11
3	-3
10	-4
17	8
21	18

Survey Unit 5	
X	Y
6	5
12	1
8	5
2	10
3	7
7	3
14	7
16	7
3	1
5	7
15	5
17	4
3	4
17	7

Survey Unit 6	
X	Y
23	8
14	1
23	1
2	15
11	9
17	5
2	8
12	4
4	13
22	14
28	6
10	6
4	3
26	9



MARSSIM Power 2000 software developed by Dr. Carl Gogolak, DOE/EML is provided on the Health Physics Society Decommissioning website (http://www.serversolutions.com/decomm_sec/index.htm) and endorsed by the Oak Ridge Institute for Science and Education (ORISE).

Appendix H

Radon Information

The USEPA recommended standard for a maximum radon level is 4.0 pCi/L.

UNC Geotech

UNC Geotech
2597 B 3/4 Road
P.O. Box 14000
Grand Junction, Colorado 81502-5504
303/242-8621

April 12, 1990

Dennis Murphy
EG&G Mound Applied Technonogies
P.O. Box 3000
Mound Road
Miamisburg, OH 45343-3000

Dear Mr. Murphy:

I have enclosed the results of the radon measurements made at your site as part of the DOE Indoor Radon Study. A copy of these results can be provided in electronic format if desired. The results will be forwarded to the study sponsor, the DOE Office of Projects and Facilities Management, by the end of April.

Please contact me at FTS 326-6293 or commercial (303) 248-6293 if you have any questions.

Sincerely yours,

Mark D. Pearson

Mark D. Pearson
Project Manager
UNC Geotech

cc: DOE Points of Contact

Bldg	Bldg Description	Room	pCi/l	pCi/l	Rsnid	Dupid	Date	Date	Comments
21		ABOVE AIR SAMPLER	161.1	125.0	1670055	1666782	12/14/89	2/16/90	MET - OLD THORIUM STORAGE
21		ABOVE AIR SAMPLERS	116.7		1660580		12/14/89	2/16/90	MET - OLD THORIUM STORAGE
	SW	19 MID EAST WALL	4.0		1661547		12/12/89	2/19/90	HISTORY OF ELEVATED READINGS
48		114 B CLOSET ON SPRINKLER PIPE	3.2		1671292		12/12/89	2/19/90	
19		ROOM 1	2.6		1670051		12/13/89	2/19/90	
	OLD SO BLDG	BASEMENT RIGHT CABINET	2.4		1661595		12/14/89	2/19/90	
55		1 BELOW THERMOSTAT ON E WALL	2.1		1661515		12/18/89	2/19/90	
57		ROOM 1	1.8		1661565		12/12/89	2/19/90	
87		143	1.5		1661563		12/13/89	2/19/90	
998	FIRE STATION	ROOM 002 EQUIPMENT ROOM WITH SUMP	1.4		1654460		12/12/89	2/19/90	
24		ROOM 1 PLANT NORTH WALL	1.3		1672067		12/12/89	2/19/90	
	PAINT SHOP	PS 4	1.2		1661510		12/12/89	2/16/90	
30		ROOM 3 EAST	1.1		1671262		12/12/89	2/16/90	
100		103 MIDDLE OF NORTH WALL	1.0		1670060		12/12/89	2/19/90	
37		6 NORTH WALL	1.0		1670046		12/12/89	2/19/90	
34		34 A WEST WALL	.9	.6	1672062	1672042	12/12/89	2/16/90	MET
102		123	.9		1661577		12/14/89	2/19/90	
61		RM 221 MIDDLE OF NORTH WALL	.9		1661565		12/13/89	2/19/90	
67		101 N	.9		1670029		12/12/89	2/19/90	
G-13	LOG	G-514 WEST WALL	.9		1661544		12/12/89	2/16/90	
	T	CORRIDOR 20	.9		1670039		1/15/90	2/19/90	
	T	153	.9		1670067		1/15/90	2/19/90	
	T	78	.9		1670077		1/15/90	2/19/90	
	T	30	.9		1661566		1/15/90	2/19/90	
105	PARTS MACHINING BUILDING	STAIRWELL NEXT TO ROOM 127	.8		1661564		12/12/89	2/19/90	
25	ARAC	3 ON BOOK CASE MIDDLE	.8		1671314		12/15/89	2/19/90	
60		1 ON DOOR TO ROOM 3	.8		1670049		12/12/89	2/19/90	
	A	153C CENTER CUBICLE WEST WALL	.8		1672056		12/14/89	2/16/90	
	C BUILDING OLD CAFETERIA	NORTHEAST SECTION INTERNAL WALL RM2	.8		1672052		12/12/89	2/16/90	
	R BUILDING	68 NORTH WALL	.8		1670050		12/13/89	2/16/90	
	SW	8 WEST WALL AT OLD RECOVERY	.8		1672057		12/11/89	2/16/90	
	WO BLDG	WO 8	.8		1670045		12/18/89	2/16/90	
87		124	.8		1670032		12/12/89	2/19/90	
88		ROOM 116 ON NORHT WALL RIGHT OF CEN	.7	.5	1661524	1661535	12/12/89	2/19/90	
89		101 NEAR BACK CORNER BY ROOF DRAIN	.7	.5	1666783	1660532	12/15/89	2/19/90	
22		RM 1 EAST CORRIDOR ON STORAGE RACK	.7		1670070		12/13/89	2/19/90	
56	FIRE PUMP HOUSE	ROOM 1 THERE IS ONLY 1 ROOM	.7		1670066		12/12/89	2/19/90	
	E ANNEX	E 225 EAST WALL	.7		1661552		12/18/89	2/16/90	
	POWER HOUSE PH-1	REPAIR SHOP NORTH EAST CORNER	.7		1670040		12/12/89	2/19/90	
	W BLDG	W-135	.7		1661553		12/12/89	2/16/90	
26		ROOM 84 SOUTH WEST WALL	.6	.9	1672040	1667150	12/13/89	2/16/90	
69		RM 7 ON NORTH WALL	.6	.4	1672044	1672077	12/12/89	2/19/90	
26		ROOM 84 SOUTH WEST WALL	.6		1671270		12/12/89	2/16/90	
35		RM 7	.6		1654450		12/14/89	2/19/90	
38	PP BLDG	PP CORR 136	.6		1670016		12/14/89	2/19/90	
72		ON OVERHEAD DOOR BEAM	.6		1672069		1/03/90	2/19/90	
93		HALLWAY 107 (HIGHWAY)	.6		1661629		12/13/89	2/20/90	
98	FIRE STATION	ROOM 114 DORK	.6		1661507		12/12/89	2/19/90	
	COS	RM STAIRWELL AT BASEMENT LEVEL	.6		1672066		12/14/89	2/19/90	
	OSW	120 C	.6		1661573		12/12/89	2/16/90	
	SW	150 WEST END GAS BOX	.6		1670042		12/11/89	2/16/90	
	A	34 EAST WALL	.5	.7	1672075	1672051	12/14/89	2/16/90	
47		102 MIDDLE OF EAST WALL	.5	.5	1650110	1666819	12/12/89	2/16/90	

Area	Bldg	Bldg Description	Room	Avg Radon pCi/l	Duplicate Radon pCi/l	Monid	Dupid	Monitor Install Date	Monitor Retrieve Date	Comments
	45		WORK STATION AREA	.4		1681568		12/14/89	2/19/90	
	46		81 EAST WALL	.4		1672070		12/12/89	2/19/90	
	49		WALL OUTSIDE RM 125	.4		1670020		12/14/89	2/19/90	
	51		107 TOP OF FUME HOOD	.4		1681575		12/12/89	2/19/90	
	63		ROOM 134	.4		1672059		12/13/89	2/20/90	
	63W		RM 4	.4		1670070		12/14/89	2/19/90	
	65		ROOM 10 CONFERANCE ROOM	.4		1671204		12/14/89	2/19/90	
	66		OFFICE AREA	.4		1681554		12/12/89	2/19/90	
	68		EAST WALL CENTER BEAM	.4		1681555		12/14/89	2/19/90	
	69		RM 10A	.4		1681576		12/12/89	2/19/90	
	70		170 MEETING ROOM CENTER WALL	.4		1670041		12/12/89	2/19/90	
	88		ROOM 116	.4		1671295		12/12/89	2/19/90	
	95	SN/PP	95- BLD-ROOM61	.4		1661531		12/12/89	2/20/90	
		DS BUILDING	CORRIDOR 2 - 6 FT. ABOVE FLOOR	.4		1670071		12/13/89	2/19/90	
		I	I HALLWAY	.4		1667194		12/12/89	2/19/90	
		N BUILDING	N 21 WEST WALL	.4		1670057		12/15/89	2/20/90	
		POWER HOUSE PH-1	OFFICE SUPERVISOR	.4		1670035		12/12/89	2/19/90	
		R BUILDING	12 SOUTH WALL	.4		1681566		12/13/89	2/19/90	
	34		BURN ROOM			1656481		12/12/89		BURNT (NOT AVAILABLE)
	61		RM 151			1681567		12/13/89		MISSING

Bldg	Bldg Description	Room	Avg Radon pCi/l	Duplicate Radon pCi/l	Monid	Dupid	Monitor Install Date	Monitor Retrieve Date	Comments
	R BUILDING	143 NEXT TO NORTH WALL	.5	.5	1666533	1666816	12/13/89	2/16/90	
101		ROOM 5 ON SOUTH WEST WALL IN OFFSET	.6		1671288		12/12/89	2/19/90	
	"B" 175	175 WEST WALL	.5		1678048		12/12/89	2/16/90	
36		ELECTRICAL PANEL RM IN ELECTRONICS	.5		1678062		12/12/89	2/19/90	
40		104	.6		1654480		12/13/89	2/16/90	
43		1 EAST WALL OVER WATER DISPENSER	.5		1678076		12/12/89	2/20/90	
44		ON BULLETTIN BOARD	.5		1678047		12/12/89	2/16/90	
47		102 MIDDLE OF EAST WALL	.5		1678059		12/12/89	2/16/90	
50		CELL 113	.5		1661502		12/13/89	2/19/90	
79		CENTRAL HALLWAY WEST OF DOOR TO RM7	.5		1661605		12/18/89	2/16/90	
89		101 NEAR BACK CORNER BY ROOF DRAIN	.5		1678079		12/15/89	2/19/90	
91		1ST FLOOR	.5		1661525		12/15/89	2/16/90	
91		2ND FLOOR OUTSIDE RM215	.5		1661593		12/15/89	2/16/90	
92		HALLWAY RIGHT OFF ROOM 8	.5		1661509		12/12/89	2/19/90	
94		BAY 2 NORTH WALL	.5		1654477		12/12/89	2/19/90	
	A	215 WEST WALL	.5		1661572		12/14/89	2/16/90	
	A	1040 WEST WALL	.5		1661580		12/14/89	2/16/90	
	COS	119 N WALL NEAR PUNCH PRESS	.5		1654456		12/12/89	2/19/90	
	COS	319 WALL CABINET TO RIGHT OF SINK	.5		1661590		12/12/89	2/19/90	
	E BUILDING	150 WEST WALL	.5		1678033		12/14/89	2/16/90	
	E BUILDING	103 WEST WALL	.6		1678072		12/14/89	2/16/90	
	E ANNEX	E 212 NORTH WALL	.5		1661587		12/18/89	2/16/90	
	GH BUILDING	ROOM 2	.5		1678065		12/12/89	2/16/90	
	GP 81	1A MIDDLE OF WEST WALL	.6		1678054		12/12/89	2/19/90	
	H BLDG	ROOM 127	.5		1661571		12/12/89	2/16/90	
	HH	HH-6	.5		1671269		12/19/89	2/19/90	
	I BUILDING	BASEMENT LEFT CRAWL SPACE DOOR	.5		1671260		12/12/89	2/19/90	
	K BUILDING	K 106	.5		1678056		12/15/89	2/19/90	
	OSE	CORRIDOR 437	.5		1661536		12/15/89	2/16/90	
	OSE	CORRIDOR 301 ACROSS FROM WATER FOUN	.5		1672084		12/15/89	2/16/90	
	OSM	4NT FLOOR	.5		1678020		12/12/89	2/16/90	
	OSE	CORR 212 SOUTH WALL NEAR 218 DOOR	.5		1678036		12/15/89	2/16/90	
	OSM	319	.5		1678069		12/13/89	2/16/90	
	OSM	2ND FLOOR	.5		1661611		12/12/89	2/16/90	
	POWER HOUSE PH-1	STATIONARY BOARD CORNER	.5		1678073		12/12/89	2/19/90	
	R BUILDING	145 WEST WALL ABOVE BALANCE	.5		1654538		12/14/89	2/16/90	
	SN/R TRITIUM COMPLEX	128 OVER LARGE METAL FLOOR DISC	.5		1678019		12/12/89	2/16/90	
	W BLDG	W135 WEST CENTRAL WALL	.5		1671293		12/12/89	2/16/90	
	WO BLDG	WOA 116	.5		1671301		12/18/89	2/16/90	
	"B" 124	EAST WALL	.5		1667188		12/12/89	2/16/90	
	OSE	113 BULLETIN BOARD OPPOSITE ELEVATO	.5		1678027		12/15/89	2/16/90	
TF-2		114 EAST WALL CENTER OF ROOM	.4		1678064		12/12/89	2/19/90	
	HH	HH-24	.4		1667187		12/14/89	2/19/90	
	DS BUILDING	CORRIDOR 7 NEXT TO ROOM 216	.4		1661614		12/13/89	2/19/90	
	GP 81	1A MIDDLE OF WEST WALL	.4	.6	1672135	1661542	12/12/89	2/19/90	
105	PARTS MACHINING BUILDING	136 QC OFFICE	.4		1678017		12/12/89	2/19/90	
27		CELL 8 - WALL	.4		1661583		12/12/89	2/19/90	
28	CERAMIC PRODUCTION	101	.4		1672061		12/12/89	2/19/90	
29		HALLWAY	.4		1672105		12/14/89	2/19/90	
	TEST FIRE BUILDING 3	3-315	.4		1672036		12/12/89	2/19/90	
38	PP BLDG	PP CORR 16/BAY 2 WALL	.4		1661570		12/14/89	2/19/90	
39		BREAK RM	.4		1678050		12/14/89	2/19/90	
42		101 B EAST WALL	.4		1678031		12/13/89	2/19/90	

Appendix I

Asbestos Information

From: Christopher Ahlquist
To: Darnell, Val; Kramer, Donald
Date: 4/9/03 4:13PM
Subject: Bldg 34 Asbestos & Lead Paint (rev)

Don & Val -

For the Building 34 complex asbestos and lead paint concerns, the following is provided for your use:

Asbestos

An asbestos survey was completed in August of 2002 by Helix Environmental, Inc. in accordance with EPA NESHAP requirements prior to demolition. No materials were found to contain asbestos which would have to be removed prior to demolition; material identified within the Helix report as "fire doors" and assumed to contain asbestos were subsequently verified by Mr. Christopher Ahlquist as not containing material suspect for asbestos. Mr. Ahlquist is certified in the State of Ohio as an Asbestos Hazard Evaluation Specialist as required by State regulation. Some of the roofing (approximately 400 square feet) is of a built-up asphalt variety and is assumed to contain asbestos - being classified as an EPA Nonfriable Category I type of material, its removal is not necessary prior to demolition by normal heavy-duty means. A copy of the survey report is being forwarded.

Lead

No previous lead surveys or sampling data could be found for Building 34. Observed paint coatings were largely intact.

Although untested paint coatings must be assumed to contain lead, the observed condition of the paint indicates that there are currently no lead paint hazards within the buildings. No further action would be necessary to protect occupant or worker health unless any coatings were to be disturbed by close worker contact (sanding, grinding, scraping, torch cutting, etc.). If these types of activities are planned, the affected paint coatings should be tested to verify the absence of lead. Since the building is scheduled for demolition, these restrictions should be incorporated into any work plans for which disturbance of paint is a possibility.

In accordance with guidance from Mound Waste Management, paint coatings should not result in a hazardous waste issue during the course of normal demolition by heavy-duty means.

These determinations were made by Mr. Christopher Ahlquist who is an Ohio Department of Health Licensed Lead Risk Assessor.

Let me know if I can be of further assistance,

Chris Ahlquist

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HELIX ENVIRONMENTAL, INC.

PRE-DEMOLITION ASBESTOS INSPECTION BUILDING 34 MOUND FACILITY. MIAMISBURG, OHIO

Prepared for

Mr. Dave Pratt, Senior Buyer
BWXT of Ohio, Inc.
P.O. Box 3030, OSE 216
1 Mound Road
Miamisburg, Ohio 45343-3030

Prepared by

HELIX ENVIRONMENTAL, INC.
1 East Stewart Street
Dayton, Ohio 45409

Ralph A. Froehlich, CIH, CSP, QEP
Certified Industrial Hygienist No. AP-2631

Report Date: Aug., 2002

Helix Job No. 3200

THIS REPORT CONTAINS INFORMATION ON THE ASBESTOS CONTENT OF BUILDING MATERIALS WHICH IS REQUIRED TO BE MAINTAINED FOR THE LIFE OF THE BUILDING. THIS REPORT MUST BE PROVIDED TO SUBSEQUENT BUILDING OWNERS AS REQUIRED BY 29 CFR 1926.1101

I 3 of 38

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PRE-DEMOLITION ASBESTOS INSPECTION
BUILDING 34, MOUND, MIAMISBURG, OHIO
JULY, 2002

TABLE OF CONTENTS

		Page
1.	EXECUTIVE SUMMARY	1
2.	BACKGROUND	3
3.	INSPECTION AND SAMPLING PROCEDURES	5
4.	ANALYTICAL PROCEDURES	6
5.	APPLICABLE STANDARDS	7
6.	ANALYTICAL RESULTS	9
7.	DISCUSSION AND RECOMMENDATIONS	11
8.	APPENDICES	13

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1. EXECUTIVE SUMMARY

On July 10, 2002, Helix Environmental, Inc. contracted with BWXT of Ohio, Inc. to conduct an asbestos-containing building materials inspection of Building 34 and other buildings at the Mound Site for the U.S. Department of Energy in Miamisburg, Ohio. The asbestos inspection was necessary to identify, quantify and evaluate the condition of regulated asbestos-containing building materials (RACBM) prior to the start of building demolition, and to confirm negative suspect asbestos-containing building materials identified during previous inspections. This report summarizes the inspection procedures, sampling and analytical methods, and analytical results, with recommendations for consideration.

The following materials were identified as suspect asbestos building materials in Building 34:

- 2' x 4' Ceiling Tile
- Tan Textured Paint on interior of exterior steel walls
- Fire Doors (assumed)
- Builtup Roofing Materials (assumed)

A total of three bulk samples were collected to to confirm the negative results of suspect-asbestos containing materials from previous inspections. Roofing materials and fire doors were assumed to contain asbestos, in accordance with current OSHA and EPA regulations and the scope of work for the project. Roofing materials are considered Category I Nonfriable Materials under current U. S. EPA regulations, and can remain in the building during demolition. Other assumed asbestos-containing materials should be treated as asbestos-containing materials until sampling and analytical information is available to document that these materials do not contain more than 1% asbestos.

The sampling results document the following confirmed and assumed asbestos-containing materials in Building 34:

- Fire doors (assumed)
- Builtup Roofing Materials (assumed - Category I Nonfriable)

Work which disturbs asbestos-containing materials could result in airborne fiber releases and exposures to workers and building occupants. OSHA regulations require air sampling to document worker exposures to asbestos whenever these materials are disturbed, as well as training for all workers who perform such work.

State and federal environmental regulations also apply to work which damages the materials during demolition. In Ohio, if more than 50 SF or 50 LF of friable regulated asbestos-containing materials must be removed using methods which may damage them, a certified asbestos abatement contractor would be required for this work. Advance notification (ten working days) is also required prior to the start of removal.

Based on the results, Helix Environmental, Inc. recommends that:

1. **BWXT of Ohio, Inc. maintain copies of the information from this asbestos inspection and sampling with Building 34 records.** This information must be maintained for the duration of ownership of the building, and must be transferred to subsequent owners. This may most easily be accomplished by maintaining a copy of this report in a secure location with other building records.

2. **Identified asbestos-containing materials should not be disturbed or removed except by properly trained and equipped personnel.** Since the planned demolition may disturb more than 50 SF or 50 LF of these materials, the regulated materials should be removed by trained workers or a licensed asbestos abatement contractor prior to the start of demolition. Removal of the doors can be performed by disassembling the fire doors from the frames without disturbing any insulation within the fire doors.

3. **Air sampling should be performed during any work which disturbs the integrity of identified asbestos-containing materials, in accordance with OSHA regulations.** While disturbance of insulation within fire doors is unlikely, if it occurs, air sampling is recommended. Air monitoring should be performed by experienced industrial hygienists under the direction of a Certified Industrial Hygienist to document airborne exposures to asbestos inside and outside of the work area, before, during and after the abatement work. Certified personnel and laboratories should be used to provide adequate documentation of airborne fiber levels. Records of the abatement operation should be maintained for a minimum of thirty years.

4. **Provide ten working-day advance notification to the Regional Air Pollution Control Agency prior to the start of demolition.** Notification is required by U. S. EPA regulations (40 CFR 61M) even if no asbestos-containing building materials have been identified in the building, in order to allow regulatory officials to reinspect the building.

2. BACKGROUND

On July 10, 2002, Helix Environmental, Inc. contracted with BWXT of Ohio, Inc. to conduct an asbestos-containing building materials inspection of Building 34 at the Mound Site for the U.S. Department of Energy in Miamisburg, Ohio. The asbestos inspection was necessary to identify, quantify and evaluate the condition of regulated asbestos-containing building materials (RACBM) prior to the start of building demolition, and to confirm negative suspect asbestos-containing building materials identified during previous inspections.

The inspection and sampling were performed on July 22, 2002 by Ralph Froehlich, CIH, CSP, QEP. and Mr. Cameron Day, Industrial Hygienist. Mr. Froehlich is a Certified Industrial Hygienist with more than twenty years experience in the fields of occupational and environmental health. Mr. Froehlich is certified by the Ohio Department of Health as an Asbestos Hazard Evaluation Specialist, Asbestos Hazard Abatement Specialist, and as an Asbestos Project Designer (Cert. Nos. 3074, 2112, and 60038, respectively). Mr. Day has over two years experience in the fields of occupational safety and health and is certified by the Ohio Department of Health as an Asbestos Hazard Evaluation Specialist (Cert. No. 33958).

Building 34 is composed of three structures: two sheet metal buildings identified as Rooms 2 and 4 on the site plan, and one concrete block structure identified as Room 1. A covered walkway identified as Room 3 linking the concrete block building to the larger sheet metal building had been removed, leaving an uncovered walkway. The buildings were built in 1966. Currently, both of the metal buildings are occupied and operational. The concrete block building has radiation controlled areas and was inacessible for entry, however the interior could be viewed from the outside and no suspect materials were observed inside of the concrete block building.

In 1989, Pedco Environmental, Inc. reported that the no suspect asbestos-containing building materials were found in Building 34.

In 1993, Barge, Waggoner, Sumner & Cannon, Miamisburg, Ohio, inspected selected buildings at the Mound facility, including Building 34. In the inspection report, only one suspect asbestos-containing material was found and assumed to contain to contain asbestos:

- Transite Lab Hood (assumed)

Helix Environmental, Inc. was directed to inspect the building to identify all suspect regulated asbestos-containing materials, and to sample and verify the asbestos content of all previously-identified suspect asbestos-containing materials for which previous sample results were found to contain less than 1% asbestos. Regulated asbestos-containing materials that had been previously identified were assumed to contain asbestos. Materials that had not been previously identified as suspect asbestos-containing materials were also to be sampled if they were not assumed asbestos-containing Category I Nonfriable materials (resilient flooring materials, bituminous roofing materials, gaskets). were not sampled, in accordance with directions from Mr. Chris Alquist, BWXT of Ohio, Inc. In addition, Helix Environmental, Inc. was directed to assume that all fire doors contained asbestos.

3. INSPECTION AND SAMPLING PROCEDURES

The following materials were identified as suspect asbestos-containing building materials, based on a room-by-room inspection of the building:

- 2′ x 4′ Ceiling Tile
- Tan Textured Paint on interior of exterior walls
- Fire Doors (assumed)
- Builtup Roofing Materials (assumed)

The results of the room-by-room inspection are contained in the appendices.

A total of three bulk samples were collected of suspect asbestos-containing materials by Helix Environmental, Inc. using appropriate hand sampling tools and random sampling techniques. Samples were placed in labeled resealable sampling bags. The outside of the sampling container, all sampling tools, and the immediate area were then wiped using new moist towelettes to minimize the possibility of cross contamination. The single-use towelettes were properly disposed off site by Helix Environmental, Inc. personnel. Sampling locations were sealed using labeled duct tape and then photographed for documentation purposes. Sampling personnel from Helix Environmental, Inc. used personal protective equipment where necessary, including half-face air-purifying respirators with HEPA cartridges during sampling, to minimize the possibility of personal exposure to asbestos.

Confirmed and suspect asbestos-containing materials were assessed as to the type of material, amount, condition and disturbance potential, and noted on physical assessment records. Condition of materials were rated as to the extent of damage to the material. Undamaged material was given a condition assessment of "good". Materials having less than 25% localized or less than 10% distributed damage were given a "fair" (damaged) condition assessment. Materials having more than 25% localized or more than 10% distributed damage were given a "poor" (significantly damaged) condition assessment.

4. ANALYTICAL PROCEDURES

Bulk asbestos samples were sent to Schneider Laboratories, Inc., Richmond, Virginia, where they were analyzed via Polarized Light Microscopy with dispersion staining in accordance with the U.S. Environmental Protection Agency's Interim Methods for the Determination of Asbestos in Bulk Insulation Samples (EPA-600/R-93/116, June, 1993.) Under this method, the limit of detection for asbestos is about 1 percent by area. Samples containing smaller amounts of asbestos are not reliably detected by this technique. Polarized light microscopes equipped with 10X eyepieces, 10X and 40X objective lenses and dispersion staining lenses were used to identify fibers present in the samples.

Schneider Laboratories, Inc. maintains accreditation from the American Industrial Hygiene Association and has received accreditation through successful participation in the NIST National Voluntary Laboratory Accreditation Program (NVLAP) for bulk asbestos. AIHA-accredited laboratories are scrutinized on a regular basis to ensure that personnel, equipment, facilities and data are maintained. In addition, AIHA-accredited laboratories have well-developed assurance/quality control programs to ensure that analytical results accurately reflect conditions present during the sampling periods. Analytical results are attached in the appendices.

5. APPLICABLE STANDARDS

Asbestos

The U.S. EPA has established regulations which apply to friable and potentially friable materials with asbestos content in excess of 1%, as determined by PLM. These regulations establish required notification, removal techniques, and disposal of regulated asbestos-containing materials. The Ohio EPA has established additional regulations paralleling those of the U.S. EPA. "Friable" means that a suspect material can be reduced to a powder by hand pressure when dry and denotes a material that is capable of releasing significant amounts of asbestos fibers to the air. Potentially-friable materials are those that may release asbestos fibers to the air if they are extensively damaged during demolition operations, and include Category I Nonfriable materials in poor condition and Category II Nonfriable materials. Category I Nonfriable materials include bituminous roofing materials, resilient flooring materials, and gaskets, where the asbestos is mixed in a resilient matrix. Category I Nonfriable materials may be left in buildings when they are demolished, if the materials are not in poor condition. Category II Nonfriable materials include all other non friable materials, and they must be removed from buildings prior to their demolition, since demolition activities may release significant amounts of asbestos into the air (40 CFR 61 Subpart M). The Ohio EPA has established equivalent regulations for Ohio.

Additionally, U. S. EPA has promulgated regulations governing the management of asbestos in public and non-profit private school buildings, grades K-12 (40 CFR 763.80 ff), which detail the sampling and analytical protocols followed during a school asbestos inspection, as well as additional requirements for the training and certification of professionals involved in the inspection and management of asbestos materials. The requirements for training and certification have been extended by congressional action to cover all persons involved in asbestos inspection, project design, supervision and abatement work, as part of the Asbestos School Hazard Abatement Reauthorization Act (ASHARA). U. S. EPA has also promulgated regulations for the protection of public sector workers (40 CFR 763.120)

The Occupational Safety and Health Administration (OSHA) revised its asbestos regulations to reduce the eight-hour Time-Weighted Average (TWA) Permissible Exposure Limit to 0.1 fibers/cc (29 CFR 1910.1001, 29 CFR 1926.1101). A 30-minute Excursion Limit of 1 fiber/cc is also included with the standards. Asbestos-containing materials are defined as those that contain more than 1% asbestos. These regulations include complex requirements for asbestos abatement, dividing the

work with and around asbestos into four classes, with varying requirements for each class. An additional requirement calls for building owners and managers to keep information on asbestos-containing materials with each building, until all asbestos-containing materials have been removed from the building.

The American Conference of Governmental Industrial Hygienists (ACGIH) has proposed an airborne eight-hour TWA Threshold Limit Value of 0.1 fibers/cc (2001 TLVs). ACGIH TLVs denote concentrations and conditions to which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect.

The National Institute for Occupational Safety and Health (NIOSH) identifies asbestos as an occupational carcinogen, and recommends that occupational exposures be "limited to the lowest feasible concentration."

The Ohio Department of Health has established additional regulations for asbestos abatement, including a certification program for asbestos supervisors, workers, inspectors and management planners, project designers, and air monitoring technicians. ODOH regulations also require contractors to be licensed, and require 10 working day advance notifications for asbestos abatement in amounts over 50 LF or 50 SF of friable asbestos-containing material (OAC 3701-34).

Montgomery County, Ohio has adopted local regulations which require advance notification when more than 50 SF or 50 LF of friable asbestos-containing building material is removed.

6. ANALYTICAL RESULTS

The sample results are as follows:

TABLE 1: SUMMARY OF ASSUMED AND CONFIRMED ASBESTOS-CONTAINING MATERIALS AT BUILDING 34, MOUND, MIAMISBURG, OHIO, JULY, 2002

Sample Number	Lab Number	Location	Amount	Condition	Result
Fire Doors	--	Building 34 Doors	4 Doors	Fair	Assumed
Roofing Materials		Concrete Block Building, Room 1	400 SF	Fair	Assumed

TABLE 2: SUMMARY OF CONFIRMED NONASBESTOS MATERIALS AT BUILDING 34, MOUND, MIAMISBURG, OHIO, JULY, 2002

Sample Number	Lab Number	Location	Result
2' x 4' Ceiling Tile Shortways Fissures and Holes			
3200-7-22-20	2346451	Southeast corner of office, Room 2	No Asbestos Detected
3200-7-22-22	2346453	Northwest corner of office, Room 2	No Asbestos Detected
Tan Textured Paint on Interior of Exterior Walls			
3200-7-22-21	2346452	Northwest corner under fiberglass insulation, Room 2	No Asbestos Detected

7. DISCUSSION AND RECOMMENDATIONS

A total of three bulk samples were collected to confirm the negative results of suspect-asbestos containing materials from two previous reports and to document the asbestos content of additional suspect materials identified in the building. Category I Nonfriable materials and fire doors were also assumed to contain asbestos.

The sampling results document the following confirmed and assumed asbestos-containing materials in Building 34:

- Fire doors (assumed)
- Builtup Roofing (assumed - Category I Nonfriable)

Other suspect materials were found to contain no detectable asbestos.

Costs for the removal of the asbestos-containing materials needed to demolish Building 34 are estimated to be as follows:

Material	Estimated Quantity	Est. Unit Cost	Est. Cost
Fire Doors	7 Doors	$100/Door	$700
ESTIMATED TOTAL			$700

These estimated costs reflect asbestos removal and disposal costs in southwest Ohio, but may vary significantly, due to scheduling, bidding procedures and other factors. They do not include costs for development of bid specifications or contractor surveillance and air monitoring expenses.

Work which disturbs asbestos-containing materials could result in airborne fiber releases and exposures to workers and building occupants. OSHA regulations require air sampling to document worker exposures to asbestos whenever these materials are disturbed, as well as training for all workers who perform such work. State and federal environmental regulations also apply to work which damages the materials during demolition. In Ohio, if more than 50 SF or 50 LF of friable regulated asbestos-containing materials must be removed using methods which may damage them, a certified asbestos abatement contractor would be required for this work. Advance notification (ten working days) is also required prior to the start of removal.

Based on the results, Helix Environmental, Inc. recommends that:

1. **BWXT of Ohio, Inc. maintain copies of the information from this asbestos inspection and sampling with Building 34 records.** This information must be maintained for the duration of ownership of the building, and must be transferred to subsequent owners. This may most easily be accomplished by maintaining a copy of this report in a secure location with other building records.

2. **Identified asbestos-containing materials should not be disturbed or removed except by properly trained and equipped personnel.** Since the planned demolition may disturb more than 50 SF or 50 LF of these materials, the regulated materials should be removed by trained workers or a licensed asbestos abatement contractor prior to the start of demolition. Removal of the doors can be performed by disassembling the fire doors from the frames without disturbing any insulation within the fire doors.

3. **Air sampling should be performed during any work which disturbs the integrity of identified asbestos-containing materials, in accordance with OSHA regulations.** While disturbance of insulation within fire doors is unlikely, if it occurs, air sampling is recommended. Air monitoring should be performed by experienced industrial hygienists under the direction of a Certified Industrial Hygienist to document airborne exposures to asbestos inside and outside of the work area, before, during and after the abatement work. Certified personnel and laboratories should be used to provide adequate documentation of airborne fiber levels. Records of the abatement operation should be maintained for a minimum of thirty years.

4. **Provide ten working-day advance notification to the Regional Air Pollution Control Agency prior to the start of demolition.** Notification is required by U. S. EPA regulations (40 CFR 61M) even if no asbestos-containing building materials have been identified in the building, in order to allow regulatory officials to reinspect the building.

8. APPENDICES

Bldg 34 Suspect ACM

Location/ Rm.	Description	ACM	TSI	Surfacing	Misc.	Flooring	Ceiling Tile	Quantity	Sampled By
Bldg 34 Room 2	Texturized Paint	n		x				600 SF	Helix Env.
Bldg 34 Room 2	2'x4' Ceiling Tile Shortways Fissures and holes	n					x	400 SF	Helix Env.
Concrete Block Bldg	Roofing Material	y			x			400 SF	Assumed
Bldg 34	Fire Doors	y			x			2 Doors	Assumed
Concrete Block Bldg	Fire Doors	y			x			3 Doors	Assumed
Metal Flammables Bldg	Fire Doors	y			x			2 Doors	Assumed

APPENDIX A: ROOM-BY-ROOM INVENTORY OF ASSUMED ASBESTOS-CONTAINING MATERIALS

HELIX ENVIRONMENTAL, INC.

ASSUMED ACBM RECORD

PROJECT NO.	BUILDING NO./NAME	PAGE
3200	Mound Bldg 34	1
	SAMPLE AREA	DATE 7/22/02

TYPE OF MATERIAL: ☐ CEILING TILES ☐ FLOOR TILES/FLOORING ☐ THERMAL SYS. INSUL. ☐ SURFACING ☒ MISCELLANEOUS

INSPECTOR(S): R. Frankich

HSA CODE	CONDITION	DESCRIPTION / AMOUNT	LOCATION
	Poor	Texturized Paint on Interior Surface of Corrugated Steel Siding 600 SF	Bldg 34 Office Room 2
	Fair	Roofing Built up on Concrete Block Bldg 400 SF	Concrete Block Bldg. Rm 1
	Fair	Fire Doors 7 doors	Entrance doors to Rms 1, 4

NOTES: Covered Walk way identified as Room 3 on floor demolished.

HELIX ENVIRONMENTAL, INC.

ASSUMED ACBM RECORD

PROJECT NO..	BUILDING NO./NAME	PAGE
3200	Mound Bldg. 34	
	SAMPLE AREA	DATE 7/22/02

TYPE OF MATERIAL
- [x] CEILING TILES
- [ ] FLOOR TILES/FLOORING
- [ ] THERMAL SYS. INSUL.
- [ ] SURFACING
- [ ] MISCELLANEOUS

INSPECTORS: R. Hoelich

HSA CODE	CONDITION	DESCRIPTION / AMOUNT	LOCATION
	Good	2'x4' Ceiling Tile, Shorthaus Fissures & Holes (400 sf)	Bldg 34 Office (16'x24') Room 2

NOTES

APPENDIX B: SAMPLE DATA SHEETS

HELIX ENVIRONMENTAL, INC.

1 East Stewart Street ♦ Dayton, Ohio 45409 ♦ (937) 226-0650 ♦ www.helixenv.com
FAX – (937) 226-0653 ♦ helix@helixenv.com

LABORATORY: Schneider
DATE SAMPLED: 7/22/02
RUSH – YES OR NO DATE REQUIRED: 7/24/02
LOCATION: Miamisburg, Ohio
CONTRACTOR/CLIENT: BWXTO
BUILDING: Mound Bldg 34
INSPECTOR: K. Strachan Cameron E. Day
JOB NUMBER: 3200

BULK SAMPLE DATA SHEET | ANALYSES REQUESTED: Asbestos PLM

AB SAMPLE NO.	HELIX SAMPLE ID NUMBER	AMOUNT	REPRESENTATIVE SAMPLE LOCATION	MATERIAL DESCRIPTION	FRIABLE/ NON	CONDITION	COMMENTS
	3200-7-22-20	400SF	Bldg 34, SE Corner Office	2'x4' Ceiling Tile, Shorthways Fissured	F	Good	Holes
	3200-7-22-21	600SF	Bldg 34, NW Corner under FG Insulation, Office	Tan Textured Paint	N	Fair	
	3200-7-22-22		Bldg 34, NW Corner Office	2'x4' Ceiling Tile, Shorthways Fissures	F	Good	Holes
			2E289922 / 01988774				

THIS IS A CHAIN OF CUSTODY DOCUMENT. PLEASE COMPLETE, SIGN AND DATE. PLEASE RETURN ORIGINAL TO HELIX ENVIRONMENTAL, INC.

RECD	RELINQUISHED BY:	COMPANY:	DATE/TIME	RECD	RELINQUISHED BY:	COMPANY:	DATE/TIME
1	Cameron E. Day	Helix Env	7-22-02 / 5:00 pm	3			

4-PLM EHS 07-02-3458

SAMPLE C[illegible]TION

HELIX ENVIRONMENTAL, INC.

1 East Stewart Street ♦ Dayton, Ohio 45409 ♦ (937) 226-0650 ♦ www.helixenv.com
FAX – (937) 226-0653 ♦ helix@helixenv.com

LABORATORY: EHS LLC
DATE SAMPLED: 7/22/02
RUSH – YES OR (NO) DATE REQUIRED: 7/25/02
LOCATION: Miamisburg, Ohio
CONTRACTOR/CLIENT: BWXTO
BUILDING: Mound Bldg 98
INSPECTOR: K. Groelich, CEDay
JOB NUMBER: 3200

BULK SAMPLE DATA SHEET | ANALYSES REQUESTED: Asbestos PLM

LAB SAMPLE NO.	HELIX SAMPLE ID NUMBER	AMOUNT	REPRESENTATIVE SAMPLE LOCATION	MATERIAL DESCRIPTION	FRIABLE/ NON	CONDITION	COMMENTS
	3200-7-22-150A	1300 SF	Garage Rm 115, SE Corner	2'x4' Susp. Ceiling Tile, Textonized	N	Good	
	3200-7-24-140A		BLD 31, SOUTH WALL WEST SIDE	SPRAYED ON FIRE PROOFING	F	POOR	
	3200-7-24-010A		BLD 80, RM 9 WEST WALL DRAIN PENTRATION	DRYWALL + JOINT COMPOUND	N	FAIR	
	3200-7-24-520A		BLD 46 1 RMS MEZZANINE ABOVE RM 3	HARD PIPE TSI	F	GOOD	
			7/25/02 9:30				

THIS IS A CHAIN OF CUSTODY DOCUMENT. PLEASE COMPLETE, SIGN AND DATE. PLEASE RETURN ORIGINAL TO HELIX ENVIRONMENTAL, INC.

RECD	RELINQUISHED BY:	COMPANY:	DATE/TIME	RECD	RELINQUISHED BY:	COMPANY:	DATE/TIME

I 26 of 28

APPENDIX C: ANALYTICAL RESULTS

SCHNEIDER LABORATORIES

INCORPORATED
2512 W. Cary Street • Richmond, Virginia • 23220-5117
804-353-6778 • 800-785-LABS (5227) • (FAX) 804-353-6928
Excellence in Service and Technology
AIHA/ELLAP 100527, NVLAP 10150-0, NYELAP/NELAC 11413, CAELAP 2078, NC 593, SC 93003

LABORATORY ANALYSIS REPORT

Asbestos Identification by EPA Method 600/R-93/116

ACCOUNT: 904-02-1448
CLIENT: HELIX ENVIRONMENTAL
ADDRESS: 1 East Stewart Street Ste B
DAYTON, OH 45409-2624
PO NO.:
PROJECT NAME: Miamisburg, Ohio
PROJECT NO.: 3200
JOB LOCATION: Mound Bldg 34

DATE COLLECTED: 7/22/2002
DATE RECEIVED: 7/23/2002
DATE ANALYZED: 7/23/2002
DATE REPORTED: 7/24/2002

Client Sample No.	SLI Sample/ Layer ID	Sample Identification/ Layer Name	Asbestos Detected (Yes/No)	Sample Description
3200-7-22-20	2346451	Bldg 34 SE corner		
	Layer 1:	Ceiling Tile	No	Brown, Fibrous
	100% Non-Asbestos	CELLULOSE FIBER 20%, FOAMED GLASS 10%, MINERAL/GLASS WOOL 25%, NON FIBROUS MATERIAL 45%		
3200-7-22-21	2346452	Bldg 34 NW corner		
	Layer 1:	Paint	No	Gray, Brittle
	100% Non-Asbestos	NON FIBROUS MATERIAL 100%		
3200-7-22-22	2346453	Bldg 34 NW corner		
	Layer 1:	Ceiling Tile	No	Brown, Fibrous
	100% Non-Asbestos	CELLULOSE FIBER 20%, FOAMED GLASS 10%, MINERAL/GLASS WOOL 25%, NON FIBROUS MATERIAL 45%		

ANALYST: RIHAB O. ABOUZAKI
Total no. of pages in report = 1

Lori A. Perez
REVIEWED BY **Lori A. Perez, Analy**

Samples analyzed by the EPA Test Method are subject to the inherent limitations of light microscopy including interference by matrix components. Gravimetric reduction and correlative analyses are recommended for all non-friable, organically bound materials. For calibrated visual estimate, 1% is the concentration at which there is a quantitative uncertainty. This report relates only to the items tested, must not be reproduced except in full with the approval of the lab, and must not be used to claim NVLAP or other government agency endorsement.

ENVIRONMENTAL HAZARDS SERVICES, L.L.C.

7469 WHITE PINE ROAD - RICHMOND, VA 23237
804-275-4788 FAX 804-275-4907

BULK ASBESTOS SAMPLE ANALYSIS SUMMARY

CLIENT: Helix Environmental, Inc.
1 E. Stewart Street, Suite B
Dayton, OH 45409-2624

DATE OF RECEIPT: 25 JUL 2002
DATE OF ANALYSIS: 29 JUL 2002
DATE OF REPORT: 29 JUL 2002

CLIENT NUMBER: 36-2170 A
EHS PROJECT #: 07-02-3458
PROJECT: Miamisburg, Ohio; Mound Bldg 98; 3200

EHS SAMPLE #	CLIENT SAMPLE #/ LABORATORY GROSS DESCRIPTION	% ASBESTOS	OTHER MATERIALS
01	3200-7-22-15QA/ White Powder; Brown Fib.	NAD	10% Cellulose 90% Non-Fibrous
02	3200-7-24-14QA/ White Fib.	NAD	95% Fibrous Glass 5% Non-Fibrous
03	3200-7-24-01QA/ Brown Fib.; White Powder	NAD	10% Cellulose 90% Non-Fibrous
04	3200-7-24-32QA/ Gray Powder	NAD	10% Cellulose 15% Fibrous Glass 75% Non-Fibrous

QC SAMPLE: M11992-1

QC BLANK: SRM 1866 Fiberglass

REPORTING LIMIT: 1% Asbestos

METHOD: Polarized Light Microscopy, EPA Method 600/R-93/116 *

ANALYST: Laura Holder

Reviewed By Authorized Signatory:

Howard Varner, Laboratory Director
Irma Faszewski, Quality Assurance Coordinator
David Xu, MS, Senior Chemist
Feng Jiang, MS, Senior Geologist
Michael A. Mueller, Quality Assurance Manager

ENVIRONMENTAL HAZARDS SERVICES, L.L.C.

CLIENT NUMBER: 36-2170 A
EHS PROJECT #: 07-02-3458
PROJECT: Miamisburg, Ohio; Mound Bldg 98; 3200

Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided b the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government This report shall not be reproduced except in full, without the written consent of Environmental Hazards Services, L.L.C. Californi Certification #2319 NY ELAP #11714. All information concerning sampling location, date, and time can be found on Chain-of Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection.

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmissio Electron Microscopy (TEM), for enhanced detection capabilities) for materials regulated by the EPA NESHAP (National Emissio Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscop (PLM). Both services are available for an additional fee.

* All California samples analyzed by Polarized Light Microscopy, EPA Method 600/M4-82-020, Dec. 1982.

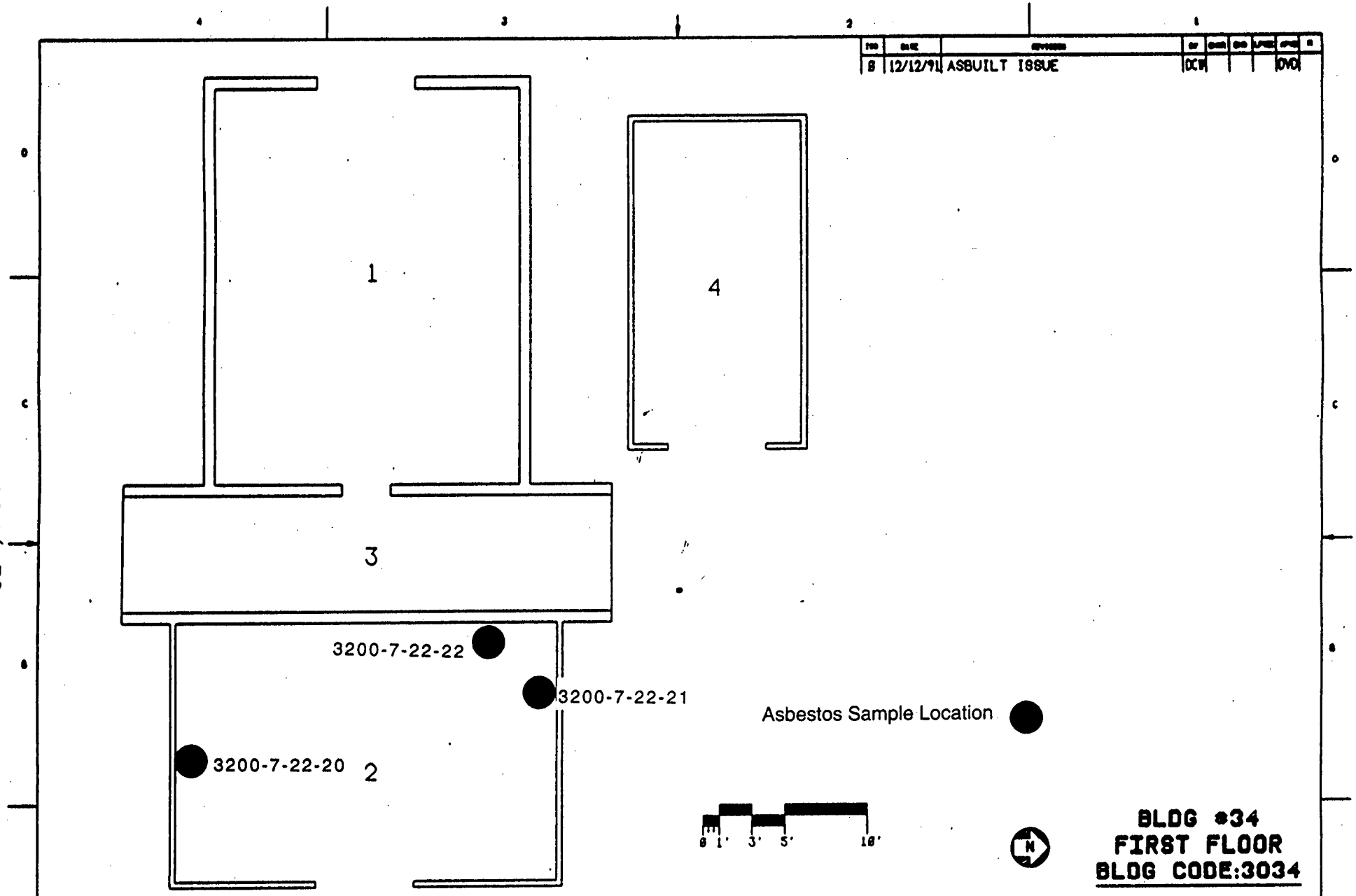
LEGEND NAD = no asbestos detected
SCF = suspected ceramic fibers

plm1.dot/07JAN2002/ pd

I 30 of 38

APPENDIX D: SAMPLE LOCATIONS

REV	DATE	REVISIONS	BY	CHKD	DWD	APVD	APVD	B
B	12/12/91	ASBUILT ISSUE	DCW				DVO	



BLDG #34
FIRST FLOOR
BLDG CODE:3034

MOUND FACILITY
BUILDING 34
MIAMISBURG, OHIO

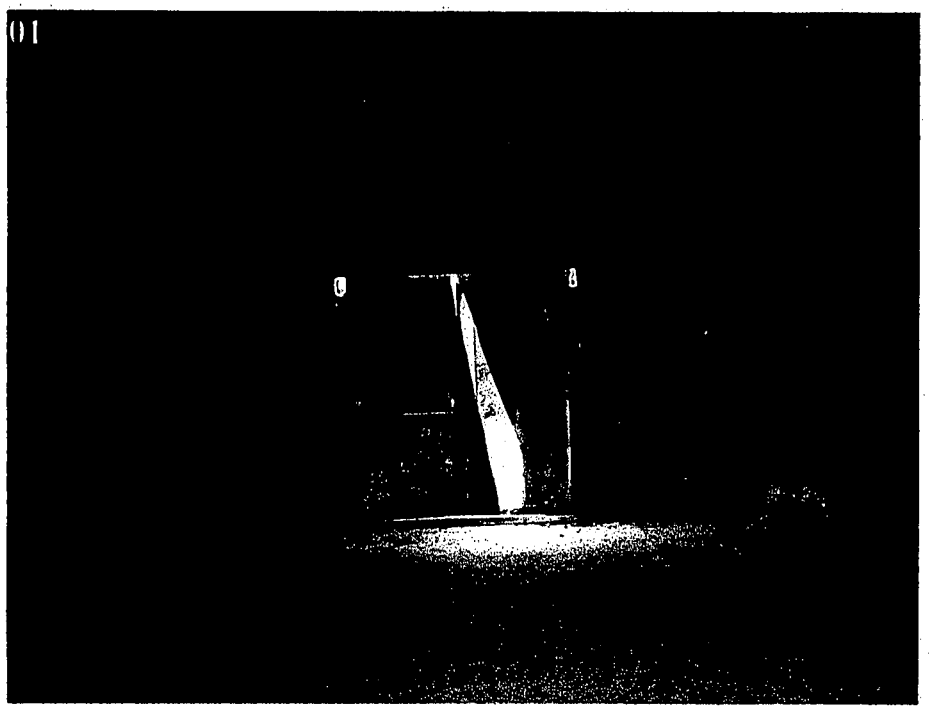
HELIX ENVIRONMENTAL, INC. | Aug 2002

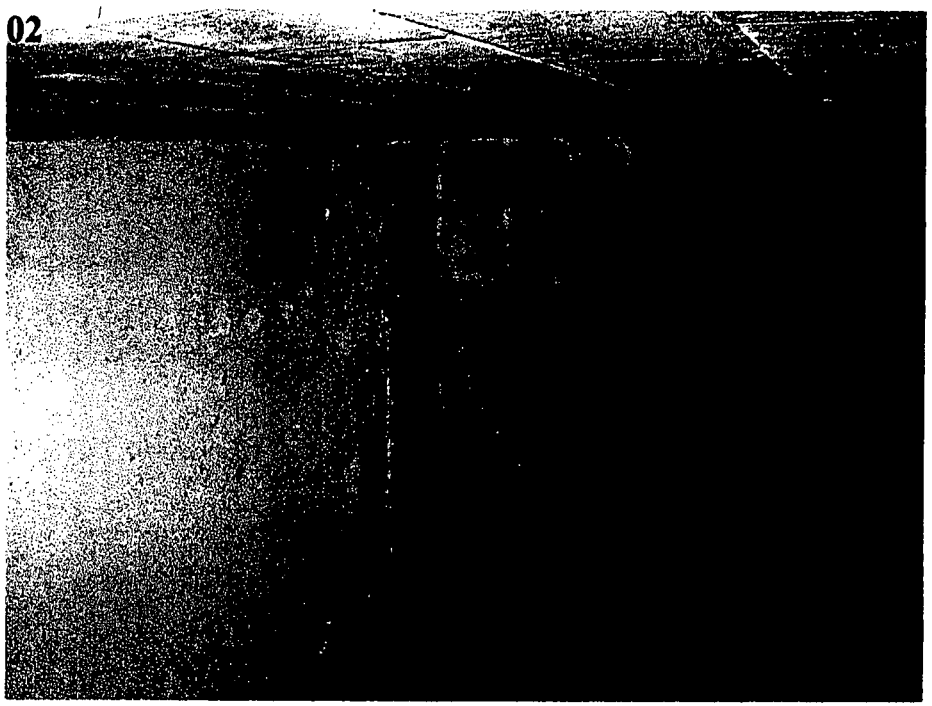
SHEET	1	2	3	4	5	6	TITLE	(U) TITLE CLASSIFICATION
ISSUE	B						BLDG #34 FLOOR PLANS	
PART CLASSIFICATION								
DRAWING CLASSIFICATION	UNCLASSIFIED						TYPE C	DRAWING NUMBER FSC911245	JOB NUMBER 12335
DWG TYPE SFP	PROJ BLDG #34							SHEET 1 OF 1

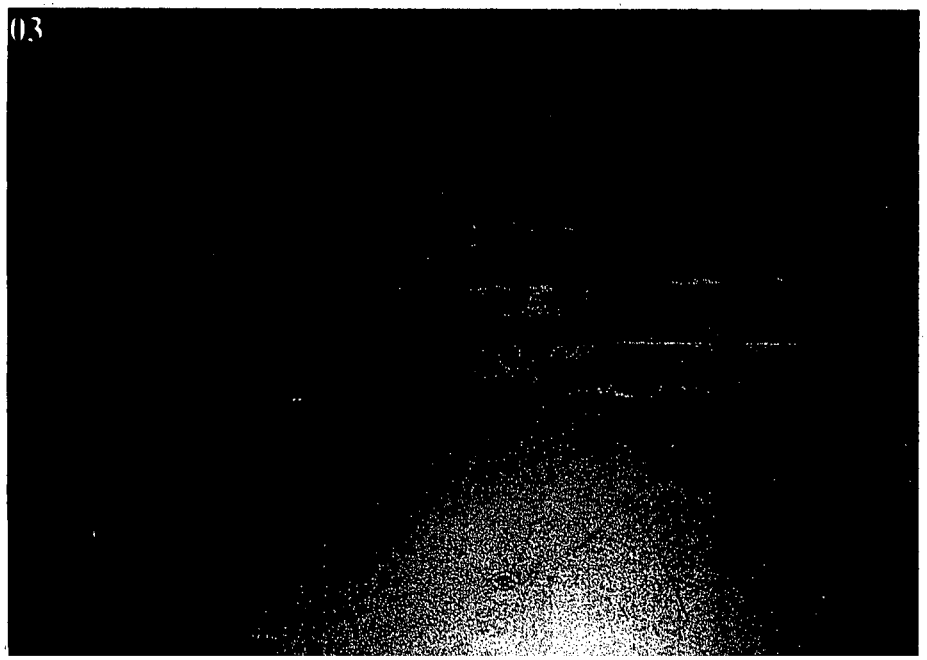
APPROVALS: DATE:
SAFETY CONSTRUCTIVE REVIEWER:
___ HEAC ___ FRACAC ___ FEAC ___ DOEC
TECH. REP. _____
ES. REP. _____
TRADES: _____

Page 38 of I

APPENDIX E: PHOTOS AND PHOTO LOG







I 34 of 38

I 35 of 38

3200-7-22-
20

3200-7-22-
21

12

Photo Log Building 34

Photo	Description
01	Department of Energy Mound Facility, Miamisburg, Building 34, Concrete Block Structure, Room 1, showing interior west view of suspect ACM fire doors.
02	Department of Energy Mound Facility, Miamisburg, Building 34, Concrete Block Structure, Room 1, showing south wall interior.
03	Department of Energy Mound Facility, Miamisburg, Building 34, Concrete Block Structure, Room 1, showing north wall interior.
04	Department of Energy Mound Facility, Miamisburg, Building 34, showing west exterior view of metal building, Room 2, and metal drum storage building, Room 4.
05	Department of Energy Mound Facility, Miamisburg, Building 34, showing North view of exterior east wall of concrete block structure, Room 1.
06	Department of Energy Mound Facility, Miamisburg, Building 34, showing interior view of metal drum storage building, Room 4.
07	Department of Energy Mound Facility, Miamisburg, Building 34, showing interior view of suspect ACM fire doors on metal drum storage building, Room 4.
08	Department of Energy Mound Facility, Miamisburg, Building 34, showing exterior view of suspect ACM fire doors on metal drum storage building, Room 4.
09	Department of Energy Mound Facility, Miamisburg, Building 34, showing 2' x 4' Ceiling Tile sampling location in Southeast corner office, Room 2, Sample 3200-7-22-20.
10	Department of Energy Mound Facility, Miamisburg, Building 34, Room 2, showing Tan Texturized Paint sampling location Northwest corner under fiberglass insulation, Sample 3200-7-22-21.
11	Department of Energy Mound Facility, Miamisburg, Building 34, Room 2, showing Tan Texturized Paint sampling location Northwest corner under fiberglass insulation, Sample 3200-7-22-21.
12	Department of Energy Mound Facility, Miamisburg, Building 34, showing 2' x 4' Ceiling Tile sampling location Northwest corner office, Room 2, Sample 3200-7-22-22.

Bldg 34 Suspect ACM

Location/ Rm.	Description	ACM	TSI	Surfacing	Misc.	Flooring	Ceiling Tile	Quantity	Sampled By
Bldg 34 Room 2	Texturized Paint	n		x				600 SF	Helix Env.
Bldg 34 Room 2	2'x4' Ceiling Tile Shortways Fissures and holes	n					x	400 SF	Helix Env.
Concrete Block Bldg	Roofing Material	y			x			400 SF	Assumed
Bldg 34	Fire Doors	y			x			2 Doors	Assumed
Concrete Block Bldg	Fire Doors	y			x			3 Doors	Assumed
Metal Flammables Bldg	Fire Doors	y			x			2 Doors	Assumed

Appendix J

Lead Information

From: Christopher Ahlquist
To: Darnell, Val; Kramer, Donald
Date: 4/9/03 4:13PM
Subject: Bldg 34 Asbestos & Lead Paint (rev)

Don & Val -

For the Building 34 complex asbestos and lead paint concerns, the following is provided for your use:

Asbestos

An asbestos survey was completed in August of 2002 by Helix Environmental, Inc. in accordance with EPA NESHAP requirements prior to demolition. No materials were found to contain asbestos which would have to be removed prior to demolition; material identified within the Helix report as "fire doors" and assumed to contain asbestos were subsequently verified by Mr. Christopher Ahlquist as not containing material suspect for asbestos. Mr. Ahlquist is certified in the State of Ohio as an Asbestos Hazard Evaluation Specialist as required by State regulation. Some of the roofing (approximately 400 square feet) is of a built-up asphalt variety and is assumed to contain asbestos - being classified as an EPA Nonfriable Category I type of material, its removal is not necessary prior to demolition by normal heavy-duty means. A copy of the survey report is being forwarded.

Lead

No previous lead surveys or sampling data could be found for Building 34. Observed paint coatings were largely intact.

Although untested paint coatings must be assumed to contain lead, the observed condition of the paint indicates that there are currently no lead paint hazards within the buildings. No further action would be necessary to protect occupant or worker health unless any coatings were to be disturbed by close worker contact (sanding, grinding, scraping, torch cutting, etc.). If these types of activities are planned, the affected paint coatings should be tested to verify the absence of lead. Since the building is scheduled for demolition, these restrictions should be incorporated into any work plans for which disturbance of paint is a possibility.

In accordance with guidance from Mound Waste Management, paint coatings should not result in a hazardous waste issue during the course of normal demolition by heavy-duty means.

These determinations were made by Mr. Christopher Ahlquist who is an Ohio Department of Health Licensed Lead Risk Assessor.

Let me know if I can be of further assistance,

Chris Ahlquist

Appendix K

Chemical Information

Chemicals known to have been in Building 34

carbon dioxide (CO_2)
dry bicarbonite of soda powder

A flammables storage cabinet was located outside the building. No documentation of what chemicals may have been stored in the cabinet.

A site subcontractor had stored chemicals associated with environmental soil sampling in Room 2; a list of those chemicals is not available. However, commonly used chemicals associated with soil sampling include small amounts of the following:

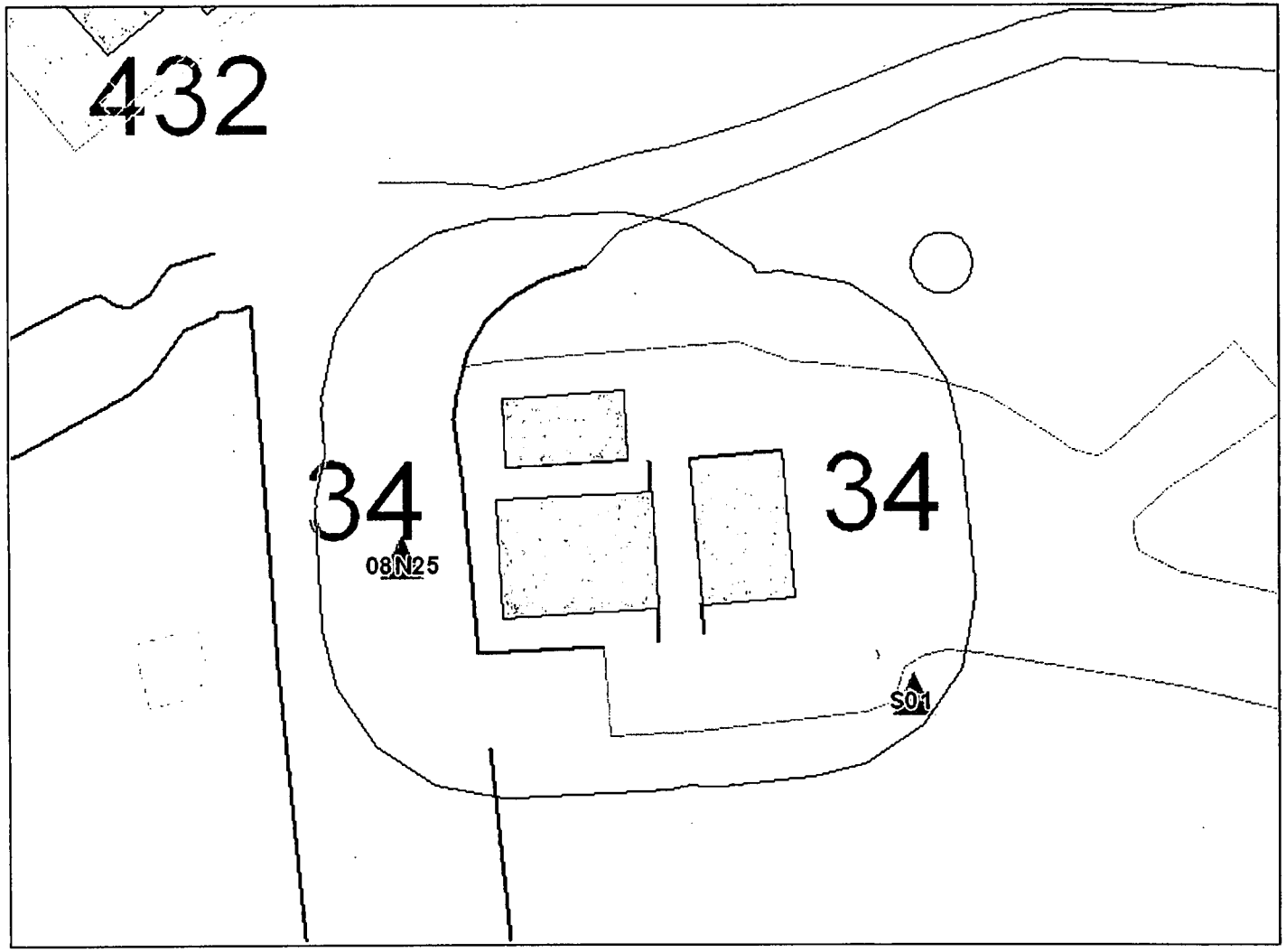
Non-phosphate soap or detergent, i.e. Alconox
Hexane (C_6H_{14} also written $CH_3(CH_2)4CH_3$)
Methanol (CH_3OH)
Nitric acid (HNO_3)
Hydrochloric acid (HCl)

Appendix L

Soil Sampling, Vicinity

S1 of 17

Historic Sample Locations within 30 feet of Buildings 34



Sample Detect

25 0 25 50 75 100 Feet

e:\ead_pro\bldg_34\eat\bldg9409 1702.apr

09/17/02

Building 34 Detects

Location _name	Sample _id	Collection _date	Value_name	Measured_ value	Value _units	Detection _limit	Chem_ class	Start_ depth	End_ depth	Lab	Data	Project _code	Media	
08N25	08N25	19941004	Total Aromatic Hydrocarbons	14156.0000	IC		GENE	0.0	1.5			2680	Soil	
08N25	08N25	19941004	Total C5 TO C11 Petroleum Hydrocarbons	27051.0000	IC		GENE	0.0	1.5			2680	Soil	
08N25	08N25	19941004	Total Halogenated Hydrocarbons	5065.0000	IC		GENE	0.0	1.5			2680	Soil	

Samples collected as part of the OU5 Operational Area Investigation. Results are not quantitative and only relative to each other. Units are ion counts (IC).

L3 of 15

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Building 34 Non-Detects

Location _name	Sample_id	Collection _date	Value_name	Measured _value	Value_ units	Detection_ limit	Chem _class	Start	End	Lab	Data	Project _code	Media
S01	PETROS-0-S01	20020515	2-Chloronaphthalene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	2-Methylnaphthalene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Acenaphthene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Acenaphthylene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Anthracene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Benzene	1.100	UG/KG	1.100	ORBTEX	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Benzo(a)anthracene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Benzo(a)pyrene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Benzo(b)fluoranthene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Benzo(g,h,i)perylene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Benzo(k)fluoranthene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Dibenz(a,h)anthracene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Diesel Range Organics	28.000	MG/KG	28.000	ORDRO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Ethylbenzene	1.100	UG/KG	1.100	ORBTEX	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Fluoranthene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Fluorene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Indeno(1,2,3-cd)pyrene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Naphthalene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Phenanthrene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
08N25	08N25	19941004	Plutonium-238	24.000	PCI/G	24.000	RAD	0.0	1.5		U	2680	Soil
S01	PETROS-0-S01	20020515	Pyrene	1900.000	UG/KG	1900.000	ORSVO	0.0	0.0	U		BDB2002	Soil
08N25	08N25	19941004	Thorium-232	0.800	PCI/G	0.800	RAD	0.0	1.5		U	2680	Soil
S01	PETROS-0-S01	20020515	Toluene	1.100	UG/KG	1.100	ORBTEX	0.0	0.0	U		BDB2002	Soil
S01	PETROS-0-S01	20020515	Xylenes, Total	3.400	UG/KG	3.400	ORBTEX	0.0	0.0	U		BDB2002	Soil

S1 2S7

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LABORATORY DATA QUALIFIERS (LABQUAL)

The following qualifiers will be applied to the organic analysis results by the laboratory in accordance with CLP SOW direction:

ORGANICS

U	Indicates compound was analyzed for but not detected. The associated sample quantitation limit will be the CRQL, corrected for dilution and for percent moisture.
J	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) assuming a 1:1 response, 2) when the qualitative data indicated the presence of a compound that meets the volatile, semivolatile, and pesticide/Aroclor identification criteria, and the result is less than the CRQL but greater than zero.
N	Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds, where identification is based on a mass spectral library search.
P	Used for pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns.
C	Applies to pesticide results where the identification has been confirmed by GC/MS.
B	Used when the analyte is found in the associated blank as well as in the sample. This flag must be used for a TIC as well as for a positively identified target compound.
E	Identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.
D	Identifies all compounds identified in an analysis at a secondary dilution factor.
A	Indicates that a TIC is a suspected aldol-condensation product.

INORGANICS

B	Indicates that the reported value was obtained from a reading that was less than the CRDL but greater than or equal to the Instrument Detection Limit (IDL).
U	Indicates that the analyte was analyzed for but not detected.
E	Indicates the reported value is estimated because of the presence of interferences.
M	Duplicate injection precision was not met.
N	Spiked sample recovery not within control limits.
S	Reported value was determined by the Method of Standard Additions (MSA).
W	Post-digestion spike for Furnace AA analysis is out of control limits, while sample absorbency is less than 50% of spike absorbency.
•	Duplicate analysis not within control limits.
+	Correlation coefficient for the MSA is less than 0.995.

L7of 15

DATA QUALIFIER CODES (DATAQUAL)

ORGANICS AND INORGANICS

U	The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
J	The associated numerical value is an estimated quantity.
R	The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
N	Presumptive evidence of the presence of the material.
NJ	Presumptive evidence of the presence of the material at an estimated quantity.
UJ	The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

SUB-QUALIFIER CODES

ORGANICS

D	Duplicates
B	Qualified due to blank
C	Qualified due to calibration
H	Holding time exceeded
K	Qualified due to surrogate recovery
L	Qualified due to Laboratory Control Sample
S	Qualified due to matrix spike recovery
I	Qualified due to internal standard
N	Tentative identification (only for TICs)
P	Pesticide/PCB results have >25 percent difference on two different columns
+	Positive bias (added after subqualifier)
-	Negative bias (added after subqualifier)

INORGANICS

D	Duplicates
B	Qualified due to blank
C	Qualified due to calibration
H	Holding time exceeded
L	Qualified due to Laboratory Control Sample
S	Qualified due to matrix spike recovery
I	Qualified due to interference
+	Positive bias (added after subqualifier)
-	Negative bias (added after subqualifier)
Examples of final qualification might be J-C, UJ-S(+), UJ-BC(-), etc.	

The subqualifiers have been included to clarify any reports you may use. The subqualifiers have been captured when it was included in the electronic data submitted by the contractor. Most of the data in MEIMS does not include them.

The above data was extracted from the OU9 Site Wide Quality Assurance Project Plan, pages 9-16 and Appendix H page 3-1. It was updated from the Methods Compendium.

Comparisons for Soil Analytical Results

10-6 Risk-Based Guideline Values			
107-06-2	1,2-Dichloroethane	3.20E+00	MG/KG
118-96-7	2,4,6-Trinitrotoluene	1.91E+02	MG/KG
72-55-9	4,4'-DDE	9.00E+00	MG/KG
50-29-3	4,4'-DDT	9.00E+00	MG/KG
309-00-2	Aldrin	1.80E-01	MG/KG
5103-71-9	Alpha Chlordane	8.50E+00	MG/KG
12672-29-6	Aroclor-1248	3.85E-01	MG/KG
11096-82-5	Aroclor-1260	3.85E-01	MG/KG
7440-38-2	Arsenic	1.20E+03	MG/KG
71-43-2	Benzene	8.90E+00	MG/KG
56-55-3	Benzo(a)anthracene	4.10E+00	MG/KG
50-32-8	Benzo(a)pyrene	4.10E-01	MG/KG
205-99-2	Benzo(b)fluoranthene	4.10E+00	MG/KG
207-08-9	Benzo(k)fluoranthene	4.10E+01	MG/KG
7440-41-7	Beryllium	7.00E-01	MG/KG
319-85-7	Beta-BHC	1.65E+00	MG/KG
117-81-7	Bis(2-ethylhexyl)phthalate	2.15E+02	MG/KG
75-27-4	Bromodichloromethane	4.80E+01	MG/KG
75-25-2	Bromoform	3.75E+02	MG/KG
7440-43-9	Cadmium	1.00E+04	MG/KG
56-23-5	Carbon Tetrachloride	4.60E+00	MG/KG
67-66-3	Chloroform	3.10E+00	MG/KG
7440-47-3	Chromium	1.50E+03	MG/KG
218-01-9	Chrysene	4.10E+02	MG/KG
53-70-3	Dibenz(a,h)anthracene	4.10E-01	MG/KG
124-48-1	Dibromochloromethane	3.55E+01	MG/KG
75-09-2	Dichloromethane	3.95E+02	MG/KG
60-57-1	Dieldrin	1.85E-01	MG/KG
5103-74-2	Gamma Chlordane	8.50E+00	MG/KG
58-89-9	Gamma-BHC (Lindane)	2.30E+00	MG/KG
76-44-8	Heptachlor	0.66	MG/KG
1024-57-3	Heptachlor Epoxide	0.33	MG/KG
193-39-5	Indeno(1,2,3-cd)pyrene	4.10E+00	MG/KG
78-59-1	Isophorone	3.15E+03	MG/KG
86-30-6	N-Nitrosodiphenylamine	6.00E+02	MG/KG
87-86-5	Pentachlorophenol	2.50E+01	MG/KG
121-82-4	RDX	2.70E+01	MG/KG
79-01-6	Trichloroethene (or trichloroethylene)	5.09E+00	MG/KG
7440-41-7	1,1,1,2-Tetrachloroethane	1.10E-02	MG/L
7440-38-2	1,1,2,2-Tetrachloroethane	1.40E-03	MG/L
7440-34-8	Actinium-227	4.50E-01	PCI/G
14596-10-2	Americium-241	6.30E+00	PCI/G
13982-38-2	Bismuth-207	1.60E-01	PCI/G
10045-97-3	Cesium-137	3.40E-01	PCI/G
10198-40-0	Cobalt-60	7.00E-02	PCI/G
14255-04-0	Lead-210	6.20E-01	PCI/G

L9 of 15

13981-16-3	Plutonium-238	6.10E+00	PCI/G
15117-48-3	Plutonium-239	5.50E+00	PCI/G
PU239/240	Plutonium-240	6.10E+00	PCI/G
13966-00-2	Potassium-40	1.42E+00	PCI/G
14331-85-2	Protactinium-231	3.90E-01	PCI/G
13982-63-3	Radium-226	9.00E-02	PCI/G
10098-97-2	Strontium-90	9.40E+00	PCI/G
14274-82-9	Thorium-228	1.10E-01	PCI/G
14269-63-7	Thorium-230	9.00E-02	PCI/G
7440-29-1	Thorium-232	7.00E-02	PCI/G
10028-17-8	Tritium	2.35E+04	PCI/G
13968-55-3	Uranium-233	9.68E-01	PCI/G
13966-29-5	Uranium-234	1.05E+01	PCI/G
15117-96-1	Uranium-235	1.60E+00	PCI/G
24678-82-8	Uranium-238	1.00E-01	PCI/G
14596-10-2	Americium-241	4.90E-01	PCI/L
14331-79-4	Bismuth-210	2.20E+01	PCI/L
15262-20-1	Radium-228	3.30E-01	PCI/L
13967-73-2	Strontium-85	1.10E+02	PCI/L
10098-97-2	Strontium-90	3.90E+00	PCI/L
15623-47-9	Thorium-227	4.00E+00	PCI/L
14274-82-9	Thorium-228	6.90E-01	PCI/L
14269-63-7	Thorium-230	1.20E-01	PCI/L
7440-29-1	Thorium-232	3.10E-01	PCI/L
24678-82-8	Uranium-238+D	2.02E-01	PCI/L
OU9 Soil Background Values			
72-54-8	4,4'-DDD	4.2	MG/KG
72-55-9	4,4'-DDE	4.3	MG/KG
50-29-3	4,4'-DDT	13	MG/KG
309-00-2	Aldrin	ND	MG/KG
5103-71-9	Alpha Chlordane	ND	MG/KG
319-84-6	Alpha-BHC	ND	MG/KG
7429-90-5	Aluminum	19000	MG/KG
14596-10-2	Americium-241	ND	MG/KG
12672-29-6	Aroclor-1248	ND	MG/KG
11097-69-1	Aroclor-1254	58	MG/KG
11096-82-5	Aroclor-1260	ND	MG/KG
7440-38-2	Arsenic	8.6	MG/KG
7440-39-3	Barium	180	MG/KG
7440-41-7	Beryllium	1.3	MG/KG
319-85-7	Beta-BHC	ND	MG/KG
7440-69-9	Bismuth	ND	MG/KG
13982-38-2	Bismuth-207	ND	MG/KG
14331-79-4	Bismuth-210m	ND	MG/KG
7440-43-9	Cadmium	2.1	MG/KG
7440-70-2	Calcium	310000	MG/KG
7440-47-3	Chromium	20	MG/KG
7440-48-4	Cobalt	19	MG/KG

L10 of 15

7440-50-8	Copper	26	MG/KG
57-12-5	Cyanide	ND	MG/KG
60-57-1	Dieldrin	ND	MG/KG
959-98-8	Endosulfan I	ND	MG/KG
1031-07-8	Endosulfan Sulfate	ND	MG/KG
72-20-8	Endrin	ND	MG/KG
7421-93-4	Endrin Aldehyde	ND	MG/KG
53494-70-5	Endrin Ketone	ND	MG/KG
5103-74-2	Gamma Chlordane	ND	MG/KG
58-89-9	Gamma-BHC (Lindane)	ND	MG/KG
76-44-8	Heptachlor	ND	MG/KG
1024-57-3	Heptachlor Epoxide	ND	MG/KG
77-47-4	Hexachlorocyclopentadiene	ND	MG/KG
7439-89-6	Iron	35000	MG/KG
7439-92-1	Lead	48	MG/KG
7439-93-2	Lithium	26	MG/KG
7439-95-4	Magnesium	40000	MG/KG
7439-96-5	Manganese	1400	MG/KG
7439-97-6	Mercury	ND	MG/KG
72-43-5	Methoxychlor	30	MG/KG
7439-98-7	Molybdenum	27	MG/KG
7440-02-0	Nickel	32	MG/KG
7440-09-7	Potassium	1900	MG/KG
7782-49-2	Selenium	ND	MG/KG
7440-22-4	Silver	1.7	MG/KG
7440-23-5	Sodium	240	MG/KG
7440-28-0	Thallium	0.46	MG/KG
7440-31-5	Tin	20	MG/KG
7440-62-2	Vanadium	25	MG/KG
7440-66-6	Zinc	140	MG/KG
7440-34-8	Actinium-227	1.10E-01	PCI/G
10045-97-3	Cesium-137	0.42	PCI/G
14255-04-0	Lead-210	1.20E+00	PCI/G
13981-16-3	Plutonium-238	0.13	PCI/G
15117-48-3	Plutonium-239	1.80E-01	PCI/G
PU239/240	Plutonium-240	1.80E-01	PCI/G
13966-00-2	Potassium-40	37	PCI/G
14331-85-2	Protactinium-231	1.10E-01	PCI/G
13982-63-3	Radium-226	2	PCI/G
10098-97-2	Strontium-90	0.72	PCI/G
14274-82-9	Thorium-228	1.5	PCI/G
14269-63-7	Thorium-230	1.9	PCI/G
7440-29-1	Thorium-232	1.4	PCI/G
10028-17-8	Tritium	1.6	PCI/G
13966-29-5	Uranium-234	1.1	PCI/G
15117-96-1	Uranium-235	0.11	PCI/G
24678-82-8	Uranium-238	1.2	PCI/G

Core Team Determined Screening Levels			
7439-92-1	Lead	400	MG/KG
7440-34-8	Actinium-227	5.60E-01	PCI/G
14596-10-2	Americium-241	6.3	PCI/G
13982-38-2	Bismuth-207	0.175	PCI/G
10045-97-3	Cesium-137	0.76	PCI/G
10198-40-0	Cobalt-60	7.00E-02	PCI/G
14255-04-0	Lead-210	1.80E+00	PCI/G
13981-16-3	Plutonium-238	55	PCI/G
14331-85-2	Protactinium-231	4.00E+00	PCI/G
13982-63-3	Radium-226	2.1	PCI/G
14274-82-9	Thorium-228	1.61	PCI/G
14269-63-7	Thorium-230	2	PCI/G
7440-29-1	Thorium-232	1.47	PCI/G
15117-96-1	Uranium-235	1.7	PCI/G
24678-82-8	Uranium-238+D	1.3	PCI/G
Maximum Contaminant Level for Drinking Water			
71-55-6	1,1,1-Trichloroethane	0.2	MG/L
79-00-5	1,1,2-Trichloroethane	0.005	MG/L
75-35-4	1,1-Dichloroethene	0.007	MG/L
120-82-1	1,2,4-Trichlorobenzene	0.07	MG/L
156-59-2	1,2-cis-Dichloroethene	0.07	MG/L
106-93-4	1,2-Dibromoethane	0.00005	MG/L
95-50-1	1,2-Dichlorobenzene	0.6	MG/L
107-06-2	1,2-Dichloroethane	0.005	MG/L
78-87-5	1,2-Dichloropropane	0.005	MG/L
156-60-5	1,2-trans-Dichloroethene	0.01	MG/L
106-46-7	1,4-Dichlorobenzene	0.075	MG/L
95-95-4	2,4,5-Trichlorophenol	0.05	MG/L
94-75-7	2,4-D	0.07	MG/L
7440-36-0	Antimony	0.0006	MG/L
7440-38-2	Arsenic	0.05	MG/L
7440-39-3	Barium	2	MG/L
71-43-2	Benzene	0.005	MG/L
50-32-8	Benzo(a)pyrene	0.002	MG/L
7440-41-7	Beryllium	0.004	MG/L
117-81-7	bis(2-ethylhexyl)phthalate	0.006	MG/L
75-27-4	Bromodichloromethane	0.008	MG/L
75-25-2	Bromoform	0.008	MG/L
7440-43-9	Cadmium	0.005	MG/L
56-23-5	Carbon Tetrachloride	0.005	MG/L
57-74-9	Chlordane	0.002	MG/L
108-90-7	Chlorobenzene	0.1	MG/L
67-66-3	Chloroform	0.008	MG/L
7440-47-3	Chromium	0.1	MG/L
7440-50-8	Copper	1.3	MG/L
57-12-5	Cyanide	0.2	MG/L
96-12-8	Dibromochloropropane	0.0002	MG/L

75-09-2	Dichloromethane (Methylene Chloride)	0.005	MG/L
88-85-7	Dinoseb	0.007	MG/L
1746-01-6	Dioxin	0.00000003	MG/L
72-20-8	Endrin	0.002	MG/L
100-41-4	Ethylbenzene	0.07	MG/L
16984-48-8	Flouride	4	MG/L
58-89-9	Gamma-BHC (Lindane)	0.0002	MG/L
76-44-8	Heptachlor	0.0004	MG/L
1024-57-3	Heptachlor Epoxide	0.0002	MG/L
118-74-1	Hexachlorobenzene	0.001	MG/L
77-47-4	Hexachlorocyclopentadiene	0.05	MG/L
7439-92-1	Lead	0.015	MG/L
7439-97-6	Mercury	0.002	MG/L
72-43-5	Methoxychlor	0.04	MG/L
7440-02-0	Nickel	0.1	MG/L
NO3	Nitrate	10	MG/L
14797-65-0	Nitrite	1	MG/L
87-86-5	Pentachlorophenol	0.001	MG/L
7782-49-2	Selenium	0.05	MG/L
100-42-5	Styrene	0.1	MG/L
127-18-4	Tetrachloroethene	0.005	MG/L
7440-28-0	Thallium	0.002	MG/L
108-88-3	Toluene	1	MG/L
8001-35-2	Toxaphene	0.003	MG/L
79-01-6	Trichloroethene	0.005	MG/L
75-01-4	Vinyl Chloride	0.002	MG/L
1330-20-7	Xylenes, Total	10	MG/L
7440-34-8	Actinium-227	0.4	PCI/L
14596-10-2	Americium-241	1.2	PCI/L
13982-38-2	Bismuth-207	1200	PCI/L
10045-97-3	Cesium-137	120	PCI/L
10198-40-0	Cobalt-60	400	PCI/L
13981-16-3	Plutonium-238	1.6	PCI/L
13982-63-3	Radium-226	4	PCI/L
10098-97-2	Strontium-90	40	PCI/L
14274-82-9	Thorium-228	16	PCI/L
14269-63-7	Thorium-230	12	PCI/L
7440-29-1	Thorium-232	2	PCI/L
10028-17-8	Tritium	20000	PCI/L
13968-55-3	Uranium-233	20	PCI/L
13966-29-5	Uranium-234	20	PCI/L
15117-96-1	Uranium-235	24	PCI/L
24678-82-8	Uranium-238	24	PCI/L
Guideline Values based on the Hazard Index			
76-13-1	1,1,2-Trichloro-1,2,2triflouroethane	7.00E+04	MG/KG
75-34-3	1,1-Dichloroethane	7.80E+00	MG/KG
120-82-1	1,2,4-Trichlorobenzene	2.04E+04	MG/KG
156-59-2	1,2-cis-Dichloroethene	2.13E+03	MG/KG

L1306 15

156-60-5	1,2-trans-Dichloroethene	4.30E+03	MG/KG
99-65-0	1,3-Dinitrobenzene	2.00E+02	MG/KG
118-96-7	2,4,6-Trinitrotoluene	1.00E+03	MG/KG
78-93-3	2-Butanone	9.30E+03	MG/KG
95-57-8	2-Chlorophenol	1.06E+03	MG/KG
108-10-1	2-Methyl-4-pentanone	7.00E+02	MG/KG
50-29-3	4,4'-DDT	1.10E+02	MG/KG
106-44-5	4-Methylphenol	1.10E+03	MG/KG
67-64-1	Acetone	2.10E+04	MG/KG
309-00-2	Aldrin	6.4	MG/KG
5103-71-9	Alpha Chlordane	110	MG/KG
7429-90-5	Aluminum	210000	MG/KG
120-12-7	Anthracene	6.40E+04	MG/KG
7440-36-0	Antimony	8.50E+01	MG/KG
11097-69-1	Aroclor-1254	4.30E+00	MG/KG
7440-38-2	Arsenic	6.40E+01	MG/KG
7440-39-3	Barium	1.50E+04	MG/KG
65-85-0	Benzoic Acid	8.50E+05	MG/KG
7440-41-7	Beryllium	1.10E+03	MG/KG
117-81-7	Bis(2-ethylhexyl)phthalate	4.30E+03	MG/KG
75-27-4	Bromodichloromethane	4.30E+03	MG/KG
75-25-2	Bromoform	4.30E+03	MG/KG
85-68-7	Butyl Benzyl Phthalate	4.30E+04	MG/KG
7440-43-9	Cadmium	2.10E+02	MG/KG
75-15-0	Carbon Disulfide	2.80E+02	MG/KG
56-23-5	Carbon Tetrachloride	1.50E+02	MG/KG
75-00-3	Chloroethane	1.60E+02	MG/KG
67-66-3	Chloroform	2.10E+03	MG/KG
7440-47-3	Chromium	1.10E+03	MG/KG
18540-29-9	Chromium-VI	6.39E+02	MG/KG
7440-50-8	Copper	7.90E+03	MG/KG
57-12-5	Cyanide	4.30E+03	MG/KG
53-70-3	Dibenz(a,h)anthracene	4.08E-02	MG/KG
124-48-1	Dibromochloromethane	4.30E+03	MG/KG
75-09-2	Dichloromethane	1.00E+03	MG/KG
60-57-1	Dieldrin	1.10E+01	MG/KG
84-74-2	Di-n-butyl Phthalate	2.10E+04	MG/KG
117-84-0	Di-n-octyl Phthalate	4.30E+03	MG/KG
959-98-8	Endosulfan I	1300	MG/KG
33213-65-9	Endosulfan II	1300	MG/KG
100-41-4	Ethylbenzene	4.80E-01	MG/KG
86-73-7	Flourene	8.50E+03	MG/KG
206-44-0	Fluoranthene	8.50E+03	MG/KG
5103-74-2	Gamma Chlordane	110	MG/KG
58-89-9	Gamma-BHC (Lindane)	64	MG/KG
76-44-8	Heptachlor	110	MG/KG
1024-57-3	Heptachlor Epoxide	2.8	MG/KG
110-54-3	Hexane	9.10E+01	MG/KG
193-39-5	Indeno(1,2,3-cd)pyrene	4.08E-01	MG/KG

L 14of 15

78-59-1	Isophorone	4.30E+04	MG/KG
7439-96-5	Manganese	2.70E+04	MG/KG
7439-97-6	Mercury	6.40E+01	MG/KG
72-43-5	Methoxychlor	1100	MG/KG
7440-02-0	Nickel	4.30E+03	MG/KG
87-86-5	Pentachlorophenol	6.40E+03	MG/KG
108-95-2	Phenol	1.30E+05	MG/KG
129-00-0	Pyrene	6.40E+03	MG/KG
7782-49-2	Selenium	1100	MG/KG
7440-22-4	Silver	1.10E+03	MG/KG
127-18-4	Tetrachloroethene	2.10E+03	MG/KG
7440-28-0	Thallium	17	MG/KG
7440-31-5	Tin	130000	MG/KG
108-88-3	Toluene	2.50E+02	MG/KG
75-69-4	Trichlorofluoromethane	7.30E+02	MG/KG
7440-62-2	Vanadium	1.50E+03	MG/KG
1330-20-7	Xylenes, Total	4.30E+05	MG/KG
7440-66-6	Zinc	6.40E+04	MG/KG
7440-41-7	1,1,1,2-Tetrachloroethane	2.90E-01	MG/L
7440-38-2	1,1,2,2-Tetrachloroethane	2.50E-01	MG/L
71-55-6	1,1,1-Trichloroethane	1.80E+00	MG/L
76-13-1	1,1,2-Trichloro-1,2,2triflouroethane	2.50E+03	MG/L
7429-90-5	Aluminum	100	MG/L
7440-42-8	Boron	9.00E+00	MG/L
18540-29-9	Chromium-VI	3.00E-01	MG/L
7440-48-4	Cobalt	6	MG/L
7440-50-8	Copper	4.00E+00	MG/L
7439-98-7	Molybdenum	0.5	MG/L
7782-49-2	Selenium	0.5	MG/L
7440-28-0	Thallium	0.008	MG/L
7440-31-5	Tin	60	MG/L
2691-41-0	HMX	1.10E+04	UG/KG
121-82-4	RDX	6.40E+04	UG/KG

L1506 15

Appendix M

Occurrence Reports

A search of the occurrence reporting system revealed one report, which was minor and without environmental impact.

- Sludge containing depleted uranium found on-site in sanitary waste.

ALO-DA-EGGM-EGGMAT02-1993-0003 Final Report

Occurrence Report

Nuclear Energy Facilities
(Name of Facility)

Plutonium Processing and Handling
(Facility Function)

Mound Plant EG&G Mound Applied Technologies
(Laboratory, Site, or Organization)

Name: Woltermann, H. Anthony
Title: Director, Technology **Telephone No.:** (513) 865-3415
(Facility Manager/Designee)

Name: H. A. Woltermann
Title: Manager, Technology **Telephone No.:** (513) 865-3415
(Originator/Transmitter)

Name: H. F. Anderson **Date:** 06/21/1993
(Authorized Classifier (AC))

1. Occurrence Report Number: ALO-DA-EGGM-EGGMAT02-1993-0003

Sludge containing depleted uranium found on-site in sanitary waste.

2. Report Type and Date: Final

	Date	Time
Notification:	02/11/1993	09:22 (MTZ)
Initial Update:	02/23/1993	13:29 (MTZ)
Latest Update:	02/23/1993	13:29 (MTZ)
Final:	06/29/1993	05:14 (MTZ)

3. Occurrence Category: Off-Normal

4. Number of Occurrences: 1 **Original OR:**

5. Division or Project: EG&G Mound Applied Technologies

6. Secretarial Office: DP - Defense Programs

7. System, Bldg., or Equipment: General Plant

8. UCNI?: No

9. Plant Area: General Plant

10. Date and Time Discovered: 02/10/1993 15:30 (ETZ)

M 1 of 5

11. Date and Time Categorized: 02/10/1993 16:00 (ETZ)

12. DOE Notification:

Date	Time	Person Notified	Organization
02/10/1993	16:00 (ETZ)	Paul Matthews	DOE/DAO

13. Other Notifications:

14. Subject or Title of Occurrence:

Sludge containing depleted uranium found on-site in sanitary waste.

15. Nature of Occurrence:

02) Environmental
A. Radionuclide Releases

16. Description of Occurrence:

On February 10, 1993, at 1530 hours (ETZ), a garbage truck filled with sanitary waste picked up from site dumpster was scanned using a FIDLER hand-held gamma detector before leaving the site according to normal site procedures. The scan showed an unusual reading emanating from the load. The load was subsequently emptied onto a gravel covered staging area and inspected. A several kilogram mass of sludge-like material was found and preliminarily determined by gamma ray assay to contain depleted uranium.

There was no release of any radioactive material to the environment. There were no safety, health or environmental consequences.

This Occurrence Report was reviewed by an Authorized Derivative Classifier (H. F. Anderson) at 1300 hours (ETZ) on 06/21/93, and contains no Classified or UCNI information.

17. Operating Conditions of Facility at Time of Occurrence:

Normal Operating Conditions

18. Activity Category:

03 - Normal Operations

19. Immediate Actions Taken and Results:

The portion of the garbage containing the sludge was isolated and held for investigation. The truck was wiped, found to be free of contamination and was released. An investigation team was formed.

20. Direct Cause:

6) Management Problem

M2 of 5

A. Inadequate Administrative Control

21. Contributing Cause(s):

4) Design Problem
B. Inadequate or Defective Design

22. Root Cause:

6) Management Problem
A. Inadequate Administrative Control

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23. Description of Cause:

A longer gamma assay time showed that the sludge material contained natural uranium which had been stripped of its daughter products. There were no RCRA hazardous wastes in the material sampled. The uranium was determined to have come from Building 34 which was used for fire brigade training. The material was placed in the building at a time when there was minimal or no administrative control over natural and depleted uranium. Recently the building was cleaned and the new building manager had no reason to suspect that anything in the building was radioactive. The building manager placed what he thought was black burned residue from previous fire brigade training burns into the nearby dumpster where it was picked up by the garbage truck.

The direct and root cause of this incident was inadequate management control of materials which at one time were not controlled, but are of concern in today's climate. Several years ago, Mound initiated an orphan source program to identify and control all radioactive material. A part of this program involved a room by room search of all Mound facilities which could contain radioactive materials. This search was accomplished with FIDLER monitors which detect gamma rays. Although this search proved very beneficial, certain areas were not scanned because they were believed to not contain radioactive materials. The room which contained the uranium was not scanned for this reason. A FIDLER scan would have discovered the uranium. A contributing cause was inadequate design of the search for radioactive materials.

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24. Evaluation (by Facility Manager/Designee):

Actions taken by personnel cleaning up Building 34 and those taken by Health Physics personnel scanning the garbage truck were deemed appropriate and according to procedures. Discovery of the uranium would have occurred two years earlier had a complete site search using a FIDLER monitor been conducted.

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25. Is Further Evaluation Required?: No

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26. Corrective Actions
(* = Date added/revised since final report was approved.)

M3 of 5

1.	Develop a written procedure for handling off-normal incidents involving Mound Trash.	
	Target Completion Date: 09/30/1993	***Completion Date:** 07/15/1993
2.	Evaluate current Health Physics control points for monitoring "cold trash".	
	Target Completion Date: 12/01/1993	***Completion Date:** 09/29/1993
3.	Clean Building 34 of the remainder of the uranium waste.	
	***Target Completion Date:** 06/30/2004	***Completion Date:** 05/13/2002
4.	Complete the total site search for radioactive sources using a FIDLER monitor.	
	***Target Completion Date:** 03/31/1994	***Completion Date:** 02/24/1994

27. Impact on Environment, Safety and Health:

None

28. Programmatic Impact:

None

29. Impact on Codes and Standards:

None

30. Lessons Learned:

Although the detection of the source in the garbage was the result of surveying garbage trucks, according to procedure and the reclamation of the uranium from the garbage met all regulations, confusion on how to handle this type of incident led to some inefficiencies in recovering the uranium from the truck. Because of the rarity of such incidents, preplanning is normally not done and the required actions are determined and accomplished at the time.

31. Similar Occurrence Report Numbers:

1. ALO-DA-EGGM-EGGMAT02-1993-0004

32. User-defined Field #1:

33. User-defined Field #2:

34. DOE Facility Representative Input:

35. DOE Program Manager Input:

36. Approvals:

M4 of 5

Approved by: Woltermann, H. Anthony, Facility Manager/Designee
Date: 06/24/1993
Telephone No.: (513) 865-3415

Approved by: MATTHEWS, PAUL O., Facility Representative/Designee
Date: 06/24/1993
Telephone No.:

Approved by: KUMAR, RAMENDRA, Program Manager/Designee
Date: 06/29/1993
Telephone No.: (301) 903-2865

M Sof 5

Appendix N

PRS Information

Recommendation pages are not generated for PRSs that require Further Assessment (FA) or that have been unbinned. Accordingly, there are no recommendation pages included for PRSs 56, 67, 69, or 70.

MOUND PLANT
PRS 15
FORMER WASTE TREATMENT SITE - AREA C (lithium burn area)

RECOMMENDATION:

PRS 15 was identified due to process history pertaining to the disposal of lithium hydride residue left in drums during the mid-1950s. There is no soil contamination that can be attributed to PRS 15. PRS 17, the Oil Burn Area that lies within PRS 15, has been binned as a response action. All sampling results, other than those related to PRS 17, showed that all concentrations of volatile compounds, semivolatile compounds, PCBs, pesticides, metals, radionuclides, and explosives in the soils were below their respective ALARA, regulatory or 10^{-6} Risk Based Guideline Criteria. Groundwater contamination in this area is being investigated separately; therefore, NO FURTHER ASSESSMENT is recommended for PRS 15.

CONCURRENCE:

DOE/MB: Arthur W. Kleinrath, Remedial Project Manager — 2/19/97 (date)

USEPA: Timothy J. Fischer, Remedial Project Manager — 2/19/97 (date)

OEPA: Brian K. Nickel, Project Manager — 2/19/97 (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 4/3/97 to 5/8/97

☒ No comments were received during the comment period.

☐ Comment responses can be found on page _____ of this package.

N 1 of 5

MOUND PLANT
PRS 17
OIL BURN STRUCTURE

RECOMMENDATION:

This potential release site is the Building 34, Oil Burn Structure. It was identified as a potential release site because aviation fuel was used in the test-burning operation in the structure.

The *1993 OU3, Limited Field Investigation* sampled the area in and around the structure. The analytical results of the soils outside the burn structure were below guideline criteria, but the sediment inside the structure showed levels above guideline criteria for cobalt, lead, and copper. Lead was detected at eight times the USEPA residential Guideline Criteria of 400 mg/kg. No petroleum compounds were detected in well 379 which is downgradient of this area. The level of lead in the well samples were at or below the USEPA drinking water Maximum Contamination Level (MCL).

Therefore, since evidence of contamination exists inside PRS 17, a REMOVAL ACTION is recommended. Lead concentrations in groundwater are being analyzed separately and will not be included in the response action.

CONCURRENCE:

DOE/MB: Arthur W Kleinrath 12/2/96
Arthur W. Kleinrath, Remedial Project Manager (date)

USEPA: Timothy J. Fischer 12/3/96
Timothy J. Fischer, Remedial Project Manager (date)

OEPA: Brian K. Nickel 12/17/96
Brian K. Nickel, Project Manager (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 1/9/97 to 2/13/97

☒ No comments were received during the comment period.

☐ Comment responses can be found on page _____ of this package.

N2065

MOUND PLANT
PRS 18
FORMER FIRE FIGHTING TRAINING AREA

RECOMMENDATION:

This Potential Release Site (PRS) is the former location of the fire fighting training area. It became a PRS due to its identification as a potential release site in the 1988 *Preliminary Review/Visual Site Inspection Report for the RCRA facilities of the Mound Plant.*

In 1989, a clean-up operation was performed at PRS 18 to remove uranium contamination in soil. Post clean-up sampling during the OU3, Limited Field Investigation showed that the maximum concentration of thorium-234 (thorium-234 is a daughter product of uranium and is used as an indicator of uranium contamination) was 5.4 pCi/g which is less than the 10^{-6} Risk Based Guideline Criteria of 11 pCi/g for uranium-238.

In 1995, a second clean-up operation was performed at PRS 18 to remove petroleum contamination in soil. Post clean-up sampling results found the maximum concentration of total petroleum hydrocarbons to be 91.9 ppm which is below the State Regulatory (BUSTR) Guideline Criteria of 105 ppm.

Therefore, since the removal verification results found no remaining evidence of contamination above levels of concern and since no history or evidence of additional contamination exists at PRS 18, PRS 18 requires NO FURTHER ASSESSMENT.

CONCURRENCE:

DOE/MB: Arthur W. Kleinrath, Remedial Project Manager — 10/3/96 (date)

USEPA: Timothy J. Fischer, Remedial Project Manager — 10/3/96 (date)

OEPA: Brian K. Nickel, Project Manager — 10/3/96 (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 10/15/96 to 11/15/96

☒ No comments were received during the comment period.

☐ Comment responses can be found on page _____ of this package.

N 3 of 5

MOUND PLANT
PRS 19
HISTORICAL FIRE FIGHTING TRAINING PIT

RECOMMENDATION:

This potential release site is the historical fire fighting training pit. It was identified as a potential release site in 1993 during the *OU3, Limited Field Investigation*.

The 1993 OU3, Limited Field Investigation showed all organics were below the 10^{-6} guideline values. Lead was detected below the USEPA residential guidance criteria of 400 mg/kg. Dioxin/furans were also detected below the Center for Disease Control proposed action level of 20 ppb. No evidence of radiological contamination was found from 3 soil samples taken in the vicinity of PRS 19 nor is there any evidence that any activities involving radioactive materials have occurred in the area.

Therefore, since no history or evidence of contamination above levels of concern exists at PRS 19, PRS 19 requires NO FURTHER ASSESSMENT.

CONCURRENCE:

DOE/MB: Arthur W. Kleinrath, Remedial Project Manager — 10/3/96 (date)

USEPA: Timothy J. Fischer, Remedial Project Manager — 10/3/96 (date)

OEPA: Brian K. Nickel, Project Manager — 10/3/96 (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 10/15/96 to 11/15/96

☒ No comments were received during the comment period.

☐ Comment responses can be found on page _____ of this package.

N4085

MOUND PLANT
PRS 354
SOIL CONTAMINATION

RECOMMENDATION:

Potential Release Site (PRS) 354 was identified due to detections of plutonium found during the Mound Soil Screening Analysis performed as part of the June 1994 OU5, Operational Area Phase I Investigation. This location is in the southern sector of the Mound Plant, with no known history of radiological or hazardous chemical processes or activities. All measured thorium concentrations are below Regulatory Criteria and plutonium concentrations are at or below the 10^{-5} Risk Based Guideline Value. Therefore, NO FURTHER ASSESSMENT is recommended for PRS 354.

CONCURRENCE:

DOE/MEMP: Arthur Kleinrath 8/7/97
Arthur W. Kleinrath, Remedial Project Manager (date)

USEPA: Timothy J. Fischer 8/7/97
Timothy J. Fischer, Remedial Project Manager (date)

OEPA: Brian K. Nickel 8/7/97
Brian K. Nickel, Project Manager (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 5/8/97 to 6/16/97

☐ No comments were received during the comment period.

☒ Comment responses can be found on page 1, 2 of this package.

N 50% S

Appendix O

Work Plan (Draft)

WORK PACKAGE / PRELIMINARY HAZARD ANALYSIS

☐~ Office Master Copy (Original Approval Signatures) ☐ ~ Field Working Copy (Original Field Sign -Offs) ☐ ~ Review Copy [Note: Mark this section in color] ☐ ~ Other Copy

Note: The Project Engineer is responsible for completing Sections 1 through 10.

1. WORK PACKAGE TITLE: Building 34 Demolition

2. WORK PACKAGE NUMBER: SMPP/TFV-33187 - *00*

3. WORK PACKAGE SCOPE: The purpose of this project is the demolition of Building 34, using heavy equipment to demolish the walls, roof, and foundations (with the exception of Room #1, the Fire Brigade Training Facility, foundation), and remove and dispose of the debris. This demolition project includes the metal "Armco Building" and foundation, the metal storage shed and foundation, the concrete block "Fire Brigade Training Facility" and the concrete block "barrier wall". The reinforced concrete slabs & footer of Room #1 will be removed by future work. An area radiological evaluation will be conducted prior to minor site remediation to repair all damaged and exposed soil surfaces.
Waste segregation & categorization for disposal will be performed at the demolition site.
All Safe Shutdown and Utility Isolation activities will have been completed before initiation of this project.

4. WORK LOCATION: Building #: 34 Test Fire Valley Area

5. WORK PACKAGE PHASES:

1. Site Information
2. Site Preparation & Mobilization
3. Building Demolition & Debris Disposal
4. Area Radiological Evaluation, Site Remediation, & Demobilization

List of Appendixes

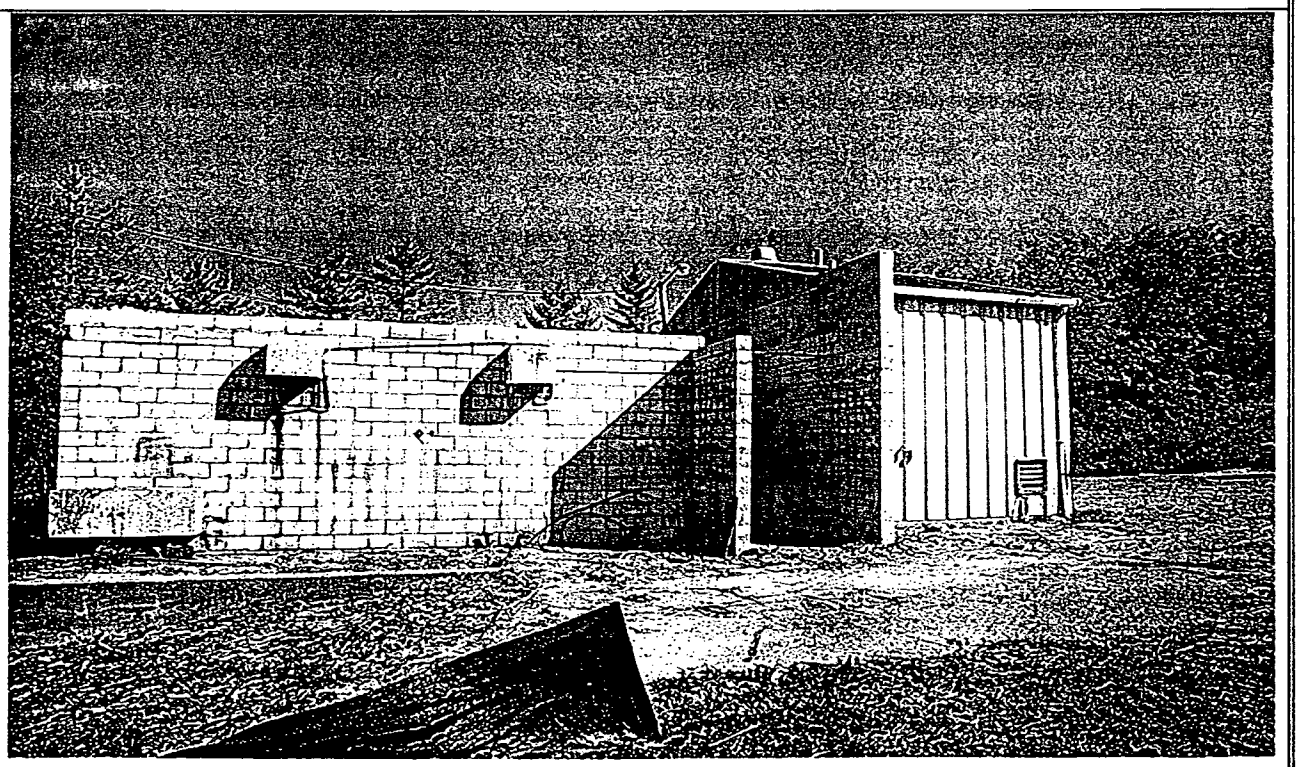
A – PHA/JSHA
B – Pre-Job Briefings/Job Status Log
C – Drawings/Sketches
D – Miscellaneous (RWP, USQ, etc.)
E – Post-Job Conference/Lessons Learned

Note: Insert the Work Package phases for the job. A phase is a separately definable portion or evolution of the project.

6. SPECIAL MATERIALS AND EQUIPMENT:

1. Tracked excavator with shear, grapple, hoe ram, concrete cracker/pulverizer, or bucket attachment.
2. Rock crusher.
3. Rubber tired and tracked front-end loaders.
4. Transport equipment for debris as required.
5. Fog Cannon
6. Torch Equipment

Note: Insert any materials that require long lead procurement or special order. Don't list common items such as PPE.



7. DETAILED WORK STEPS:

7.1 SITE INFORMATION:

Room 1, the fire training room, was constructed in about 1965. The walls of the original Building 34 are reinforced block. The block walls, "75% solid block" 8" concrete block, are set on 3'-6" reinforced concrete footers. The footers on their base span out to 1'-6". The floor is a 6" reinforced concrete slab set on a 4" gravel base. The roof structure is constructed of a "Flexicore" base covered with 2" thick lightweight concrete with wire mesh. A reinforced block wall was also constructed just to the east of the original part of Building 34. This wall is set on the same style of footer as Room 1.

Room 2 is a metal ("Armco Building") building that was anchored to the existing "barrier" wall (constructed in 1965) to the east of the Room 1 segment of Building 34. Besides being anchored to the block "barrier" wall western side, the metal framed walls of the northern, southern, and eastern sides of Building 34 are anchored to a reinforced 6" concrete slab that sets on 36" (minimum) footers that have a span 1'-4" at their base. A 4" minimum gravel bed underlies the slab.

The area designated as "Room 3" is an open area with eastern and western walls located between Room 1 and Room 2.

Room 4 a "Storage Shed" was "constructed" in 1984, by the relocation of a metal storage building from the area between Building 47 and W Building. That building, when it became a part of Building 34, was placed on a 4" thick wire mesh reinforced slab. To place, and to anchor this building the then existing blacktop was removed, and a 4"gravel base was lain to accommodate the new slab. The slab has 10" footers on its perimeter.

7.2 NATIONAL HISTORIC PRESERVATION ACT (NHPA)

Building 34 is not listed as a historic structure with the Ohio Historic Preservation Office (OHPO). No mitigative documentation package is required.

IMPORTANT: However, if any items or artifacts are discovered as this project progresses, the Cultural Resource Representative will be notified at extension 3691. Work will be temporarily suspended until which time the items or artifacts have been recovered.

7.3 SITE PREPARATION & MOBILIZATION

7.3.1 Site Access Control

Establish work zone boundary using fencing and/or with barricade tape as directed by the Project Foreman. Natural barriers, such as, waterways, spillways, etc. may be used to control access to the site. Proper signage will be placed at all access points to the site.

This zone is not to be entered by anyone not directly involved with the demolition unless they have contacted the Project Construction Manager/Foreman first.

Install storm drain protection by utilizing a grating slip cover.

7.3.2 Clear Area and Mark/Protect Utility Equipment

The area around the building will be mowed or otherwise cleared of obstacles as appropriate. Coordinate with site Safety and Health and Environmental Compliance.

Verify Mark fire hydrant and other utility equipment is protect with visible stakes. Verify field grates are covered for protection.

7.3.3 Cover/Protect Room #1 FCA

Install steel sheeting over Room #1 yellow – over – magenta painted surfaces (FCA) where possible. Utilize plywood sheets in inaccessible areas to cover the balance of the painted area.

7.3.4 Temporary Utilities

The only temporary utility that may be required is water. Ensure backflow prevention is present. Coordinate with site Safety and Health and Environmental Compliance PoCs. Water will be used to control dust emissions.

7.3.5 Temporary Facilities

This project will use the existing SMPP/TFV project new trailer complex located in the existing Mound "C" parking lot.

7.3.6 Temporary Communications

Temporary communications are required (cell phone, radios) due to the functions and equipment for hearing plant

announcements and emergency notifications have been removed prior to demolition. At the job site, plant announcements and emergency notifications can be heard on the Plant radio channel.

7.3.7 Staging Areas

The project site is of sufficient size to also be used as a staging area.

7.4 PRELIMINARY ACTIVITIES AND VERIFICATIONS

7.4.1 Verify all Building Utility Isolation Activities have been completed per FTS - 35838

verified by _____ Date: _____
Project Supervisor - signature or email

7.4.2 The *Pre-Job Briefing Record* must be completed and signed.

7.4.3 The *Job Specific Hazards Analysis (JSHA)* must be reviewed.

7.4.4 Notification of Demolition and Renovation form must be filed with the Regional Air Pollution Control Agency (RAPCA) at least 10 business days before planned building demolition.

HOLD POINT: RAPCA Notification Verification

_____ Date to Proceed with Demo_____
Environmental Compliance PoC signature or email confirmation

7.4.5 The "Cold & Dark" Implementation Requirements Document requires a Review Team tour of the facility & scope of the project prior to Project Manager authorizing the start of work.

HOLD POINT: 'COLD & DARK' Review Team Walkdown Completed &

Project Manager Authorizes Work to Start:

Project Manager _____ Date & Time : _____

IMPORTANT NOTE: All workers have Stop Work Authority. Situations where stop work authority is to be exercised are:

- To stop unsafe work.
- To stop unauthorized work, for example, work outside the scope of this work package.

WARNING HAZARD: Building #34, Room #1 floor is a Radiologically Controlled Area categorized as a Fixed Contamination Area(FCA). In order to prevent the production of loose contamination, the yellow – over – magenta painted surfaces must not become damaged.

IMPORTANT:

- Rooms #2 & #3 building demolition debris is to be placed in Waste Management roll-offs for disposal at the sanitary landfill. The concrete slab & foundation debris will be radiologically categorized before transportation for disposal as directed by Waste Management PoC.
- All of Room #1 debris must be segregated for radiological categorization & waste disposition. Transport the concrete debris for disposal as directed by Waste Management PoC.

7.5 BUILDING DEMOLITION SEQUENCE OF WORK

7.5.1 Structural Demolition

Detach room #2, the "Armco Building", from the concrete block barrier wall on the west side & slab foundation by dismantlement or torch cutting and demolish the structure utilizing heavy duty equipment. The metal walls & roofing may be sized reduced to fit into roll-offs.

Room #4 metal storage shed may be detached from the slab and demolished in like manner and also placed into roll-offs for disposal.

Room #2 West "barrier" wall is to be demolished along with Room #1 concrete walls & concrete roof materials. The resulting concrete debris is to be radiologically screened before being placed into haulers & transported to the concrete crusher for onsite disposal.The flexicore roof, exhaust fans, ventilation louvers, wire mesh roofing reinforcement, and all other non-concrete demolition debris from Room #1 must be segregated & radiologically surveyed and categorized for waste disposition by the Waste Management PoC.

IMPORTANT: Care should be taken to prevent debris from falling into the canal on the West & North sides of the site. Should debris inadvertently fall into the canal, utilize demo crafts to immediately retrieve.

Note: The progression of the building demolition will ultimately be determined in the field.

7.5.2 Slab & Foundation Demolition

HOLD POINT : Obtain completed Excavation/Soil Disturbance Permit, MD_10286, O5. Ensure entire area is clearly marked, or remarked, after building demolition activities, denoting all underground utilities as required by the permit

Project Superintendent _____ Date & Time _____
Signature or email confirmation

Demolish the reinforced concrete slab foundations of rooms #2 & #4. During the concrete demolition, use heavy equipment to assist RCTs to radiologically survey and categorize the concrete waste for disposition.

WARNING HAZARD: Dust Control – Utilize dust control measures for demolition activities as described in Table 1 in Appendix A. The Goal is no visible dust emissions. Controls will evaluated routinely to determine their effectiveness

CAUTION ELECTRICAL HAZARD: Contact of overhead power lines with heavy-duty equipment. If any part of heavy-duty equipment has the potential to come within 10' of street lighting circuit, perform LOTO to de-energize electrical power source. This circuit must be re-energized each evening when demolition is complete for that day.

CAUTION HAZARD: Struck by flying debris. Establish construction boundary. Wear hard hat safety glasses, safety shoes, and reflective vest inside construction area.

CAUTION HAZARD: Struck by moving equipment.

- Maintain the following distances from operating equipment:
  - Shear – 75 feet
  - Hoe Ram – 50 feet
  - Other heavy duty equipment – 30 feet
  - Bobcat – 15 feet

WARNING NOISE HAZARD: Wear hearing protection while running heavy-duty equipment. Follow the requirements of MD-10286 D9.

CAUTION HAZARD: Burns from torch cutting. Obtain and follow Hot Work permit per MD-10286 O2

CAUTION LEAD HAZARD: Exposure to airborne lead during torch cutting. Contact Inductrial Hygiene to verify absence of lead in paint prior to torch cutting.

CAUTION ASBESTOS HAZARD: Asphalt roof may contain asbestos – do not render friable or conduct invasive activities involving close worker contact

CAUTION HAZARD: Heat/Cold Stress. Follow the requirements of MD-10286 D13/D16

7.6 AREA RADIOLOGICAL EVALUATION, SITE REMEDIATION, & DEMOBILIZATION

IMPORTANT: Radiological Evaluation must be completed before site remediation is initiated.

7.6.1 Area Radiological Evaluation

7.6.1.1 Perform walkover radiological surveys, utilizing Fidler Instrumentation, of all exposed soil areas.

7.6.1.2 Collect one biased composite soil sample from the soil exposed from removal of each removed slab for on-site long-count gamma spectrographic analysis.

7.6.2 Grading, Seeding, & Mulching

Restore the area by grading and filling with appropriate amount of gravel/soil to grade to drain.

Apply appropriate amounts of grass seed and mulch to maintain erosion control/protection in accordance with Environmental Compliance PoC instructions.

7.6.3 Remove Temporary Protection Structures or Markers

Remove steel and plywood sheeting from room #1 floor, markers from fire hydrants, and protection from field grates. Utilize care to prevent disturbance of painted FCA surfaces. RCT will monitor the area during removal.

Remove silt fencing and other storm water control and erosion protection.

7.6.4 Demobilize Construction Equipment

Remove dust control water distribution system, temporary power, fencing and any traffic control. Scan equipment for radiological contamination prior to leaving area as required dependent upon in-process Rad surveys.

7.6.5 Area Radiological Control & Posting

Radiologically control & post area per Mound Radiological Control Procedures.

Note: Insert the activities to be performed during the job. Describe the specific methods of accomplishing these activities and appropriate level of detail based on the complexity, hazard, and skill of the craft. Activities listed must be grouped under the Work Package phases listed in item 5.

Note: Comments, to identify activities/hazards that are common to multiple phases of the project. Identification of these items will facilitate the option of addressing the items once in the pre-job briefing, as opposed to redundantly listing them in the JSHAs for different phases.

COMMENTS:

Enter any review comment or issues in this section and/or information generated as a result of completing detailed work steps.

REVIEW SIGNATURES:

Written by: J Boston Date: 05/27/03 Phone: 3262

Job Foreman: Date: 6/3/03 Phone: 3663

Superintendent/Constr. Mgr: Date: 6/3/03 Phone: 3866

Project Eng. Mgr: Date: 5/27/03 Phone: 4220

Industrial Safety & Hygiene: Date: 5/27/03 Phone: 4040 3737

Rad. Controls: Date: 5/27/03 Phone: 4522

Environmental Compliance Date: 5/27/03 Phone: 4080

Waste Mgmt: Date: 6/3/03 Phone: 4617

Bldg. Mgr: Date: 6/6/03 Phone: 3241

Craft Review: Trade HD Date: / / Phone:

Craft Review: Trade HDM Date: / / Phone:

Craft Review: Trade HO Date: / / Phone:

Craft Review: Trade Date: / / Phone:

10. USQ SCREEN / DETERMINATION REQUIRED? ☐ YES X NO

Brief Explaination Building 34 is not a Nuclear or Radiological Building and operations will not affect any Nuclear or Radiological Facility

USQ Trained Person: J Boston Date: 05/27/03 Phone: 3262

10. AUTHORIZATION SIGNATURE:

Project Manager: Date: 06/09/03 Phone: 4169

11. WORK PACKAGE CLOSURE:

Job Supervisor: Date: / / Phone:

Project Manager: Date: / / Phone:

RETURN PHA TO IS&H AT JOB COMPLETION.

Work Package Revision Form

Work Package Revision Form			
Work Package No.SMPP/TFV-33187-00	Revision No.		
Revision Description: (attach page revisions to form)			
	Name	**Signature**	**Date**
PREPARED BY:			
Revision Preparer:			
REVIEWED BY:			
Project Engr. Manager:			
Project Foreman:			
Project Superintendent/ Constr. Mgr.:			
Industrial Safety & Hygiene P o C:			
Radiological Point of Contact:			
Environmental Safeguards & Compliance P o C:			
Waste Management PoC:			
Building Manager:			
Other:			
Other:			
USQ Trained Person			
USQ SCREEN / DETERMINATION REQUIRED? ☐YES ☒NO			
APPROVED BY:			
Project Manager:			

07 06 53

Work Package Revision History Form

WORK PACKAGE REVISION HISTORY FORM			
REV. NO.	REASON	SIGNATURE	DATE

Appendix A

PRELIMINARY HAZARD ANALYSIS

JOB SPECIFIC HAZARD ANALYSIS

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PHA/JSHA

APPENDIX A

Preliminary Hazard Analysis (PHA) For Work Package Activities

SECTION A, INDUSTRIAL SAFETY - TO BE COMPLETED BY THE INDUSTRIAL SAFETY AND HEALTH REPRESENTATIVE
Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. lead compliance plans, confined space plans, hearing conservation programs, etc.), Including any notations for future Hazard Analyses. Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards, that require protective measures be designed, inspected, or approved by a professional engineer or other competent person. (Use Section F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Access/Blockage:			
Blockage of exits or means of egress	No		[EGRESS]
Blockages/obstructions (Identify)	No		
Confined space entry (permit)	No		[CONFINE]
Emergency alarms or evacuation plans required	Yes	All	[EMERG] Plant Public Address system will be used to announce any plant emergency over the plant radio channel, cell phones will be used also, no specific added hazards exist in the demolition of this building.
Obstruction of fire protection equipment (pull boxes, hydrants, fire department connections, control panels, fire extinguishers, etc.)	No		
Traffic control/flagman	No		[TRAFIC]
Flammable/Explosive:			
Burning, welding, hot-work permit (Fire Watch)	Yes	7.5.1	[BURN] Hot Work Permit Required. Paint may contain lead, do not torch cut painted surfaces without verification by IH.
Chemical compatibility of corrosives/flammables	No		
Explosive/flammable atmosphere	No		
Explosives	No		
Fire protection system/equipment outage	No		[FIRE/EFIRE]
Fire Hazards Analysis/Fire Engineer Approval	Yes	N/A	[FHA/ADJA] Completed in Utilities Isolation Package
Flammable liquids/gases	No		[FLAM]
Powder-actuated tools (permit)	No		
Special Fire Protection Equipment Required	No		[FIREQU]
Chemicals:			
Chemical process safety	No		
Compressed gas cylinders	Yes	7.5.1 & 7.5.2	Acetylene torch
Emergency eyewash/shower available	No		[EWASH]
Elevated/Aerial Work:			
Crane operations, overhead or mobile	No		
Critical lifts (heavy or high value loads)	No		[CLIFT]
Elevated work/fall protection	No		[ELEV]
Forklifts, aerial lifts or material handling equipment	No		
Hoisting and rigging	No		[HOIST]
Overhead utilities (Identify)	Yes	7.5.1	[UITL]Overhead Light Power lines to be LOTO or removed during demolition. See drawings in Appendix C.

APPENDIX A

Preliminary Hazard Analysis (PHA)For Work Package Activities (Continued)

SECTION A, INDUSTRIAL SAFETY - TO BE COMPLETED BY THE SAFETY AND HEALTH REPRESENTATIVE
Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. lead compliance plans, confined space plans, hearing conservation programs, etc.), Including any notations for future Job Safety and Health Analysis(JSHA). Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards that require protective measures be designed, inspected, or approved by a professional engineer or other competent person. (Use Section F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Lockout/tagout, outages, disconnects (permit)			[LOTO/ISO]
• Electrical	Yes	7.5.1	Electrical isolation of the facility is accomplished during Utilities Isolation Activities. Overhead Light Power lines to be LOTO or removed during demolition
• Mechanical (steam, hydraulic, pneumatic, gravity)	No		
• Interlocks	No		[ILOCK]
• Chemical	No		
• Radiological	No		
Outages of the plant public announcement (PA) system or the emergency notification system	No		[OUTAGE]
Building Systems Alarms - Ensure systems are not functional by contacting: Fire Department Security Facilities Services.	No		-Fire Alarm Pull Boxes -Fire Suppression Water Flow Alarms -Smoke Detector Alarms -Security Systems -DDC signals
Alarm Disable/Disconnect	No		
Structure Related:			
Modification to Fire Wall/Door	No		[FIREWAL]
Penetrations into walls, floors, etc. (permit)	No		[PENETR]
Plastic sheeting or wood framing/enclosures	No		
Structural Modification	No		[STRUCT]
Work impacting adjacent normally occupied areas	No		[ADJAC/BMAPP/SIGNS/NOTIF]
Building Structural Engineering Survey per OSHA 29 CFR 1926.850	Yes	N/A	Survey Completed by __W._Johanan__-letter in Appendix D_____ Date: 05.08.03
Temporary Requirements:			
Temporary heating facilities	No		
Temporary/portable buildings or structures	No		[FACIL]
Temporary service hook-ups (Identify)	Yes	7.3.4	Water hydrant for misting, including backflow prevention, if required or fog cannon & self contained water tanks
Public utilities (Identify)	No		[WATER]
Lighting/illumination/adequacy	No		[MLITE]
Miscellaneous:			
Machine guards	No		
Off-shift work	Yes	All	As required – no special precautions required
Repetitive work	No		[ERGO]
Other (Specify)	None		
Work in attics, ceilings, chases, or crawlspaces	No		
Work Requiring Scaffolding (inspection required)	No		[SCAFF]
Electrical:			
Electrical hazards	No		[LIVEL]

APPENDIX A

Preliminary Hazard Analysis (PHA)For Work Package Activities (Continued)

SECTION A, INDUSTRIAL SAFETY - TO BE COMPLETED BY THE SAFETY AND HEALTH REPRESENTATIVE
Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. lead compliance plans, confined space plans, hearing conservation programs, etc.), Including any notations for future Job Safety and Health Analysis(JSHA). Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards that require protective measures be designed, inspected, or approved by a professional engineer or other competent person. (Use Section F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Grounding of electrical equipment	No		
Soils/Excavation:			
Underground utilities (Identify)	Yes	7.5.2	[UTIL-DIG] Utilize Excavation/Soil Disturbance Permit, MD_10286, O5 before slab demolition or site remediation
Trenching/Shoring (permit)	No		[DIG]
Hazards due to condition of facility or terrain (Identify)	No		

SECTION B, INDUSTRIAL HYGIENE - TO BE COMPLETED BY INDUSTRIAL HYGIENE REPRESENTATIVE
Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. lead compliance plans, confined space plans, hearing conservation programs, etc.), Including any notations for future Job Safety and Health Analysis (JSHA) . Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards that require protective measures be designed, inspected, or approved by a professional engineer or other competent person. (Use Section F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Asbestos/Fibers:			
Asbestos	Yes		[ASBEST] Asphalt roof may contain asbestos – do not render friable or conduct invasive activities involving close worker contact
Removal of ceiling tiles*	No		
Insulation/man-made mineral fibers (☐ MSDS available)*	No		
Hazardous Materials:			
Beryllium	No		
Cadmium	No		
Chlorofluorcarbon (CFC)	No		[CFC]
Coal, tar or asphalt products	Yes	7.5.1	Roofing material contains tar and asphalt products; to be disposed of as construction debris.
Lead	No		
Mercury	No		
Polychlorinated biphenyls (PCBs)	No		
Carcinogens (☐ MSDS available)*	No		[CARC]
Chemical/Corrosives:			
Chemicals/solvents (☐ MSDS available)*	No		[CHEM/MSDS]
Corrosives/acids/caustics (☐ MSDS available)*	No		

***NOTE:** Requires a description of the materials involved which present a hazard. Identify the physical location of the MSDS.

APPENDIX A

Preliminary Hazard Analysis (PHA)For Work Package Activities (Continued)

FOR Work Packages

SECTION B, INDUSTRIAL HYGIENE - TO BE COMPLETED BY INDUSTRIAL HYGIENE REPRESENTATIVE
Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. lead compliance plans, confined space plans, hearing conservation programs, etc.), Including any notations for future Job Safety and Health Analysis (JSHA). Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards that require protective measures be designed, inspected, or approved by a professional engineer or other competent person. (Use Section F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Ventilation/Air:			
Abrasive blast (☐ MSDS available)*	No		
Coating/painting (☐ MSDS available)*	No		
Dusty operations	Yes	7.5.1	Utilize dust control measures as appropriate from Table 1.
Foam in Place Operations	No		
Spraying/generation of mists*	Yes	7.5.1	Demolition dust control water misting during demolition and road wetting during waste hauling.
Ventilation or Air Monitoring requirements	Yes	7.5.1	[VENTIL/IH] Air monitoring for potential silica during demolition activities wil be performed as needed for annual site assessment.
Miscellaneous:			
High Pressure systems	No		[HIPRES]
Lasers	No		
Noise in excess of 85 dBA	Yes	7.5.1	[NOISE] Hearing protection required during noise hazard activities.
Blood-borne pathogens*	No		
Temperature extremes (heat or cold stress)	Yes	All	[CRYRO/COLD/HEAT] discuss in daily pre-job briefings & monitor per MD-10286 Operations D13/D16
Welding, brazing, or thermal cutting operations (permit)	Yes	7.5.1	[BURN] Hot Work Permit Required. Paint may contain lead, do not torch cut painted surfaces without verification by IH.
Hazardous Waste Operations (HAZWOPER)*	No		
Other (specify)	None		

*NOTE: Requires a description of the materials involved which present a hazard. Identify the physical location of the MSDS.

APPENDIX A

Preliminary Hazard Analysis (PHA)For Work Package Activities (Continued)

FOR Work Packages

SECTION C, RADIOLOGICAL PROTECTION - TO BE COMPLETED BY RADIOLOGICAL CONTROLS REPRESENTATIVE
Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. RWP, ALARA Plan, etc.). Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards that require protective measures be designed, inspected, or approved by a professional engineer or other competent person. (Use Section F if additional space is needed.)

Item		Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Location:	Controlled Areas (Specify)			
	Building 34 Room #1 – Floor Fixed Contamination Area (FCA)	Yes	7.5.1	FCA painted floor - Contamination levels of U-238 - 58354 dpm U-233/234 - 7457 dpm U-235 - 525 dpm
	Building 34 Room #1 – structure Radiological Controlled Area (RCA)	Yes	7.5.1	Segregate concrete/cement block materials from other debris. - concrete/cement debris to be hauled to the crusher for disposal or as directed by Waste Management PoC. - balance of debris to be segregated for radiological survey to categorize for waste disposal.
	Other (Specify)	None		
Activities:	Digging/Soil Removal (permit)	Yes	7.5.1	[DIG] Excavation permit required for slab/foundation removal
	• URMA	No		
	Welding, burning, grinding, hammering, chipping, or scraping of contaminated materials	No		Precautions to be taken to prevent physical disturbance of contaminated areas
	Decontamination	No		
	Other(Specify)			
	– FCA protection during Demolition	Yes	7.5.1	Cover & protect painted room #1 FCA's during demolition to prevent heavy duty equipment damage to painted surfaces due to high levels of contamination. -Utilize metal plating where feasible, where plywood is used, RCT coverage is required to monitor protection.
	- Site Remediation	Yes	7.6.1	Conduct Fidler walkover radiological surface surveys of all exposed soil areas and collect a composite sample from soil underneath each removed slab for gamma spectrographic analysis prior to site remediation.
Sources:	X-Ray equipment, sealed, or unsealed sources	No		
Controls:	Radiological Work Permit	No		[RWP/RWP=JS/RWP=N/R/RPGEN]
	ALARA Plan	No		[ALARA]
	Other	None		

Preliminary Hazard Analysis (PHA)For Work Package Activities (Continued)

SECTION D, ENVIRONMENTAL COMPLIANCE- TO BE COMPLETED BY ENVIRONMENTAL COMPLIANCE REPRESENTATIVE
Identify engineering/administrative controls as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard. Additionally, identify any activities which are DOE or EPA prescribed protective requirements. (Use Section F if additional space is needed.)

		Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Conditions:	Fugitive Dust (refer to Table 1 below)	Yes	7.5.1	OPA 980014 Section 2.11
	Storm Water Runoff	Yes	7.5.1	Install sediment/storm water protective "slip cover" around storm drain grating.
	Erosion Control	Yes	7.6.1	Grading, seeding, and mulching
	NESHAPS Calculation	Yes	N/A	Emission Levels determined to be below requirement. No US EPA approval required for this building.
	National Historic Preservation	Yes	All	Building 34 is not listed as a historic structure with the Ohio Historic Preservation Office (OHPO). No mitigative documentation package is required
	• Artifacts found	Yes	All	If any items or artifacts are discovered as this project progresses, the Cultural Resource Representative will be notified @ extension 3691. Work will be temporarily suspended until which time the items or artifacts have been recovered.
	Safe Drinking Water Act			
	• Potable water	Yes	N/A	Potable water was disconnected for building during Utilities Isolation Work Package.
	• Backflow prevention for misting	Yes	7.3.4	Install backflow prevention for water misting source as directed by Environmental Compliance PoC
	Emergency Spill Response Materials (Confirm process lines are drained)	Yes	All	Ensure spill kits are available
Notifications:	RAPCA Notification for Asbestos	N/A		No regulated asbestos material removal performed in this building.
	RAPCA Notification for Demolition	Yes	7.4.4	Required 10 business days before beginning demolition activity
	Emergency Spill Response Notification	Yes	All	911 or 865-4040
	Other			

Table 1 Airborne Contaminant Protection Methods

Dust Generating Activities	Administrative and Engineering Dust Control Measures
Building Demolition	• Applying dust control materials such as water and surfactants
Hauling Material and Equipment	• Reducing vehicle speeds (<20 mph) • Covering truck beds when transporting materials • Keeping soil levels in vehicles below the vehicle sides • Wetting roads used for transport • Wet sweeping or otherwise removing soil and mud deposits from paved roadways and parking areas
Vehicle and Equipment Traffic	• Reducing vehicle speeds (<20 mph) • Covering truck beds when transporting materials • Wetting roads used for transport • Minimizing unnecessary traffic on roadways, parking areas, and areas around field activities
Excavation	• Applying dust control materials water and surfactants • Covering storage piles with a tarpaulin, plastic, etc. • Keeping soil levels in vehicles below the vehicle sides • Minimizing the material drop height during excavation and loading operations • Compacting soils in work areas and in stockpiles at the end of each workday • Changing excavation and transportation method(s) when feasible • Applying vegetative cover or asphalt to project work area at completion of project • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks
Trenching	• Applying dust control materials water and surfactants • Covering storage piles with a tarpaulin, plastic, etc. • Keeping soil levels in vehicles below the vehicle sides • Minimizing the material drop height during excavation and loading operations • Compacting soils in work areas and in stockpiles at the end of each workday • Changing excavation and transportation method(s) when feasible • Applying vegetative cover or asphalt to project work area at completion of project • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks

Table 1 Airborne Contaminant Protection Methods (continued)

Dust Generating Activities	Administrative and Engineering Dust Control Measures
Material Loading and Unloading	• Reducing vehicle speeds (<20 mph) • Covering truck beds when transporting materials • Keeping soil levels in vehicles below the vehicle sides • Wetting roads used for transport • Wet sweeping or otherwise removing soil and mud deposits from paved roadways and parking areas
Storage Piles	• Compacting soils in work areas and in stockpiles at the end of each workday • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks • Covering storage piles with a tarpaulin, plastic, etc. • Applying vegetative cover to storage pile areas at completion of project
Wind Erosion from Work Sites	• Compacting soils in work areas and in stockpiles at the end of each workday • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks • Covering storage piles with a tarpaulin, plastic, etc. • Applying vegetative cover or asphalt to project work area at completion of project

Preliminary Hazard Analysis (PHA)For Work Package Activities (Continued)

SECTION E, WASTE MANAGEMENT- TO BE COMPLETED BY WASTE MANAGEMENT REPRESENTATIVE *Include any required and/or other special actions to be taken because of the particular hazard. Additionally, identify any activities which are required by DOE, Nevada Test Site, Envirocare or other waste site.* (Use Section F if additional space is needed.)

	Quantity Expected	Work Package Phase	Radiological Characterization	Packaging Requirements	Mode of Disposal
Types:					
Sanitary Landfill Waste: • Concrete • Steel & Copper Piping • Metal Roofing • PVC • Electrical Wiring • Fiberglass Insulation • Wood	7200 cu.ft.	3	No elevated radioactivity levels	30 Cu. Yd. Roll-Off/End Dumps	Offsite Disposal via Waste Management Operations/Journey LTD.
Hazardous Waste: • RCRA Hazardous Waste • Asbestos • Other	None				All non-regulated asbestos disposed with construction debris
Mixed Waste	None				
Low Level Radiological Waste: • Building Debris • Below grade	None				
Transuranic (TRU) Waste	None				
NOTE: 1. Sealed pressure vessels will need to be at <1.5 atmosphere if present. 2. Any items not previously evaluated are to be set aside for evaluation by Waste Management prior to disposal.					
Other:	None				

SECTION F - OTHER CONDITIONS, CONCERNS, OR SUPPLEMENTAL INFORMATION FROM SECTIONS A THROUGH C INCLUDING APPLICABLE LESSONS LEARNED:

EMERGENCY PREPAREDNESS

- Site Notification Procedures

Use **911** for all emergency services onsite. This is the first response for any emergency, spill, or release. If using a cell phone, dial **865-4040**. This number will ring into the plant 911 system. Any injury, no matter how minor, shall be reported immediately to the Medical Department for evaluation and treatment. The injured employee shall report any injury to the supervisor in charge or designee.

Employees will be notified of emergency or abnormal conditions by the project two-way radios. Additionally, unique sheltering and evacuation signals are available should site-wide protective actions be necessary.

- Evacuation Route/Assembly Areas

Assembly area is East of Building 34 at the Site Boundary Fence Gate. See map in Appendix C.

- Take Shelter Area

Be aware of threatening weather and take shelter when life-threatening storms are imminent.

The take shelter area is Building 87. See map per Appendix C.

APPLICABLE LESSONS LEARNED – See Appendix E

Project/Activity: Building 34 Demolition
Name: Jeffrey L. Boston

JSHA CRITERIA CHECKLIST	YES	NO	N/A
1. Work performed with a 6 ft. or greater fall hazard, excluding portable ladders. See Item 14 for further requirements.		X	
2. Roof work requiring the use of fall protection (within 6 ft of an unprotected edge) or special fall protection procedures.		X	
3. Potential hazardous chemical exposure above action levels or permissible exposure limits (PELs), or ACGIH Threshold Limit Values (TLVs).		X	
4. Work activity in an immediately dangerous to life or health (IDLH) breathing hazard environment.		X	
5. Fire or explosion hazards. Are fire hazards beyond a Hot Work Permit? (Reference O2, MD-10286)		X	
6. Work within close proximity of live electrical greater than 50 volts, conductors, and/or work that requires multiple locks, multiple hazard sources, or complicated lockout/tagout circumstances. (Reference MD-10444, *Lockout/Tagout Procedure Manual*, for multiple energy lockout/tagout.)		X	
7. Any maintenance or repair of equipment under pressure where the pressure cannot be shut off and de-energized.		X	
8. Work with high or extreme exposure to ionizing or nonionizing radiation (reference MD-80036, Op 10002), noise, or heat or cold stress (reference D9, D13 & D16, MD-10286).		X	
9. Determined by an appropriate core team, building manager, member of general or executive management, or the IS&H manager to require a JSHA.	X		
10. Any onsite construction or service project directed to have JSHAs based on this procedure and/or instruction from project personnel or IS&H staff.	X		
11. Near-miss event with the potential for loss of life or limb or disabling injury/illness if repeated.		X	
12. Excessive trauma/motion/vibration work situations or manual lifting involving heavy, large, and/or awkward-to-handle objects (reference MD-10407, *Ergonomics Program.*		X	
13. Unguarded, unmarked close clearance, pinch point, exposed moving machinery parts.		X	
14. Known potential falling object hazards (e.g., employees working above other employees, potential for dropping tools, falling equipment or material) or working in areas with the potential for flying objects (flying chips, sandblasting, etc.), exposure to sharp or protruding objects (e.g., working inside plenums, air mover ducts, etc.).	X		

MANDATORY JSHA REQUIRED TO ADDRESS ANY/ALL (YES) RESPONSES

JOB SAFETY & HEALTH ANALYSIS

JSHA MASTER DOCUMENT CONTROL NO:
SMPP/TFV – 34 - 041403

DATE: 5/22/2003	_X_ NEW ___ REV	BUILDING: 34	JOB: Demolish Building 34 MSR #33187
DEPARTMENT/COMPANY: SMPP-TFV Project/CH2M Hill Mound, Inc.			SECTION: N/A

OCCUPATIONS: : Heavy Duty Operators, Demolition Tech's, Demolition Crafts, & Electricians.
Supported by Project Personnel e.g.. Supervision, Engineering, RAD Control, Ind. Hygiene, and Safety

SIGNATURES

ORIGINATOR:	J. Boston 05.27.03
REVIEW/REV:	5-27-03
REVIEW/REV:	
REVIEW/REV:	6/6/03
APPROVED:	6/4/03

REQUIRED PERSONAL PROTECTIVE EQUIPMENT:	MSDS(s)/CHEMICALS ASSOCIATED WITH THE JOB:
Hard Hat, Safety Glasses with side shields, safety shoes, safety vest	None

BASIC JOB STEPS	POTENTIAL ACCIDENT/ILLNESSES OR KNOWN HAZARDS	SAFE JOB PROCEDURES
Break the job down into basic steps that tell what is done first, what is done next, and so on. Record the job steps in their normal order of occurrence. Describe what is done, not the details of how it is done. Usually, three or four words are sufficient to describe each job step. For example, the job of "replacing a light bulb" may break down into basic steps as follows: 1. Bring and set up ladder 2. Ascend ladder 3. Remove light globe & bulb 4. Replace light bulb 5. Replace light globe 6. Descend ladder 7. Remove and store ladder	Ask yourself for each job what accidents/illnesses could occur to the employee doing the job. Record potential accidents/illnesses by combining one of the abbreviations below with the agent of contact. For example, "struck by a crane hook" is recorded "SB-crane hook." Number each potential accident. SB - Struck by CB - Contacted by SA - Struck against CW - Contact with CI - Caught in CO - Caught on IB - Caught between F - Fall SO - Strain-overexertion* E - Exposure (occ. illness) *Show ergonomic stresses as SO (repetitive trauma, single event strain, or awkward position)	For each potential accident/illness, ask yourself exactly what the employee should do or not do to avoid the accident/illness. Describe specific precautions in detail. Give each precaution the same number given in the potential accident (center column) to which it applies. Avoid generalities such as "Be alert," "Be careful," and "Take caution." Use simple do or don't statements; e.g., "Lock out main power switch," "Stand clear of lift before signaling," or "Check wrench grip before exerting full force." If necessary, explain how, as well as what, to do. Amount of detail is a matter of judgment. Describe ergonomic solutions (job redesign, new tools, worker lift assistance, etc.)
General Safety Note	A wide variety of incidents occur on a regular basis that potentially could result in injury or illness	-Be cognizant of your own safe work practices as well as those of your co-workers -Review any related safety procedures of which you are unsure -Utilize STOP WORK Authority as necessary
Pre-job meeting with involved personnel to discuss the work plan and safety requirements. This meeting is conducted daily.	N/A	-This project engages in Enhanced Work Planning(EWP), a ISM process that evaluates and improves the approach by which work is identified, planned, approved, controlled, and executed.
1. Site Preparation & Mobilization	Standard construction hazards.	-Demolition preparation is defined by 29CFR1926.850; workers, unfamiliar with construction standards must notify the project supervision and/or project health and safety personnel.
1a. Site Access Control	Struck by equipment, debris	-Once the work area is defined, only authorized personnel are permitted in the construction perimeter. -Unescorted, Non-project and Non-emergency personnel, must have acceptance of the SMPP/TFV Project Manager for entry -Emergency access to the work zone will be maintained to the extent possible.
1b. Install Room #1 FCA floor protection; steel/plywood sheeting	Lifting /twisting strain Cuts and abrasions Slip trips and falls	-2 man rule follow standard practice lifting -Wear appropriate PPE -Be cognizant of your own safe work practices as well as those of your co-workers

02-06 53

JOB SAFETY AND HEALTH ANALYSIS FORM
(CONTINUATION SHEET)

BASIC JOB STEPS	POTENTIAL ACCIDENT/ILLNESSES OR KNOWN HAZARDS	SAFE JOB PROCEDURES
1c. Clear Area and Mark/Protect Utility Equipment	Running into fire hydrants, manhole covers, or grates over field drains.	-Mark/protect hydrant and other utility equipment with wooden boxes, visible stakes, and/or colored flags. -Cover field grates to protect
2 Building Demolition & Debris Disposition	Vehicle Traffic Hazard	-Control traffic with flagmen as necessary
2a. Operation of heavy equipment near electric overhead lines	Shock Hazard	-All utilities to the building including electrical have been disconnected by project electricians at a point away from the building. -Identify sources outside the building that may require LOTO to prevent incidental contact by Heavy Duty Equipment, such as street lighting circuit.
2c. Demolish building using excavator mounted shear, hoe ram, grapple, . loader, and bobcat	Struck by flying debris Struck by moving equipment Noise Hazard	-Establish construction boundary. -Wear hard hat safety glasses, safety shoes, and reflective vest inside construction area. Make eye contact with operator when working around equipment. Use hand signals to communicate intent. -Maintain the following distances from operating equipment: Shear – 75 feet Hoe Ram – 50 feet Other heavy duty equipment – 30 feet Bobcat – 15 feet -Make sure equipment is in safe working order. Use spotter if vision is obstructed. -Install traffic control with sufficient flagmen -Wear hearing protection while running heavy duty equipment Follow the requirements of MD-10286 D9
2d. Torch cut rebar or to weaken structural members	Burns, fire Potential lead paint fume exposure	-Obtain and follow Hot Work permit per MD-10286 O2. Wear proper PPE, have fire extinguishers in the construction zone. -Test for lead paint; do not torch cut lead paint.
2e. Working in excessive heat/cold	Heat Stress/Cold Stress	-Follow the requirements of MD-10286 D13/D16 and discuss in daily pre-job briefings
2f. Debris Characterization & Disposal	Radiological Contamination	- Protect room #1 FCA with steel sheeting where possible to prevent damage that could produce loose contaminated material. In areas where plywood is most practical, utilize RCT in-process surveillance.
2g Room #2 & #4 Slab & Foundation Demolition & Removal	Underground Utility Contact – Electrical/Water Pressure Exposure Radiological Contamination	-Evaluate & Mark area per Excavation/Soil Disturbance Permit, MD_10286. O5 for Underground Utilities. - Have RCTs survey bottom of concrete slab before disposal

022 of 53

JOB SAFETY AND HEALTH ANALYSIS FORM
(CONTINUATION SHEET)

3 Site Remediation & Demobilization	**General Safety Note** A wide variety of incidents occur on a regular basis that potentially could result in injury or illness	-Be cognizant of your own safe work practices as well as those of your co-workers -Review any related safety procedures of which you are unsure -Utilize STOP WORK Authority as necessary
3a. Rough grading	Equipment/ personnel mixture	-Stay clear of operating heavy equipment
3b. Seeding & Mulching	Slip – Trip – Fall Lifting /twisting strain	-Uneven walking and/or working surfaces –use extra caution. -Follow accepted practices
3c. Remove Temporary Protection Structures Remove wooden boxes from fire hydrants & fire prevention water lines Remove steel sheeting from field grates Remove siltation fencing/ storm water drain grating cover Remove steel/plywood sheeting from Room #1 floor	Lifting /twisting strain Cuts and abrasions Slip trips and falls Radiological Contamination	-2 man rule follow standard practice lifting -Wear appropriate PPE -Be cognizant of your own safe work practices as well as those of your co-workers - Ensure yellow – over – magenta paint has not been damaged. If damaged is observed, contact Radiological PoC.
3d. Demobilize Construction Equipment Remove dust control water distribution system Remove temporary power Remove fencing	Equipment/ personnel mixture Cuts and abrasions Lifting /twisting strain Radiological contamination of equipment if required by in-process surveys	-Be cognizant of your own safe work practices as well as those of your co-workers -Review any related safety procedures of which you are unsure -Utilize STOP WORK Authority as necessary -Coordinate in-process Rad Surveys with Rad Techs

02320 53

SIGN-OFF SHEET

I have read and understand the attached Job Specific Work Plan and JSHA:

SIGNATURE	**Date**	**Department**

Appendix B

PRE-JOB BRIEFING/JOB STATUS LOG

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PRE-JOB UPDATE

MSR/PROCEDURE (if applicable):	JOB SUPERVISOR

A.	Time, Date and Location of PJB:
B.	Applicable Procedure Number:
C.	Job Description:
D.	Personnel Attending:

HP#	SIGNATURE	HP#	SIGNATURE

JOB SUPERVISOR – This is a reminder checklist for the update. The supervisor need only discuss and note changes from the previous day's briefing or update. (Use NC for No Change).

1.	Any changes/revisions to safety envelope for work: a. New/added assignments and responsibilities of any individual b. Changes in facility conditions, tagouts, valve lineups c. New or changed precautions/hazards d. Valid RWP or other required work permits still in effect
2.	Adequate supply of PPE
3.	New training, any training coming up on expiration
4.	New changes to relevant Category "A" or Category "B" procedures.
5.	Equipment and tools calibrations in effect
6.	Relevant lessons learned, critique reports
7.	RWP revisions: a. Changes to radiological conditions of the workplace, particularly with respect to postings. b. Change in scope, especially if it is a reduction in scope or Stop Work Levels.
8.	Changes to radiological and/or health monitoring.
9.	Open the floor to questions.

The above minimum requirements have been met; this PJB has been conducted in sufficient detail to maximize continued safe conduct of the job, and all personnel have been through a previous Pre-Job Brief.

Job Supervisor/Foreman _____ Date _____

NOTE: Completed pre-job update sheet must be retained with the work package or maintained in your record file.

Daily Toolbox Safety Meeting

Project:	Date:

Safety Topic of Meeting:

Work Description of Meeting:

Review the following to determine if conditions have changed since the last Pre-Job Meeting
If this is the 1st meeting with a subcontractor, has Safe Work Authorization been done?
Check off each item that applies or mark N/A if it doesn't apply.

Hot Work Permit (torch cutting, spark producing grinding, open flame heaters, welding)		Signage and Barricades (construction area, hazard notification, rad postings, etc).	
Penetration Permit (penetrating walls, ceilings, or floors in a building)		Air Monitoring (as required by Environmental Compliance and/or Industrial Hygiene)	
Excavation Permit (digging in soil)		Dust Suppression (misting, etc.)	
Trench Plan (shoring, soil layback, etc. if over 4 feet below grade)		Water Runoff Prevention (silt fence, straw bales, collection pond, etc.)	
Confined Space Entry Permit (manhole, tank, or other confined space entry)		Radiation Work Permit (as required by Rad Controls)	
Fall Protection (person's feet over 6 feet above ground)		TLDs (as required by RWP and rad postings)	
Lockout/Tagout (all energy sources to equipment being worked on)		Waste Containers (rolloffs, sealands, dumpsters, LSA boxes, drums, etc.)	
PPE (respirators, Tyveks, safety shoes, safety glasses, hard hats, gloves, reflective vests, etc.)		Utility review especially for asbestos abatement contractor (label live utilities e.g. FAS, phone, electric)	
Personnel Training up-to-date for assigned work (Radworker II, Asbestos, Lead, etc.)		Hoisting and Rigging Review	

PRE-JOB UPDATE

Continuation Sheet for _____/_____/_____

HP#	SIGNATURE	HP#	SIGNATURE

PRE-JOB UPDATE

MSR/PROCEDURE (if applicable):	JOB SUPERVISOR

A.	Time, Date and Location of PJB:
B.	Applicable Procedure Number:
C.	Job Description:
D.	Personnel Attending:

HP#	SIGNATURE	HP#	SIGNATURE

JOB SUPERVISOR – This is a reminder checklist for the update. The supervisor need only discuss and note changes from the previous day's briefing or update. (Use NC for No Change).

2. Any changes/revisions to safety envelop for work: e. New/added assignments and responsibilities of any individual f. Changes in facility conditions, tagouts, valve lineups g. New or changed precautions/hazards h. Valid RWP or other required work permits still in effect
2. Adequate supply of PPE
3. New training, any training coming up on expiration
4. New changes to relevant Category "A" or Category "B" procedures.
5. Equipment and tools calibrations in effect
6. Relevant lessons learned, critique reports
8. RWP revisions: c. Changes to radiological conditions of the workplace, particularly with respect to postings. d. Change in scope, especially if it is a reduction in scope or Stop Work Levels.
8. Changes to radiological and/or health monitoring.
9. Open the floor to questions.

The above minimum requirements have been met; this PJB has been conducted in sufficient detail to maximize continued safe conduct of the job, and all personnel have been through a previous Pre-Job Brief.

_____

Job Supervisor/Foreman Date

JOB STATUS LOG

Work Package Title: Building 60 Demolition

Work Package No: SMPP/TFV 34620 - 00

DATE	TIME	1.1. WORK PKG. SECTION	% Complete	BY	STATUS

031 of 53

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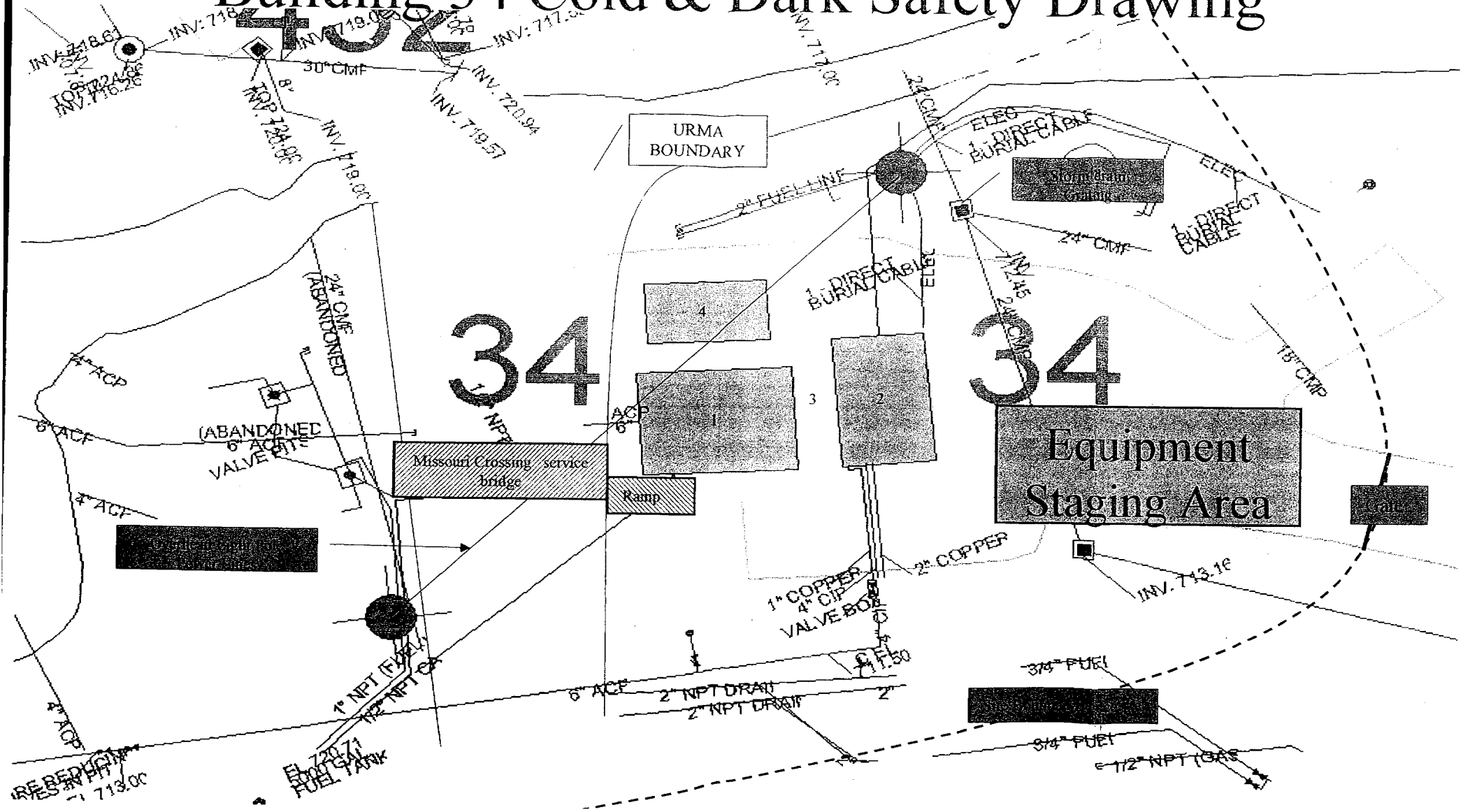
Appendix C

DRAWINGS/SKETCHES

- BD34 Cold & Dark Safety Drawing
- BD34 Demolition Project Evacuation Assembly Area/Take Shelter Area Sketch
- BD34 Area Monitoring Well Locations
- BD34 Floor Plans
- BD34 Site Plan
- BD34 Sections & Elevations Thermal Test Fac. BLDG 34 Area Dwg #4-11056
- BD34 Sections & Elevations Thermal Test Fac. BLDG 34 Area Dwg #4-11061
- BD34 Services & Wall Sect's Dwg#4-5666
- BD34 Building 34 Addition Dwg#4-8801
- BD34 Storage Shed Installation Bldg 34 Area Dwg#FSD21945

Building 34 Cold & Dark Safety Drawing



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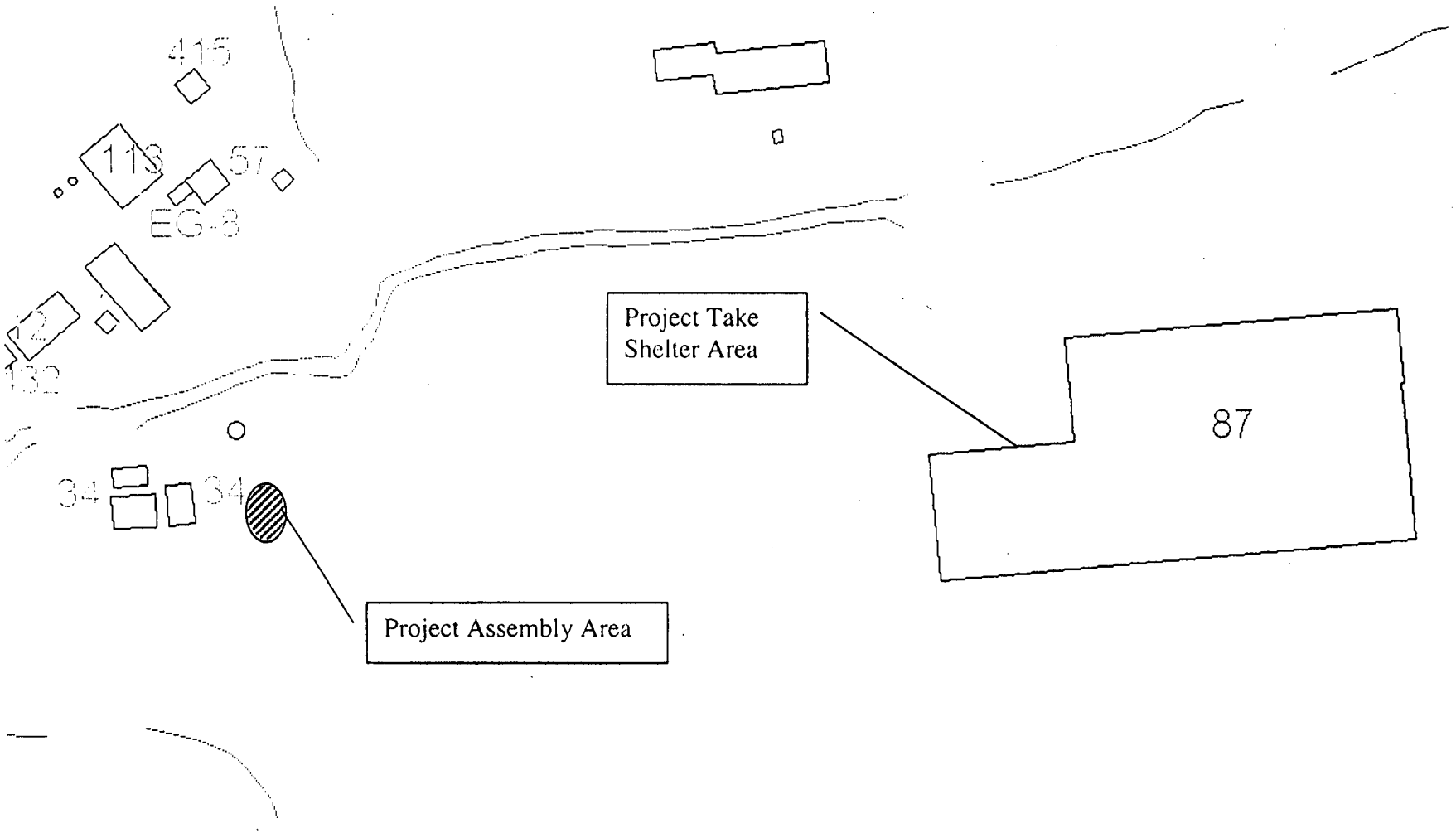
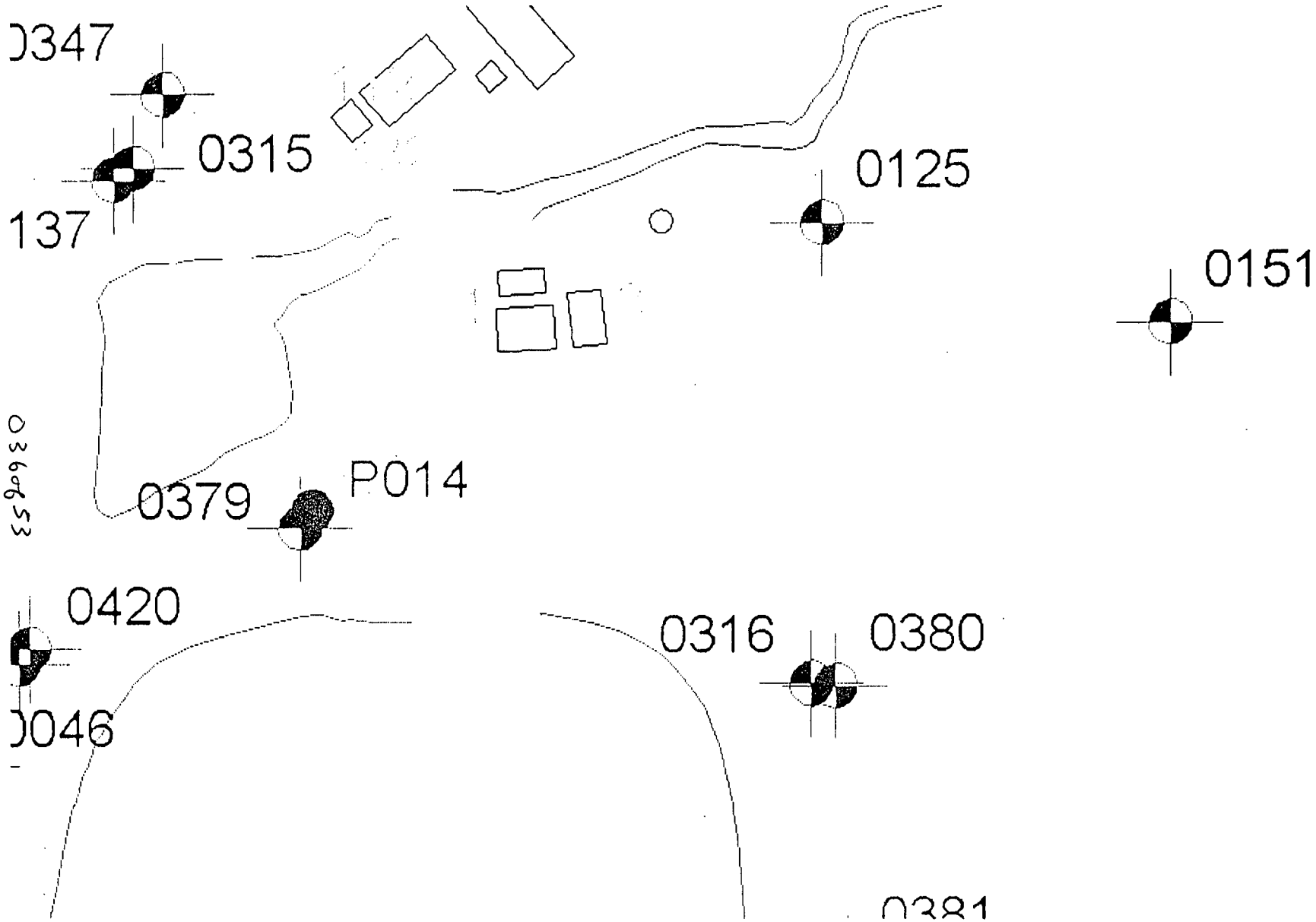
Building 34 Take Shelter & Assembly Areas

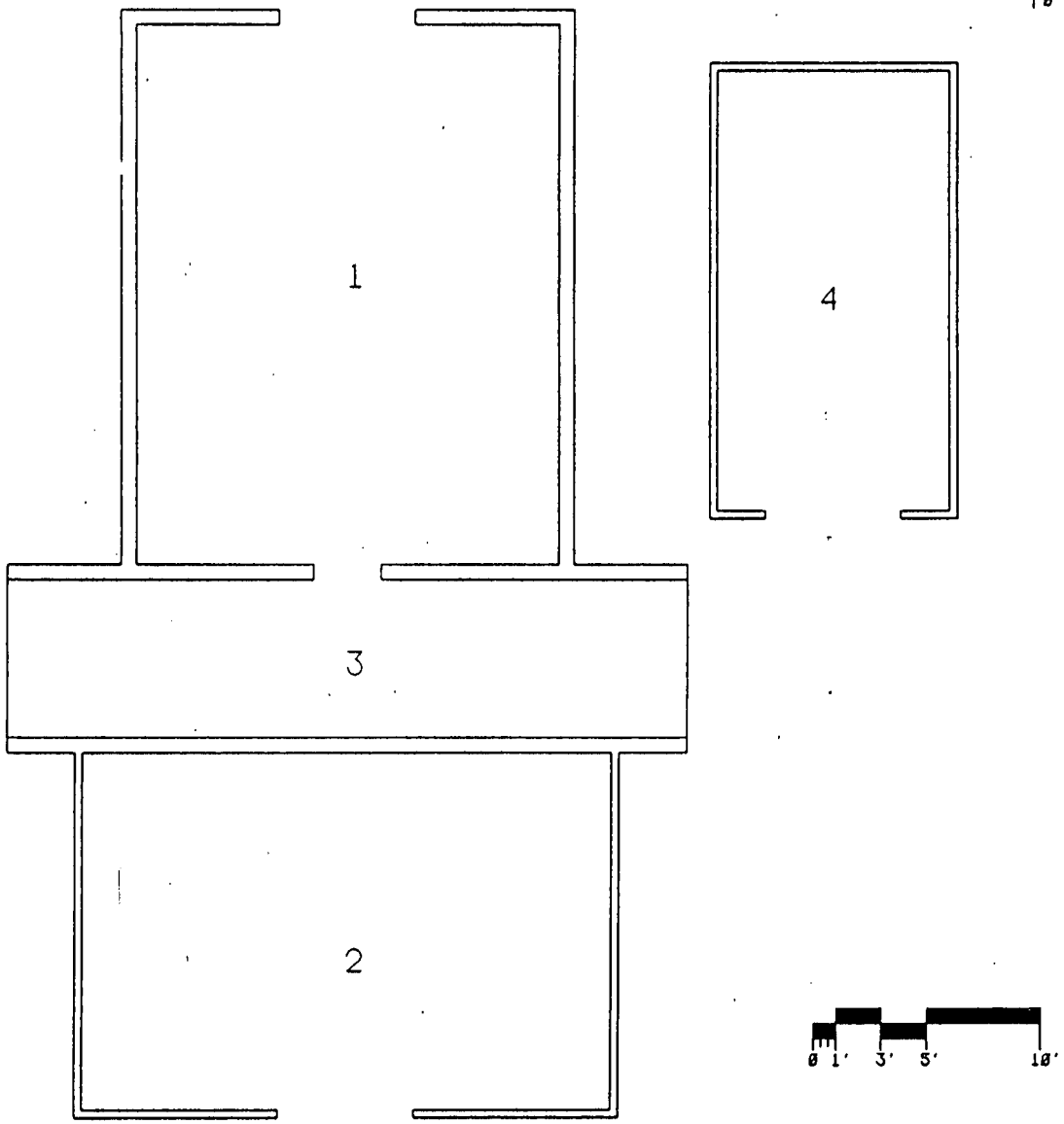


Jeffrey L. Boston 4/22/2003 34shelter.doc

Building 34 Monitoring Wells



ISS	DATE	REVISION	BY	CHKR	ENG	LPMGR	APVD	M
Ø	12/12/91	ASBUILT ISSUE	DCW				DVD	



BLDG #34
FIRST FLOOR
BLDG CODE:3034

SHEET	1	2	3	4	5	6
ISSUE	Ø					

PART CLASSIFICATION

TITLE (U) TITLE CLASSIFICATION
BLDG #34
FLOOR PLANS

GRAPHIC CLASSIFICATION: UNCLASSIFIED
SIZE: C
GRAPHIC NUMBER: FSC911245
JOB NUMBER: 12333
DWG TYPE: SFP
FROM: BLDG #34
CAGE: 14865
SCALE: AS NOTED
SHEET 1 OF 1
STATUS: MD-REL-12/12/91
ORIGIN: MD-BR3-V3.3

DESIGN DWG | PROJ MGR
BPCHIE | DWG SUPV
LP & DC | MECH REV
DWG MGR
APVD | DATE

APPROVALS: DATE:
SAFETY COMMITTEE REQUIRED:
___ NONE ___ TRUEDOC ___ TEDOC ___ CHDOC
TECH. REMP. ___
BR. MGR. ___
TRUEDOC ___
TEDOC ___
CHDOC ___

037653

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Appendix D
MISCELLANEOUS
(USQ, RWP, etc.)

- No USQ required for this Work Package
- No RWP required for this Work Package
- Structural Engineering Survey letter, per OSHA CFR1926.
- MSR 33187
- Request To Stage Clean Hard Fill Debris at Construction Spoils Area
- ML-9987 – D & D Solid Waste Free Release Declaration

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INTER OFFICE MEMO CH2MHILL MOUND, INC.

Date: May 8, 2003 cc. J. Boston

From: W. L. Johanan – OSW-430

Subject: Structural Survey of Building 34, RE: 29 CFR 1926.850 (a)

To: Kurt Kehler-Project Manager

Please be advised that we have performed a structural review and walk down of the subject building and found them to be satisfactory based on the demolition process and work plan.

Please call me if you have any further questions.

W. L. Johanan P.E.
Site Structural Engineer

STATE OF OHIO
WILLIAM
L
JOHANAN
E-44883
REGISTERED
PROFESSIONAL ENGINEER

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:R # : 33187

Babcock and Wilcox of Ohi - Maintenance Service Request

Date Printed: 10/09/2002

Date called in : 09/25/200

arge # : 5ss367

Area assigned t SMPPTF

Awaiting action by WEIDENBACH

g/Room 34

Equipment # 34BUILDING

RWP # :

Priority:

MOLITION OF BLDG 34

Requestor : WEIDENBACH 4228 3241

ilding Manager / Core Team Review Notes :

Review **Description**

rk Planning Details:

RFORM NECESSARY ACTIONS TO DEMOLISH BLDG 34 PER WORK PACKAGE SUPPLIED BY SMPP/TFV OJECT.

: work scope of this MSR/Work Package is to be defined in a work package implementing guidelines of PP-1059A. The PP/TFV core team will review and approve the package, see signature sheet of the package; Gary Weidenbach

desman notes and closeout

this job complete and ready to closeout ? YES/NO (circle one) [If no, what work remains to be done ???]

'as advance planning and coordination of work activities adequate for this type job ? YES/NO (circle one) [If not, please explain}

ıould a post-job review be done on this job ? YES/NO (circle one)

o you have any suggestions for improvements ?

ırs spent on this job : _____ Name : 093 of 53 Date : _____

eman (signature) : _____ Date : _____

RETURN SIGNED PAPERWORK TO EM/PM GROUP FOR CLOSEOUT

Request To Stage Clean Hard Fill Debris at Construction Spoils Area

Work Location/ Source of material Building 34 Approximate Volume 1600 cu.ft.

Requestor Project Group SMPP-TFV Project Point of Contact Jeffrey L. Boston

Name/Phone Ext Jeffrey L. Boston 3262

MSR # 33187 Charge # EE034J

Process Knowledge (attach documentation, if more space needed):

PRS # N/A PRS Binning Status: NFA RA FA NFA Pending Stakeholder Review

Binning remarks

Clean up criteria for soils

Identify how point of origination /area is posted: (e.g. non-RMMA, URMA, SCA, CA, HCA, RMA, RMMA, FCA, et

Note:

Radionuclides of Concern for verification sampling:

Radiological Surface Contamination Not Applicable – never exposed to radionuclides circle if applicable

Survey Results: <PP-1059F, Table 2-2 criteria > PP-1059F, Table 2-2 criteria

In Process monitoring of excavating equipment: <PP-1059F, Table 2-2 criteria > PP-1059F, Table 2-2 criteria

Activation Concerns: No Yes If yes, explain

Material is released for recycle /reuse Yes No

Sending Rad POC Signature	**Date**
Sending Project Manager Signature	**Date**

Work Location/ Source of material

Final material use:

On-site Unrestricted Removed as LLW to disposal

Waste Management Rad POC Signature	**Date**
Spoils Area Foreman Signature	**Date**

— ML-9987 – D & D Solid Waste Free Release Declaration

The ___SMPP-TFV _____ Project has determined that all solid waste streams resulting from safe shutdown, decontamination, and/or demolition of Building(s) _____34_____ have been free released in accordance with DOE Order 5400.5, MCP procedural manual MD-80043, and direction from the DOE Miamisburg Environmental Management Project (MEMP) office (letter from Provencher to Baker, MB 423-99, dated April 27, 1999). Data supporting this free release determination may be found by contacting ____Jeffrey L. Boston_____, Project Manager, at _____3262_____. This data may include radiological surveys and data sheets and/or process knowledge utilized according to the above procedures.

_____ _____

Waste Coordinator Date

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Appendix E

POST-JOB CONFERENCE/LESSONS LEARNED

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(Lessons Learned L03-012)

Transporting Portable Fuel Tanks

Lessons Learned Statement:

When moving portable fuel tanks, care should be taken to adjust lifting forks to the proper width required by th item being lifted. Setting of the forks into available lifting slots should be verified and spill kits should be readily available at the job site where portable fuel tanks are being used.

Discussion:

Oh March 26, 2003, a Heavy Duty operator attempted to lift a 550 gallon portable diesel fuel day tank, with a John Deere 644G loader equipped with forks. The tank assembly was equipped with two lifting slots; however the operator did not take time to adjust the loader forks to match their spacing. He attempted to pick up the tan by engaging only one lifting slot (a common practice) and placing the other fork under the lower tank support rails. In his haste to complete the job, the operator proceeded to lift the tank without first verifying that the fork had engaged the slot; the fork had missed the intended slot. As the tank was lifted it became unstable, rolled of of the forks, and tipped onto its end. At this point, diesel fuel began to pour out of the vent pipe. After three attempts, the operator was able to right the tank and stop the spill. Immediately, the Fire Department was calle and several people in the area began to take measures to contain the spill. Through teamwork by the involved organizations, the spill was prevented from flowing into the adjacent stream. A total of approximately 24 gallons of fuel spilled from the tank onto a paved parking lot.

Analysis:

Failure to take the time necessary to adjust the loader forks and to verify that they were set into the tank lifting slots prior to lifting resulted in the spill of diesel fuel. Contributing to the event was the common practice of transporting the tank with only one fork set in the lifting slot. Additionally, work plans did not consider specia precautions though the tank was being manipulated while in close proximity to a body of water.

Recommended Actions:

1. Operators must take the required time to adjust lifting forks to the proper width required by the item being lifted. The practi of moving the portable tanks with only one fork set into the lifting slots should be discontinued. Further, setting of the forks into both lifting slots must be verified prior to beginning the lift.
2. Spill kits should be located at the job site where portable fuel tanks are being used.
3. Work plans should provide special precautions when using or transporting portable fuel tanks near bodies of water.

WORKER STRUCK ON HEAD BY SECTION OF PIPE

OH-FN-FFI-FEMP-2003-0005

LESSON-LEARNED

IT IS IMPERATIVE THAT THOROUGH WALKDOWNS BE CONDUCTED BY WORKERS BEFORE AND AFTER WORK ACTIVITIES. PRE-JOB WALKDOWNS SHOULD NOT JUST CONSIDER THOSE AREAS TH ARE AT "EYE-LEVEL", BUT NEED TO INCLUDE SURROUNDING ELEVATED AREAS PARTICULARLY WORK HAS BEEN ONGOING IN THESE AREAS. IT IS EQUALLY IMPORTANT FOR WORKERS TO WALKDOWN WORK AREAS AFTER ACTIVITIES ARE COMPLETED TO ENSURE THAT AREAS ARE CLEANED UP AND NO POTENTIAL HAZARDS ARE LEFT BEHIND.

CORRECTIVE ACTIONS

The following actions were initiated:
Before commencing work it is important to conduct a thorough walkdown of the area. It is importa that walkdowns consider elevated areas around the job site. Special equipment may be needed in t area to allow for inspections of elevated areas.
Having personnel unfamiliar with the work area participate in pre-job walkdowns can be beneficial. Personnel who do not work in the area often bring a new perspective to the situation and may ident potential hazards that other personnel have become accustomed to seeing. Having workers from tv different work areas switch places for the day's pre-job walkdowns may improve the quality of the walkdowns.
It is important to conduct a thorough walkdown and cleanup of debris after completing a job. Work should inspect the area to ensure that hazardous conditions are not inadvertently left behind. Wher work is conducted in elevated areas, walkdowns should include the areas below.
When working at elevated levels, access to the areas below should be restricted to prevent personn from potentially entering the area and being struck by a falling object or debris.

EVENT SUMMARY

On April 23, 2003, subcontractors were doing manual dismantlement of equipment on the first floo removing components that were difficult to reach with the shear. As is normal practice, at the begir of the shift several workers and the foreman did an inspection of the area looking for hazards, inclu potential overhead falling-objects. At approximately 0900 hours, manual demolition work commenc At approximately 1000 hours, two workers were working near the southeast corner of the area, removing a pipe and flange from the side of a tank. Standing on the floor, one worker (#1) was holding/supporting the flange, while the other (#2) loosened and removed the bolts. Just as the last was removed and worker #1 was bringing down the flange, a 4-ft. long section of 4-in. diameter pi containing a 4-in. gate valve fell from somewhere above and struck worker #1 on the head (hard ha Worker #2 saw it deflect off of worker #1 and caught the pipe. Worker #1 staggered, but did not collapse. Worker #2 tossed the pipe onto the floor, then checked on his co-worker.

Prepared by: David Kozlowski, (513)648-3187, David.Kozlowski@OH.DOE.GOV

POST JOB CONFERENCE

WHAT WENT WELL?

What could be improved?

Other Comments:

Items Requiring Further Action:

POST-JOB CONFERENCE ATTENDEES

NAME	HP	NAME	HP

LESSONS LEARNED INPUT FORM

What Happened? (Describe in as little or as much detail as necessary the situation and what occurred. Do not mention any names, only job functions and activities)

What did you learn? (Describe how the job could have been done better, how a hazard could have been eliminated, etc.)

Submitted by: _____ **Date:** _____

OPTIONAL

Mail to: Lessons Learned Program Manager, W-219 or appropriate Project or Functional Manager

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