LOCKHEED MARTIN

ORNL/ER-408

ENVIRONMENTAL RESTORATION PROGRAM

Final Deactivation Report on the Radioisotope Production Lab-C, Building 3030, at Oak Ridge National Laboratory, Oak Ridge, Tennessee

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FOR THE UNITED STATES
DEPARTMENT OF ENERGY

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Final Deactivation Report on the Radioisotope Production Lab-C, Building 3030, at Oak Ridge National Laboratory, Oak Ridge, Tennessee

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DISCLAIMER

PREFACE

This is the *Final Deactivation Project Report on the Radioisotope Production Lab-C, Building 3030, at Oak Ridge National Laboratory, Oak Ridge, Tennessee* (ORNL/ER-408). Although this element of work is not part of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, it was accomplished in accordance with the substantive requirements of the Act. This work was performed under Work Breakdown Structure 1.6.6.2.10.02, Activity Data Sheet 6504IS, "Isotopes Facilities Deactivation Project." This document provides the Environmental Management and Enrichment Facilities Program with the final report on the deactivation of Bldg. 3030.

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ABBREVIATIONS

D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
EM-40	Department of Energy Office of Environmental Restoration
EM-60	Department of Energy Office of Facility Transition and Management
FDPR	Final Deactivation Project Report
MOA	Memorandum of Agreement
ORNL	Oak Ridge National Laboratory
S&M	Surveillance and Maintenance

DEFINITIONS

Commitments	Tasks required to be accomplished to meet non-regulatory requirements. (site, stakeholders, etc.)
Deactivation	The process of placing a facility in a safe and stable condition to minimize the long-term cost of a surveillance and maintenance program that is protective of workers, the public, and the environment until decommissioning is completed.
Decommissioning	Refers to the ultimate disposition of a facility. Also substitutes for previously used "D&D."
Decontamination	The removal or reduction of radioactive or hazardous contamination from facilities, equipment, or soils by washing, heating, chemical or electro-chemical action, mechanical cleaning or other techniques to achieve a stated objective or end condition.
Defense-in-Depth	Achieving required levels of safety and protection there is more than one layer of protection between the hazard and that which is being protected.
End Point	A detailed specification for the final deactivation condition of areas and hardware within a facility and related documentation. An individual milestone towards the deactivation and/or the decommissioning of a facility.
End Point Technical Information	A compilation of documents to support end point conclusions.
Stakeholder	Individuals and organizations (i.e. regulators, local municipalities, the public, etc.) who may be directly or indirectly impacted by activities associated with the IFDP.
Turnover Package	A compilation of project related documents to be given to a postdeactivation organization.

EXECUTIVE SUMMARY

The purpose of this report is to document the condition of Bldg. 3030 after completion of deactivation activities as outlined by the Department of Energy (DOE) Office of Nuclear Materials and Facility Stabilization Program (EM-60) guidance documentation. This report outlines the activities conducted to place the facility in a safe and environmentally sound condition for transfer to DOE's Office of Environmental Restoration Program (EM-40).

This report provides profile of Bldg. 3030 before and after deactivation activities. Turnover items, such as the Postdeactivation Surveillance & Maintenance Plan, remaining hazardous materials, radiological controls, Safeguards and Security, QA, facility operations, and supporting documentation provided in the Office of Nuclear Materials and Facility Stabilization Program (EM-60) Turnover package are discussed.

Building 3030 will require access to facilitate required S&M activities to maintain the building safety envelope. Building 3030 was stabilized during deactivation so that when transferred to the EM-40 program, only a minimal S&M effort would be required to maintain the building's safety envelope. Other than the minimal S&M activities, the building will be unoccupied and the exterior doors locked to prevent unauthorized access. The building will be entered only for required S&M.

All materials have been removed from the building and the hot cell, and all utility systems, piping, and alarms have been deactivated.

1. INTRODUCTION

1.1 PURPOSE

This report documents the condition of Bldg. 3030 after completion of deactivation activities as outlined by the Department of Energy (DOE) Office of Nuclear Materials and Facility Stabilization (EM-60) Program guidance documentation. This report outlines the activities conducted to place the facility in a safe and environmentally sound condition for transfer to the DOE Office of Environmental Restoration (EM-40) Program.

This report provides a profile of the facility before and after deactivation activities. Turnover items, such as the Postdeactivation Surveillance & Maintenance Plan, remaining hazardous materials, radiological controls, Safeguards and Security, QA, facility operations, and supporting documentation provided in the EM-60 Turnover package are discussed.

1.2 SCOPE

This report addresses the activities performed during deactivation associated with Bldg. 3030, to place the facility in a safe and environmentally sound condition to await decommissioning, the status of the facility, and the activities required to maintain the facility following deactivation. Attachment 1, "Building 3030 Floor Plan," provides a floor plan of Bldg. 3030 that illustrates the physical boundaries and scope of this Final Deactivation Project Report (FDPR). The scope of this FDPR is limited to Bldg. 3030.

2. BACKGROUND

2.1 FACILITY DESCRIPTION

Building 3030 is a steel-frame structure covered by corrugated aluminum siding. The single-story facility has a floor area of 825 ft^2. A manipulator-type hot cell is located on the middle of the east wall. Two laboratory-type hoods occupy the northeast corner of the building with one laboratory-type hood occupying the center of the north wall of the building. A laboratory-type workbench occupies the center of the facility and is equipped with a sink. The manipulator cell and laboratory hoods constitute the primary means of containment. All high-level work was conducted in the hot cell. The building operates at a slightly negative pressure relative to the outside atmosphere.

The hot cell has 2-ft barytes concrete walls with 4 in. of lead brick shielding on the operating face of the cell wall and an unshielded top cover. The cell has a mineral-oil-filled, lead glass window. A stainless steel operating pan covers the floor and interior walls up to the level of the viewing window. A small steel door on the north side of the cell is used for the insertion and removal of small equipment and containers. A thick steel double door at the back of the cell provides access for larger items if needed.

Extended reach Model-8 manipulators are inserted through holes in the top of the cell. The slave sections of the manipulators are covered with urethane manipulator boots sealed to the inside top surfaces of the cells. An additional plastic boot and wiper seals in the manipulator barrels provide secondary containment for manipulator penetration.

2.2 FACILITY HISTORY

Building 3030 was constructed in 1950 as part of the Isotopes Program. The building contains facilities that were used for storage purification and processing and dispensing of a wide variety of radioisotopes. These isotopes were processed primarily from irradiated targets from the High Flux Isotope Reactor, the Oak Ridge Research Reactor, and the 86-in. Cyclotron.

3. FACILITY STATUS

3.1 PREDEACTIVATION FACILITY STATUS

Following approximately 40 years of operations and processing, Bldg. 3030 was surplused, and many of the process systems were abandoned in place. General housekeeping was not maintained, and the building structural integrity was allowed to lapse.

Attachment 2, "Predeactivation Facility Photographs," contains photographs of the building conditions prior to deactivation activities.

3.1.1 Hazards Analysis

No predeactivation hazards analysis was performed. Since only process activities involving less than 100 ci were performed in Bldg. 3030, it was determined that the facility did not warrant a hazard analysis or safety analysis.

3.1.2 Internal Spaces

The general area contained furniture, cabinets, hazardous waste, radioactive waste, and miscellaneous items used when the facility was in operation. The lead-based paint is chipping and peeling, providing a means of transferring lead and endangering personnel and the environment.

Predeactivation radioactive contamination levels and radiation levels for the general area are listed in Tables 1 and 2, respectively. Table 3 lists predeactivation hazardous materials and waste located in the general area.

3.1.3 Building Structure and External Spaces

The structure and roof of Bldg. 3030 were inspected and found to be in generally good condition, with the exception of water inleakage through various paths.

3.1.4 Process, Utility, and Support Systems

3.1.4.1 Electrical power system

Prior to deactivation, the electrical power system provided power distribution for the electrical service to Bldg. 3030. Typical electrical loads were the lighting, heaters, and exhaust fans. A 480-VAC outlet also existed for use with welders and other equipment requiring this service.

3.1.4.2 Fire protection system

The fire protection system is a dry pipe fire suppression system for Bldg. 3030 and is available for use. The general area was equipped with sprinkler heads and alarms as required by the local fire code. In addition, fire extinguishers were placed strategically in and around Bldg. 3030.

The fire protection system is not believed to be contaminated.

3.1.4.3 Building steam system

The building steam system provided steam for use in heating the general area of Bldg. 3030. Two heat exchangers located in Bldg. 3030 provided space heating for personnel.

The building steam system is not believed to be contaminated. However, most of the steam piping within Bldg. 3030 is lagged with asbestos insulation materials.

3.1.4.4 Potable water system

Prior to deactivation, the potable water system provided water to the Bldg. 3030 safety shower, water heater, and sink. The potable water system is not believed to be contaminated.

3.1.4.5 Hot drain system

Prior to deactivation, the hot drain system provided a means of discharging liquid process wastes from the hot cells to the LLLW system. The hot drain system is a gravity drain system to the WC-10 tank in the low-level liquid waste (LLLW) system.

The hot drain system was determined to be highly contaminated from the process and cleaning activities performed prior to deactivation.

3.1.4.6 Process drain system

Prior to deactivation, the process drain system provided a means of removing liquids from the area floor to the ORNL process waste system and treatment facility. The process drain system is a gravity drain system.

The process drain system was determined to be contaminated from the process and cleaning activities performed prior to deactivation.

3.1.4.7 Natural gas system

The natural gas system to Bldg. 3030 was never used. The system has remained isolated from the building since the time of its installation and is not believed to be contaminated.

3.1.4.8 Overhead crane

Prior to deactivation, an overhead crane was used in Bldg. 3030 to provide a means of moving heavy equipment in and around the hot cell. The overhead crane was determined to be contaminated from the process activities performed prior to deactivation.

3.1.4.9 Plant air system

Prior to deactivation, the plant air system provided 110 psig air to Bldg. 3030. The plant air system was regulated and used for process activities and instrumentation throughout the facility. The plant air system is not believed to be contaminated.

3.1.4.10 Hot cell manipulators

Prior to deactivation, the hot cell manipulators provided a means of remote process operation within the hot cell. The hot cell is equipped with Model 8 manipulators.

Prior to deactivation, the hot cell manipulator boots and seals were determined to be in poor condition and a potential for the spread of contamination from the hot cells.

3.1.4.11 Central ventilation system

Prior to deactivation, the central ventilation system provided exhaust ventilation services to the hot cell in Bldg. 3030. The central ventilation system for Bldg. 3030 was filtered through HEPA filters prior to discharge to the 3039 stack.

The central ventilation system was determined to be contaminated from the process activities performed prior to deactivation.

3.1.4.12 Local ventilation system

Prior to deactivation, the local ventilation system provided exhaust ventilation services to the hoods in Bldg. 3030. The local ventilation system for Bldg. 3030 was filtered through HEPA filters prior to discharging to the atmosphere.

The local ventilation system was determined to be very slightly contaminated from the process activities performed prior to deactivation.

3.1.5 Radioactive Material, Contamination, and Waste

Table 1 lists the radioactive contamination levels identified on radiation surveys conducted prior to deactivation.

Table 1. Predeactivation Radioactive Contamination Levels

Identification	Description	Quantity
Hot cell	alpha smear - transferable contamination	less than 500 dpm/100cm^2
Hot cell	beta/gamma smear - transferable contamination	up to 21 mRad/h/100cm^2
Hood #1,#2,#3	alpha smear - transferable contamination	less than 500 dpm/100cm^2
Hood #1	beta/gamma smear - transferable contamination	1799 dpm/100cm^2
Hood #2	beta/gamma smear - transferable contamination	5943 dpm/100cm^2
Hood #3	beta/gamma smear - transferable contamination	1134 dpm/100cm^2
General area	alpha smear - transferable contamination	less than 500 dpm/100cm^2
General area	beta/gamma smear - transferable contamination	up to 350,000P dpm/100cm^2

Table 2 lists radiation levels identified on radiation surveys conducted prior to deactivation:

Table 2. Predeactivation Radiation Levels

Identification	Description	Quantity
Hot cell	fixed and transferable radiation levels	1 Rem/hr
Hood #1	fixed and transferable radiation levels	1.5 mRem/hr
Hood #2	fixed and transferable radiation levels	6 mRem/hr
Hood #3	fixed and transferable radiation levels	20 mRem/hr
General area	fixed and transferable radiation levels	up to 1.2 mRem/hr

3.1.6 Hazardous Materials and Waste

Table 3 lists the hazardous materials and waste identified during facility walkdowns prior to deactivation.

Table 3. Bldg. 3030 Predeactivation Hazardous Materials and Waste

Identification	Description	Quantity
Lead-based paint	Used as wall covering throughout building.	indeterminate
Asbestos floor tiles	Used as floor covering throughout the building.	approx. 825 ft^2
Asbestos lagging	Used as pipe lagging throughout the building	indeterminate
PCBs	Electrical devices and transformers	indeterminate
Lead shielding	Used in hot cell walls and window	indeterminate
Mineral oil	Used in hot cell window	indeterminate

3.2 POST DEACTIVATION FACILITY STATUS

Attachment 3, "Postdeactivation Facility Photographs," contains photographs of the building conditions following deactivation activities.

3.2.1 Deactivation End Point Completion

End point criteria for deactivation activities and end point completion documentation are not applicable for Bldg. 3030. The requirement and guidance for these program elements were not developed prior to Bldg. 3030 deactivation.

3.2.2 Hazards Analysis

A postdeactivation hazards screening was performed. This hazards screening placed the facility in the "other industrial" category.

3.2.3 Internal Spaces

The miscellaneous items abandoned when the facility was no longer in use have been removed from the general area. No significant combustibles remain in the general area and the general area of Bldg. 3030 has been decontaminated to remove transferable contamination from access-required spaces. The lead-based paint is chipping and peeling, providing a means of transferring the lead and endangering personnel and the environment.

Postdeactivation radioactive contamination levels and radiation levels for this area are listed in Tables 4 and 5 respectively. Postdeactivation hazardous materials and waste located in this area are listed in Table 6.

3.2.4 Building Structure and External Spaces

The structure and roof of Bldg. 3030 were inspected and found to be in generally good condition, with the exception of some water inleakage through various paths.

3.2.5 Process, Utility, and Support Systems

3.2.5.1 Electrical power system

All electrical services, with the exception of lighting, have been disconnected or de-energized at the main breaker box.

3.2.5.2 Fire protection system

The fire protection system is a dry system and remains available for use if there is a fire in the building.

3.2.5.3 Building steam system

The building steam system has been isolated, drained, and abandoned in place.

3.2.5.4 Potable water system

The potable water system has been isolated, drained, and abandoned in place.

3.2.5.5 Hot Drain System

The hot drain system has been abandoned in place. All hot cell drains have been plugged to isolate the hot cells and to prevent the potential spread of contamination.

The hot drain system remains highly contaminated from the process and cleaning activities performed prior to deactivation.

3.2.5.6 Process Drain System

The process drain system has been abandoned in place. However, the process drain system remains connected to the ORNL process waste system.

The process drain system remains contaminated from the process and cleaning activities performed prior to deactivation.

3.2.5.7 Natural Gas System

The natural gas system has been isolated, vented, and abandoned in place.

3.2.5.8 Overhead Crane

The overhead crane has been de-energized and abandoned in place. It remains contaminated from the process activities performed prior to deactivation.

3.2.5.9 Plant Air System

The plant air system has been isolated, vented, and abandoned in place.

3.2.5.10 Hot cell manipulators

The hot cell manipulator boots and isolation bags were removed and replaced. New boots were placed on the in-cell portion of the manipulators. The plastic boot and wiper seals around the manipulator were removed. The manipulator control arms are bagged as an added precaution.

3.2.5.11 Central ventilation system

The central ventilation system remains in operation to provide negative pressure for contamination control for the hot cell. All controls associated with the central ventilation system remain in operation as well.

The central ventilation system remains highly contaminated from the process activities performed prior to deactivation.

3.2.5.12 Local ventilation system

The local ventilation system has been removed from service and shutdown. It is slightly contaminated from the process activities performed prior to deactivation.

3.2.6 Radioactive Material, Contamination, and Waste

Table 4 lists the radioactive contamination levels identified on radiation surveys conducted following deactivation.

Table 4. Postdeactivation Radioactive Contamination Levels

Identification	Description	Quantity
Hot cell	alpha smear - transferable contamination	less than 500 dpm/100cm^2
Hot cell	beta/gamma smear - transferable contamination	1.0 to 100000 dpm/100cm^2
Hood #1	alpha smear - transferable contamination	less than 500 dpm/100cm^2
Hood #1	beta/gamma smear - transferable contamination	No detectable contamination
Hood #2	alpha smear - transferable contamination	less than 500 dpm/100cm^2
Hood #2	beta/gamma smear - transferable contamination	No detectable contamination
Hood #3	alpha smear - transferable contamination	less than 500 dpm/100cm^2
Hood #3	beta/gamma smear - transferable contamination	No detectable contamination
General area	alpha smear - transferable contamination	less than 500 dpm/100cm^2
General area	beta/gamma smear - transferable contamination	No detectable contamination

Table 5 lists radiation levels identified on radiation surveys conducted prior to deactivation.

Table 5. Postdeactivation Radiation Levels

Identification	Description	Quantity
Hot cell	fixed and transferable radiation levels	22 mRem/hr
Hood #1	fixed and transferable radiation levels	0.2 mRem/hr
Hood #2	fixed and transferable radiation levels	0.3 mRem/hr
Hood #3	fixed and transferable radiation levels	5.0 mRem/hr
General area	fixed and transferable radiation levels	0.1 mRem/hr

3.2.7 Hazardous Materials and Waste

Table 6 lists the hazardous materials and waste identified during facility walkdowns following deactivation

Table 6. Bldg. 3030 Postdeactivation Hazardous Materials and Waste

Identification	Description	Quantity
Lead-based paint	Used as wall covering throughout building	indeterminate
Asbestos floor tiles	Used as floor covering throughout the building	approx. 825 ft^2

Table 6. (continued)

Identification	Description	Quantity
Asbestos Lagging	Used as pipe lagging throughout the building	indeterminate
PCBs	Electrical devices and transformers	indeterminate
Lead shielding	Used in hot cell walls and window	indeterminate
Mineral oil	Used in hot cell window	indeterminate

4. BLDG. 3030 DEACTIVATION ACTIVITIES

The following section addresses the major activities performed during the deactivation of Bldg. 3030. The objectives of the deactivation process were to place the facility in a passively safe and environmentally stable configuration that can be efficiently and cost-effectively maintained indefinitely. The major deactivation issues, with regard to Bldg. 3030, are listed below:

4.1 INTERNAL SPACES; ACCESS REQUIRED

4.1.1 General Areas

All storage cabinets, desks, file cabinets, and miscellaneous office materials were removed from the building. Some were green-tagged for reuse. The remaining items were disposed of.

The asbestos floor tiles were not removed and are not intended to be removed until facility decontamination and decommissioning.

The walls in the building are covered with lead-based paint. Peeling and flaking areas have been repaired, but the remainder of the paint will remain as is. Paint condition is an inspection item in the S&M plan for Bldg. 3030.

4.2 INTERNAL SPACES; NO ACCESS REQUIRED

4.2.1 3030 Hot Cell

The following deactivation activities were performed in the hot cell:

- The hot cell manipulator boots and isolation bags were removed and replaced. New boots were placed on the in-cell portion of the manipulators. The plastic boot and wiper seals around the manipulator were removed.
- The hot cell was wiped down to reduce airborne contamination.
- All hot cell service lines were identified, labeled, and plugged.
- All in-cell filters were removed.
- All hot cell drains were plugged.
- Access to the hot cell was secured.

4.3 EXTERNAL SPACES

4.3.1 Bldg. 3030 Structure

The exterior of Bldg. 3030 was inspected and found to be in generally good structural condition. The building exterior has been cocooned to eliminate air and water inleakage and to provide effective containment for the building.

4.3.2 Bldg. 3030 Roof

The roof of Bldg. 3030 was repaired/inspected and found to be in generally good structural condition.

4.4 OPERATIONAL SYSTEMS

4.4.1 Electrical Power System

All electrical services that were not essential to the basic surveillance and maintenance operations were disconnected at the main breaker box.

4.4.2 Fire Protection System

The fire protection system is a dry pipe delivery system available in case of a building fire.

4.4.3 Hot Drain System

The hot cell drains were plugged with Plexiglas plugs to isolate the hot cells and prevent the spread of contamination. No decontamination of the hot drain system has been performed.

4.4.4 Process Drain System

The process floor drains remain in operation to direct any roof inleakage to the ORNL process waste system and prevent any uncontrolled contamination from leaving the building. No decontamination of the process drain system has been performed.

4.4.5 Central Ventilation System

The central ventilation system remains in operation to provide negative pressure for contamination control for the hot cell. All controls associated with this system remain in operation as well. No decontamination of the central ventilation system has been performed.

4.4.6 Local Ventilation System

The local ventilation system has been removed from service and shut down in place. No decontamination of the local ventilation system has been performed.

4.5 "MOTHBALLED" SYSTEMS

There are no "mothballed" systems associated with Bldg. 3030.

4.6 ABANDONED SYSTEMS

4.6.1 Building Steam System

The building steam system supply was drained and valved off.

4.6.2 Potable Water System

The incoming line of the potable water system has been capped, isolating the system from Bldg. 3030.

4.6.3 Hot Cell Manipulators

The hot cell manipulator boots and isolation bags were removed and replaced. New boots were placed on the in-cell portion of the manipulators. The plastic boot and wiper seals around the manipulator were removed. Decontamination was performed, as required, during manipulator boot replacement.

4.6.4 Natural Gas System

The natural gas system was vented and valved off.

4.6.5 Overhead Crane

The overhead crane was de-energized and abandoned in place. Minor decontamination was performed on the overhead crane to minimize the potential spread of contamination.

4.6.6 Plant Air System

The plant air system has been depressurized and valved off.

5. TRANSITION ACTIVITIES

Building 3030 will be officially transferred from DOE's EM-60 program to the EM-40 program by a Memorandum of Agreement (MOA). The building will be accepted "as is" by EM-40 at the time of transfer.

5.1 MEMORANDUM OF AGREEMENT

The MOA documents the requirements agreed upon between EM-40 and EM-60. The signed MOA indicates acceptance by EM-40 that the criteria outlined in the MOA have been completed

satisfactorily, with the exception of post-transition punchlist items, and that the level of deactivation of the facility is acceptable for transition to the EM-40 program.

Post-transition punchlist items will be finished after deactivation is complete. The details of how the punchlist items will be completed and documented will be addressed in the MOA.

5.2 POST-TRANSITION ACTIVITIES

No Post-Transition punchlist items have been identified for Bldg. 3030. All deactivation activities have been completed prior to transfer to EM-40.

6. POSTDEACTIVATION S&M

The "Postdeactivation S&M Plan for Building 3030" covers S&M activities associated with the interior spaces, operational and mothballed systems, and external areas related to Bldg. 3030.

The specific objectives of the S&M program for Bldg. 3030 are as follows:

1. Ensure adequate containment of contamination,
2. Provide physical safety and security control,
3. Maintain the facility in a manner that will minimize potential hazards to the public, and
4. Provide a mechanism for the identification and compliance with applicable environmental, safety, and health requirements.

The "Postdeactivation S&M Plan for Building 3030" details the specific S&M items to be performed and estimates the annual cost of performance. The S&M cost estimates are based on previous operational costs associated with similar S&M activities at ORNL.

The S&M activities associated with Bldg. 3030 include the following types of activities:

- Walkdowns and inspections for structural integrity, safety, radioactive contamination, and hazardous material conditions;
- General housekeeping of the interior and exterior of the building as needed; and
- Maintenance activities required to maintain the security and safety envelope of the facility.

7. ABNORMAL ACTIVITIES/CONDITIONS

No Abnormal Activities/Conditions have been identified for Bldg. 3030.

8. TURNOVER PACKAGE DOCUMENTATION

8.1 ADMINISTRATIVE TURNOVER PACKAGE

Administrative turnover consists of a collection of administrative documents. This includes procedures, agreements, and other documents not directly related to the physical facility. The level of detail depends on the conditions, requirements, and agreements specific to the facility.

Attachment 4, "Administrative Turnover Package Checklist," reflects the documents required for this facility with respect to administrative turnover. The following sections detail the contents of the applicable sections required for Bldg. 3030.

8.1.1 Final Deactivation Project Report

The FDPR is a management summary of the facility deactivation completion and its general status and conditions that demonstrates conformance with DOE's specification of the overall end point. It identifies management actions needed that are not routine. Unresolved issues are also described.

8.1.2 Regulatory Compliance Documentation

Regulatory compliance documentation includes the status/compliance of all regulatory commitments; for example, status of compliance with applicable regulations promulgated pursuant to statutes, such as Occupational Safety and Health Administration, RCRA, CERCLA, the National Environmental Policy Act, and the remediation process in the National Contingency Plan.

8.1.3 Interagency Agreements Documentation

Interagency agreements documentation includes Interagency Agreements that identify the terms and milestones of agreements pending and entered into by DOE with federal, state, and local agencies and the status of compliance. This includes settlement agreements, administrative or consent orders, and compliance plans to settle outstanding notices of violation.

8.1.4 Existing Permit Documentation

Existing permit documentation includes the status of existing permits, including National Pollutant Discharge Elimination System (NPDES), air permits, RCRA, and others associated with the facility.

8.1.5 Corrective Action Documentation

Corrective action documentation addresses the status of corrective actions completed and outstanding, from previous audits, inspections, and other similar activities (e.g., Tiger Team, Technical Safety Appraisal, Defense Nuclear Facility Safety Board, regulatory agencies, self assessments, business systems review), including identification of those items that need to reevaluated and reviewed with respect to the facility's surplus condition.

8.1.6 Deactivation Locks and Keys

All deactivation locks and keys for facility access, isolation of electrical components, chaining of valves, and other situations where physical access is to be controlled will be turned over to EM-40 at the time of transfer.

8.2 TECHNICAL TURNOVER PACKAGE

Technical turnover consists of a collection of technical documents that describe the facility, its equipment, and the conditions at the completion of all deactivation activities. The level of detail depends on the conditions, requirements, and agreements specific to the facility. Attachment 5, "Technical Turnover Package Checklist," reflects the documents required for this facility with respect to technical turnover. The following sections detail the contents of the applicable sections required for Bldg. 3030.

8.2.1 Updated Facility Drawings (Arrangement, PID, Loop, Etc.)

Updated facility drawings include facility, room, and cell arrangement drawings—to the extent they exist. However, except in unique circumstances, as-builts of the deactivated conditions within the facility are not provided. Attachment 6 contains the drawing list for Bldg. 3030. This documentation provides status (including drawings) of the deactivation/safe shutdown (if applicable), and addresses systems, such as the water, sewer, air, electric, gas, process (mechanical and chemical) and fire protection systems.

Table 7. Bldg. 3030 Updated Drawings

Number	Rev.	Title
D-37907	A	Manipulator Cell - Service Piping & Ventilation - Sections & Details
D-6615	A	Isotope Process Area - Process Bldg. "C" - Heating & Exhaust System
E-30097		Storage Vault - Mechanical & Electrical - Plans & Details - Sheet 3
H203369EG-002-D	001	A/C Elec. Roof Plan A/C Units Isotope Area
D-51926	A	Enclosure Bldgs. 3030 and 3031 - Ventilation
D-51926		Piping, Htg. & Vent.

8.2.2 "As Left" Photos of Spaces and Major Equipment

"As left" photos include descriptions/photos of spaces for which no access is anticipated during S&M.

8.2.3 Hazardous Materials Inventory and Survey

Location of fixed hazardous materials, wastes, and contamination with characterization information.

8.2.4 Safeguards and Security Documentation

Inventory and Safeguards and Security documentation provides for nuclear or other material remaining in the facility for which there is a requirement for accountability or protection from diversion.

8.2.5 Chemical Substance Inventory and Survey

The chemical substance inventory and survey inventories chemical and hazardous substances remaining, if any, and contains characterization information.

8.2.6 Radioactive Materials Inventory and Survey

The radioactive materials inventory and survey inventories radioactive and fissile material remaining as contamination and includes characterization information.

The final radiological/hazardous materials survey records, final configuration and surveillance and maintenance requirements, available drawings, specifications, procedures, manuals, and unplanned occurrences records applicable to the facility. Attachment 8 contains the radiological survey data.

8.2.7 Facility Soil, Surface Water, and Groundwater Condition Report

The Facility Soil, Surface Water, and Groundwater Condition Report describes soil, surface water, and groundwater conditions at the facility, provides all available data, and lists reports that describe those conditions and the nature and extent of contamination therein. This report Also identifies any known assessment requirements.

8.3 S&M TURNOVER PACKAGE

S&M turnover consists of a collection of documents required to support postdeactivation S&M activities. The level of detail depends on the S&M specific to the facility. Attachment 8, "S&M Turnover Package Checklist," reflects the documents required for this facility with respect to S&M turnover. The following sections detail the contents of the applicable sections required for Bldg. 3030.

8.3.1 Postdeactivation S&M Plan

This document describes the S&M plan for the facility after deactivation is complete, up to the initiation of decommissioning. The S&M activities will be integrated into the decommissioning work and phased out as decommissioning is completed.

8.3.2 Postdeactivation S&M Updated Safety Equipment List

This document describes the safety equipment that will remain in the facility during the postdeactivation S&M period.

8.3.3 Postdeactivation S&M Procedures

Table 8 contains a list of procedures required during the postdeactivation S&M period. These procedures outline the maintenance activities and special surveillances required to ensure that the facility conditions and safety envelope remain consistent until decommissioning can take place.

Table 8. Bldg. 3030 S&M Procedures

Number	Procedure Title
IP-1418	Manipulator Removal, Repair, and Replacement
IP-1313, Rev. 2	Local and Central Ventilation System HEPA Filter Replacement

9. ASSOCIATED LITERATURE

Document Number	Document Title
Draft	Facility Deactivation End Points Handbook; Volume 1: Method and Examples
Draft	Facility Deactivation End Points Handbook; Volume 2: Deactivation Practices
DOE/EM-0246	Decommissioning Resource Manual. August 1995
ORNL/ER-249/R2	Martin Marietta Environmental Restoration Program; Work Plan for the Isotopes Facilities Deactivation Project at Oak Ridge National Laboratory, August 1995
	Oak Ridge National Laboratory; Local Emergency Manual, Isotope Area, Revision 94-1, January 1994

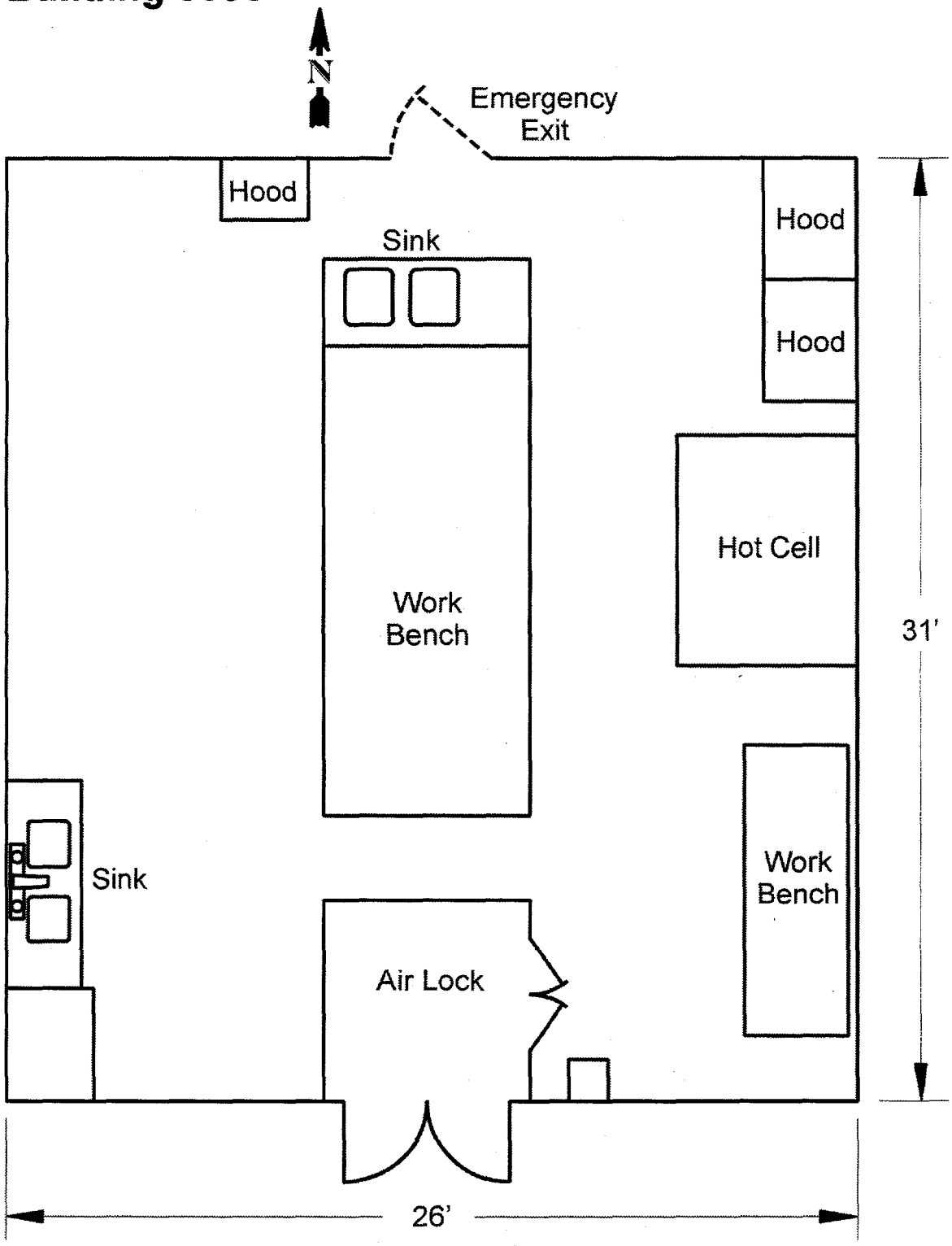
10. ATTACHMENTS

1. Bldg. 3030 Floor Plan
8. Bldg. 3030 Predeactivation Facility Photographs
9. Bldg. 3030 Postdeactivation Facility Photographs
10. Administrative Turnover Package Checklist
11. Technical Turnover Package Checklist
12. Bldg. 3030 Drawing List
13. Bldg. 3030 Radiological Survey Data
14. S&M Turnover Package Checklist

ATTACHMENT 1
BLDG. 3030
FLOOR PLAN

ORNL DWG 97C-250

Building 3030



ATTACHMENT 2
BLDG. 3030
PREDEACTIVATION FACILITY PHOTOGRAPHS

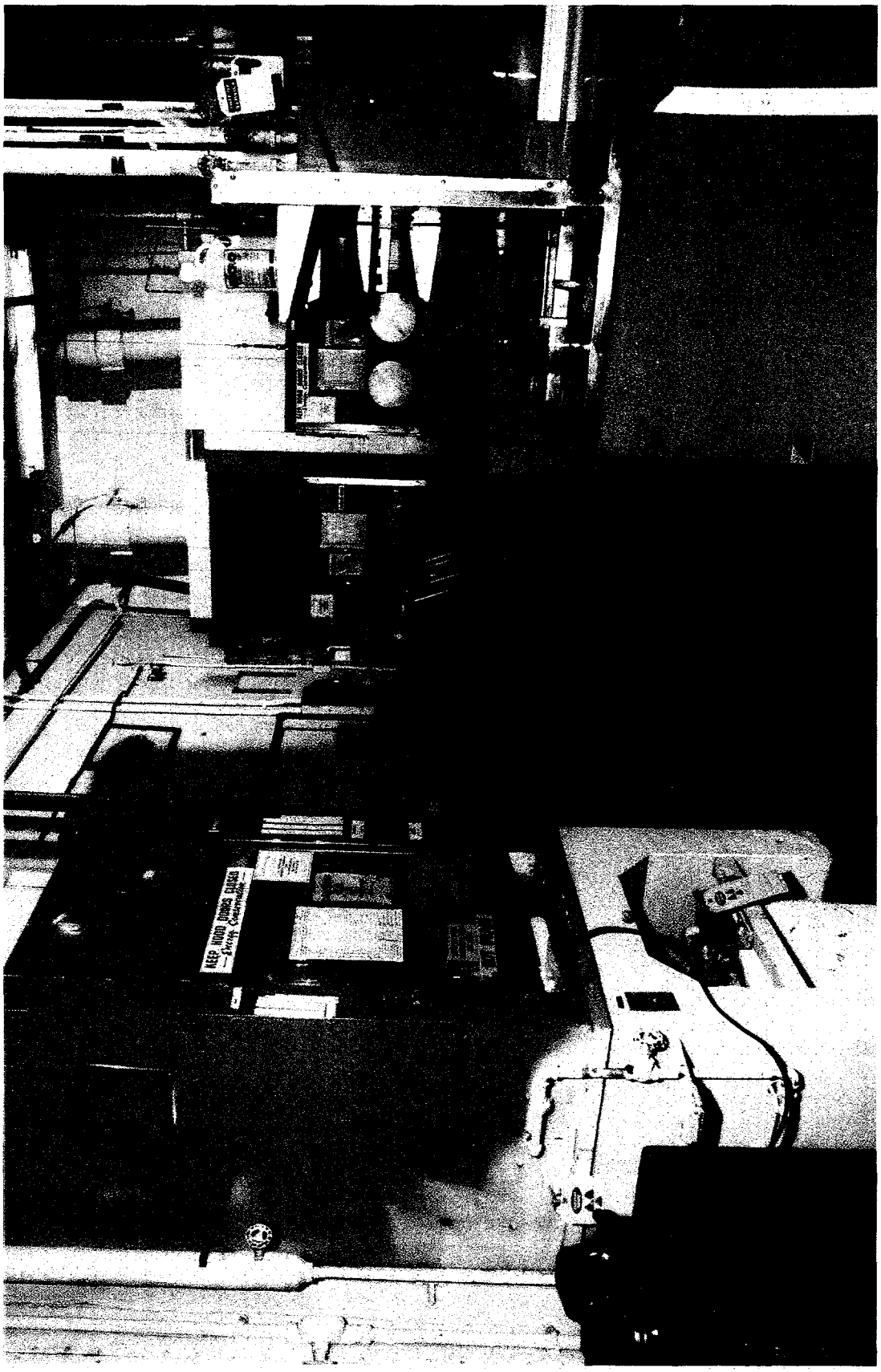


Fig. 2-1. Bldg. 3030: predeactivation.

Fig. 2-2. Bldg. 3030: predeactivation.

ATTACHMENT 3
BLDG. 3030
POSTDEACTIVATION FACILITY PHOTOGRAPHS

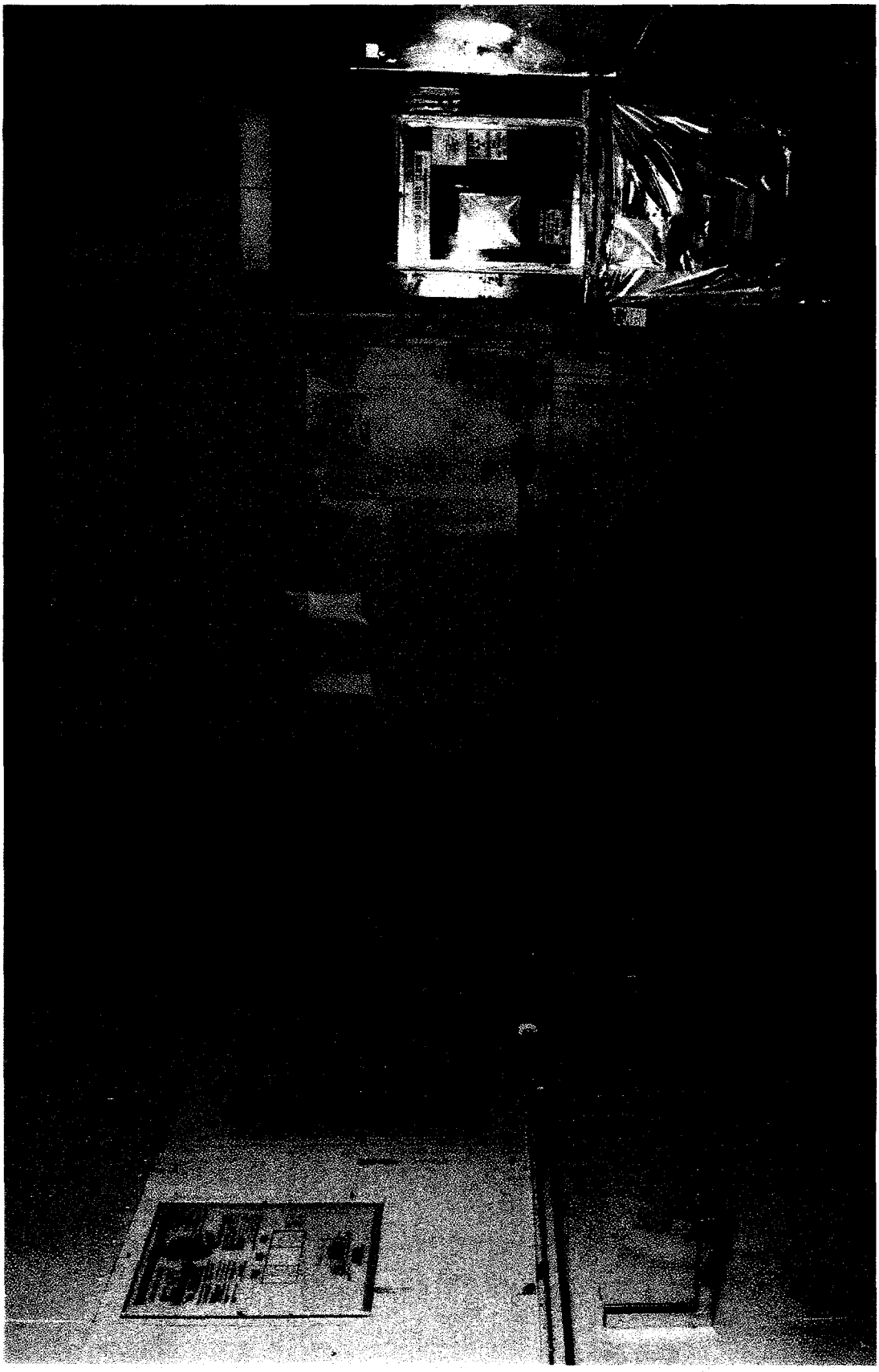


Fig. 3-1. Bldg. 3030: postdeactivation.

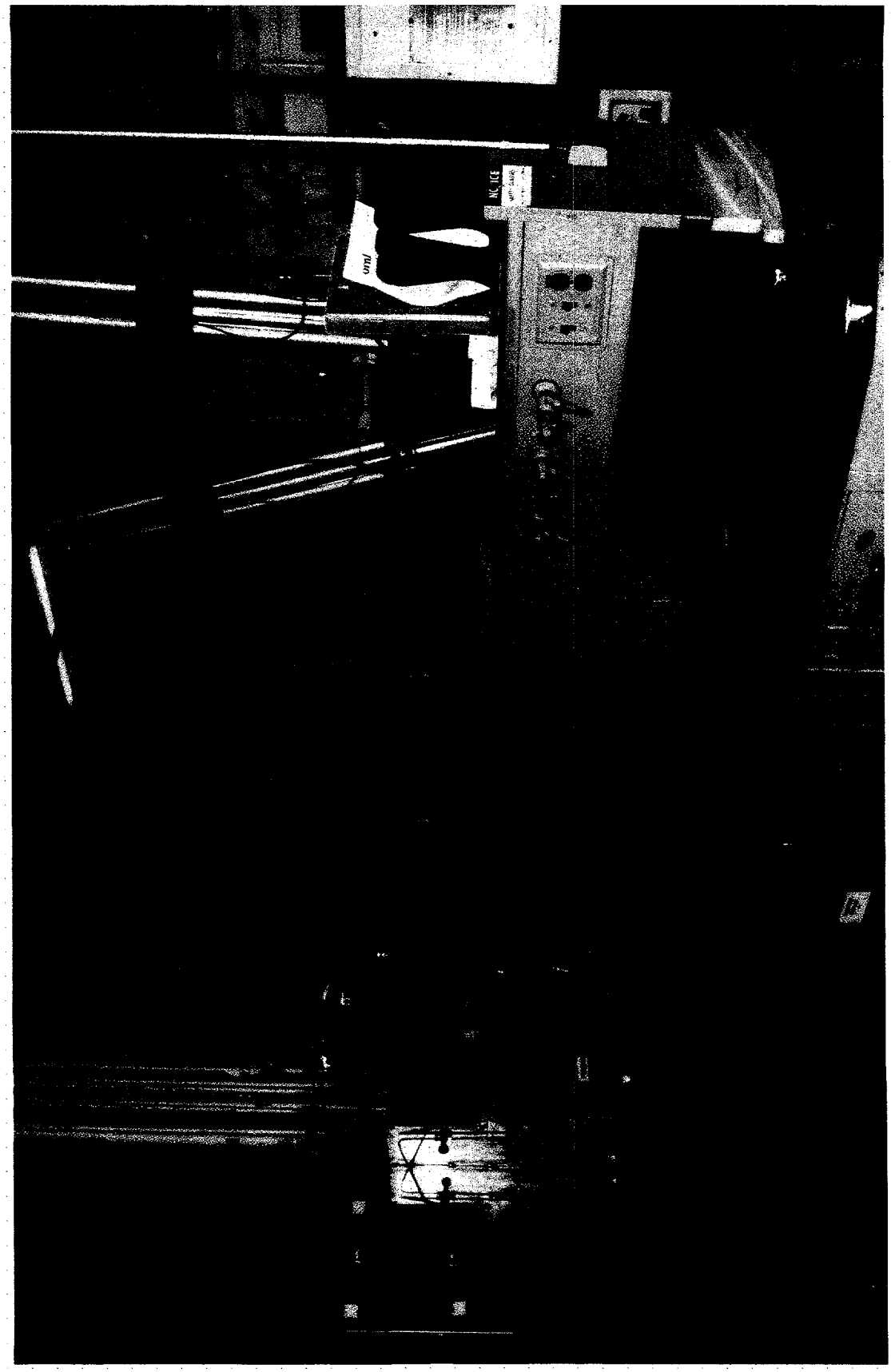


Fig. 3-2. Bldg. 3030: postdeactivation.

ATTACHMENT 4
ADMINISTRATIVE TURNOVER PACKAGE CHECKLIST

Administrative Turnover Package Checklist

Item Number	Document	Applicable ?
1	Final Deactivation Project Report	Yes
2	Emergency Response Plan	No
3	Safety Documentation (Category III or greater)	No
4	Regulatory Compliance Documentation	No
5	Interagency Agreements Documentation	No
6	Existing Permit Documentation	No
7	Corrective Action Documentation	No
8	Postdeactivation Punchlist	No
9	Deactivation Locks and Keys	Yes

ATTACHMENT 5
TECHNICAL TURNOVER
PACKAGE CHECKLIST

Technical Turnover Package Checklist

Item Number	Document	Applicable ?
1	End Point Determination Report	No
2	End Points Completion Report	No
3	End Point Technical Information	No
4	Deactivation Work Plans	No
5	Updated Facility Drawings (arrangement, PID, Loop, etc.)	Yes
6	"As Left" Photos of Spaces and Major Equipment	Yes
7	Hazardous Material Inventory and Survey	No
8	Safeguards and Security Documentation	No
9	Chemical Substance Inventory and Survey	No
10	Radioactive Materials Inventory and Survey	No
11	Facility Soil, Surface Water, and Groundwater Condition Report	Yes

ATTACHMENT 6
BLDG. 3030
DRAWING LIST

Bldg. 3030 Drawing List

Document Number	Revision	Title
C3E-020366-A001		Reroof Bldgs. 303, 3031, 3118 - site access plan and drawing index
D-18749		Manip cell elec plan & sects
D-19819		Manipulator cell - service piping, drains & exhaust
D-19820		Manipulator Cell - service piping & exhaust detail
D-20525		Alterations existing cell top view front elec sect
D-20526		Alterations existing cell plot plan sect elev det
D-20527		Roof plan, sects & front elev.
D-20567		Roof plan, sects & front elev.
D-20568		Plot plan, sect. elev. & dets
D-20569		67 lead door dets
D-20570		Misc dets sht 1
D-20571		Misc dets sht 2
D-43620		Driveway & curb alteration & new man hole cover
D-51920		Elec & fire det plans
D-51926		Enclosure Bldgs. 3030 and 3031 - ventilation
D-52252		Foundation plan, sect & dets
D-52253		Floor plan & steel framing dets
D-52254		wall sects & door sched
D-5545		20 ft hot barricades foundation plant & det
D-5546		20 ft hot barricades structural plan & elev
D-5547		20 ft hot barricades lead wall framing dets
D-5556		Machine barricade plan & elev.
D-5557		Machine barricade sects & dets
D-5709		Mach barricade hoods sect & dets
D-5744		20 ft hot barricades exh hood
D-6640		D building serv piping plan, sect & dets
E20366EF-003-D		South wall encl elec fire det plans
E20378D-001-D		440v elec feeder new 440v isotope area distr plot pl
E3E-20375-D003		Fire alarm plans
E-5622		Hot sink tables items 22-28 & 33-A
E-5730		Process bldg. exhaust hoods
H20366EG-001-D		A/C elec struc roof plan dets A/C units iso area
M20366EL-001-D		Cell window ext assy det

Bldg. 3030 Drawing List (continued)

Document Number	Revision	Title
ORNL/ENG/SR-221		Safety review reroof Bldgs. 3031, 3031, & 3118
ORNL/ENG/SR-221 R1		Safety review reroof Bldgs. 3031, 3031, & 3118
S20366EF-001-D		South wall encl steel framing plant dets
S20366EF-002-D		South wall encl steel framing exh dets
S3E-020366-B012		Reroof Bldgs. 3030, 3031, 3118 - roof plant, sections & details
S3E-020366-B013		Reroof Bldgs. 3030, 3031, 3118 - sections & details
X1989-0032-0003-008		Isotope processing facility functional criteria
X1991-0031-001		Memo: checking roofs for radiation contamination
X1991-0031-0003-006		Identification of bulk samples for asbestos content (asbestos survey)
X-RAP-0300-0		Risk assessment/plan for reroof Bldgs. 3030, 3031, & 3118

ATTACHMENT 7
BLDG. 3030
RADIOLOGICAL SURVEY DATA

ORNL Radiological Survey Data

Survey Number: 3038-96-1885 **3038 Field Office** **Date:** 8/29/96 **Time:** 10:15

Surveyor Badge Number: 626079 ☐ Routine Survey **RWP Number:** 3038-96-0040A

Building: 3030,3118 **Specific Location:** Bldg 3030 hot cell and 3118 @ rear cell door.

Description:

Enter 3030 hot cell via 3118 to remove waste, replace rings that hold bottom part of the manipulator boot on and do radiological survey.

Instruments Used and Calibration Due Date:

CTB-047 3/1/97 3038-1I 2/11/97 3038-3P 3/26/97

General Description of Radiological Conditions: From previous survey

Maximum loose contamination: 350,000 dpm/100 cm sq beta-gamma. Maximum fixed contamination: 1 R/hr beta-gamma. The average whole body dose is 42.5 mR/hr beta-gamma. The smear results from the survey performed are listed below.

Division or Group Needing the Survey: CT **Person-hours spent on the survey:** 3.5

# of Pages: 6 **Completed By:** [signature] **Reviewed by:** [signature] **Date:** 1-29-97

Smear Results (dpm/100 cm² unless noted)

Smear Number	α	β	Location	Smear Number	α	β	Location	Smear Number	α	β	Location
1	NC	21.0 mR/hr	See map	2	NC	4.5 mR/hr	See map	3	NC	80,000	See map
4	NC	250,000	See map	5	NC	300,000	See map	6	NC	100,000	See map
7	NC	230,000	See map	8	NC	3.5 mR/hr	See map	9	NC	200,000	See map
10	NC	1,421	See map	11	NC	6,433	See map	12	NC	6,265	See map
13	NC	100,000	See map	14	NC	100,000	See map				

Description: Cell entry

Sampler Number: M133701 Flow Rate (cfm): 2.5 Date/Time Start: 8/29/96 10:15

Filter Efficiency: 100.0% Date/Time End: 8/29/96 11:05

Date/Time Counted: 9/5/96 8:59 Sample Time (min): 50.0

	Alpha	Beta	
Counter ID	CTA-041	CTB-047	**AIR**
Counter Efficiency	42.5%	14.4%	
Background Counts	1	50	**SAMPLE**
Bkgd Count Time (min)	5	5	
Gross Sample Counts	4	24	
Sample Count Time (min)	1	1	
Sample DPM	8.9	97.2	
Air Concentration (uCi/ml)	1.14E-12	1.24E-11	First Count Factor
Min. Det. Conc. (uCi/ml)	1.29E-12	1.25E-11	~~10.87~~ N/A

Lockheed Martin Utility Services
6226029

ORNL Radiological Survey Data

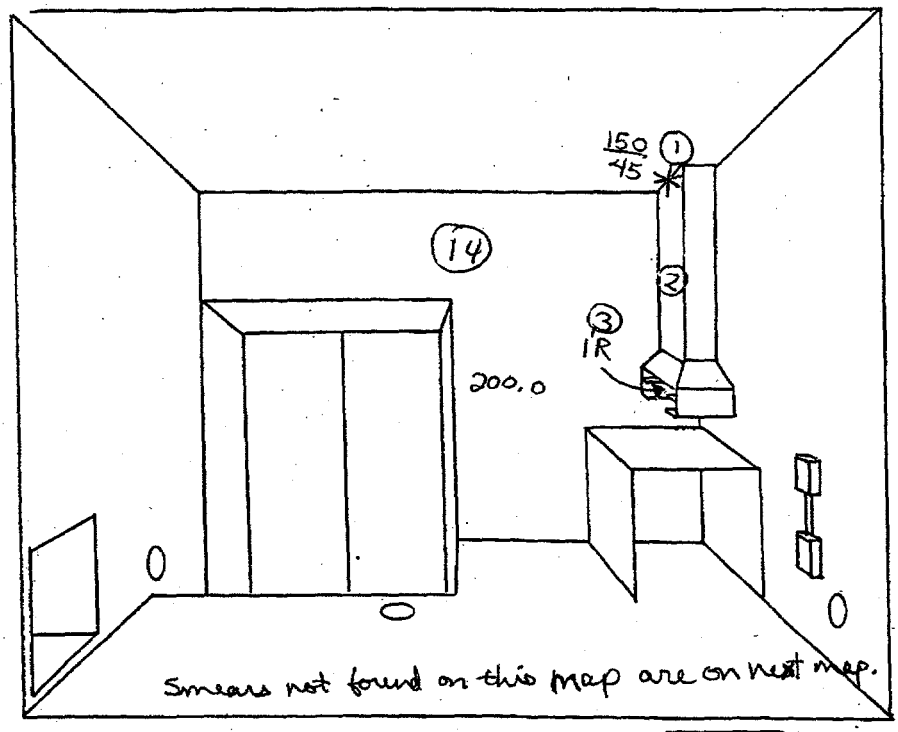
Survey Number: 3038-96-1885 3038 Field Office Date: 8-29-96 Time: 1015

Hot Cell Bldg 3030

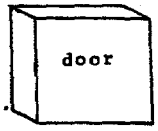
CTB-047
3038-3P
~~RSO5~~ IDC
3038-IF

Give only D/M on smears over
NC dpm/100 cm² α
200 dpm/100 cm² β

	β	β
*	1 21.0	34
*	2 4.5	35
	3 80K	36
	4 250K	37
	5 300K	38
	6 100K	39
	7 230K	40
*	8 3.5	41
	9 200K	42
★	10 1,421	43
★	11 6,433	44
★	12 6,265	45
	13 200K	46
	14 100K	47
	15	48
	16	49
	17	50
	18	51
	19	52
	20	53
	21	54
	22	55
	23	56
	24	57
	25	58
	26	59
	27	60
	28	61
	29	62
	30	63
	31	64
	32	65
	33	66



* Read with RSO-5 (mR/hr)
★ Counted in CTB-047 (Beta counter)
The rest were read with a portable inst.



(#)	- Smear Location	Boundary Designations	
(#)—(#)	- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
#	- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
#	- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
#	- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP	- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS	- Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

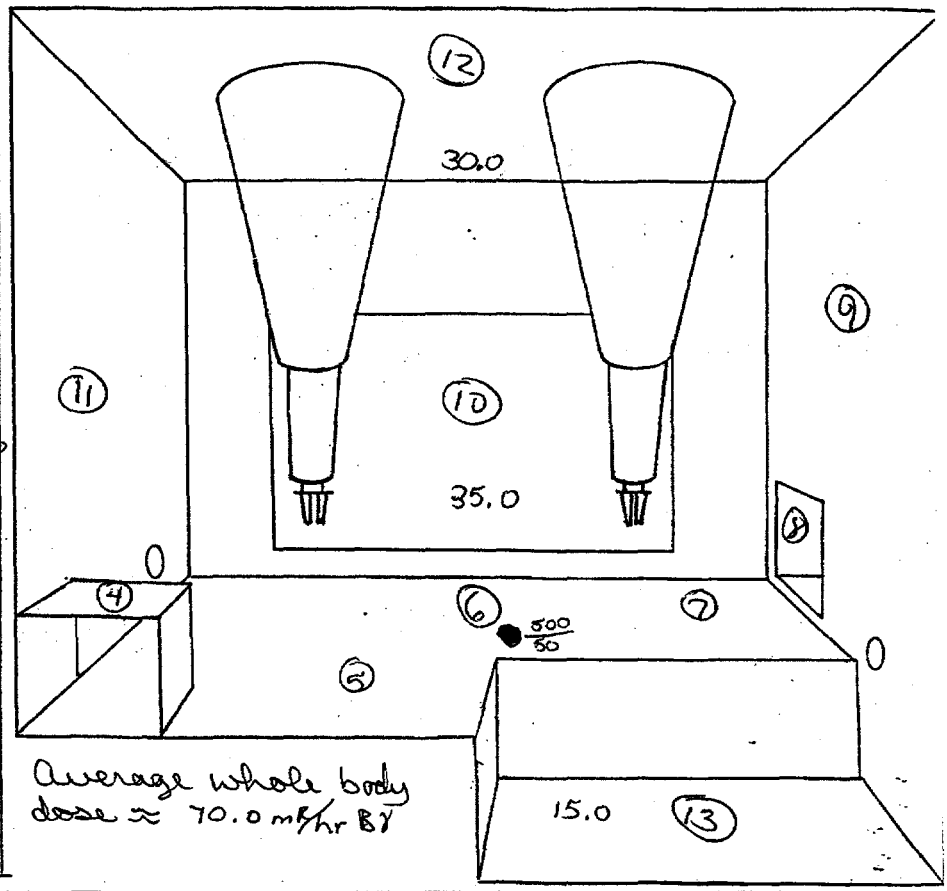
Page: 5

ORNL Radiological Survey Data

Survey Number: 3038-96-1885 3038 Field Office Date: 8-29-96 Time: 1015

Give only DPM on smears over
_____ dpm/100 cm² α
_____ dpm/100 cm² β

β	β
1	34
2	35
3	36
4	37
5	38
6	39
7	40
8	41
9	42
10	43
11	44
12	45
13	46
14	47
15	48
16	49
17	50
18	51
19	52
20	53
21	54
22	55
23	56
24	57
25	58
26	59
27	60
28	61
29	62
30	63
31	64
32	65
33	66



#	- Smear Location	Boundary Designations	
#—#	- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
#	- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
#	- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
#	- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP	- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS	- Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

Page: 6

ORNL Radiological Survey Data

Survey Number: 3038-96-1880 **3038 Field Office** **Date:** 8/26/96 **Time:** 9:00

Surveyor Badge Number: 626079 ☐ Routine Survey **RWP Number:** 3038-95-0029

Building: 3030 **Specific Location:** On top of hot cell

Description:

Survey to determine contamination/radiation levels prior to upcoming work.

Instruments Used and Calibration Due Date:

CTB-047 3/1/97 3038-11 2/11/97

General Description of Radiological Conditions:

The highest smear was 9,975 dpm/100 cm sq beta-gamma. The highest dose rate was 300.0 mR/hr beta-gamma at contact with the back of the cell where it meets the wall and 20.0 mR/hr at 30 cm. After the manipulator work leftover lead was used to shield the 300 mR/hr spot down to < 5.0 mR/hr at 30 cm. The average whole body dose after this is ~ 1.1 mR/hr beta-gamma. Then the top of the cell was posted as a contamination area 8/29/96.

Division or Group Needing the Survey: CT **Person-hours spent on the survey:** 2.5

# of Pages: 2 **Completed By:** Deborah Cossano **Reviewed by:** J. Slate **Date:** 12-3-96

Smear Results (dpm/100 cm² unless noted)

Smear Number	α	β	Location	Smear Number	α	β	Location	Smear Number	α	β	Location
1	NC	<200	See map	2	NC	<200	See map	3	NC	1,309	See map
4	NC	5,068	See map	5	NC	4,186	See map	6	NC	<200	See map
7	NC	273	See map	8	NC	9,975	See map	9	NC	553	See map
10	NC	329	See map	11	NC	847	See map				

ORNL Radiological Survey Data

626079

Survey Number: 3038-96-1880 3038 Field Office Date: 8-26-96 Time: 0900

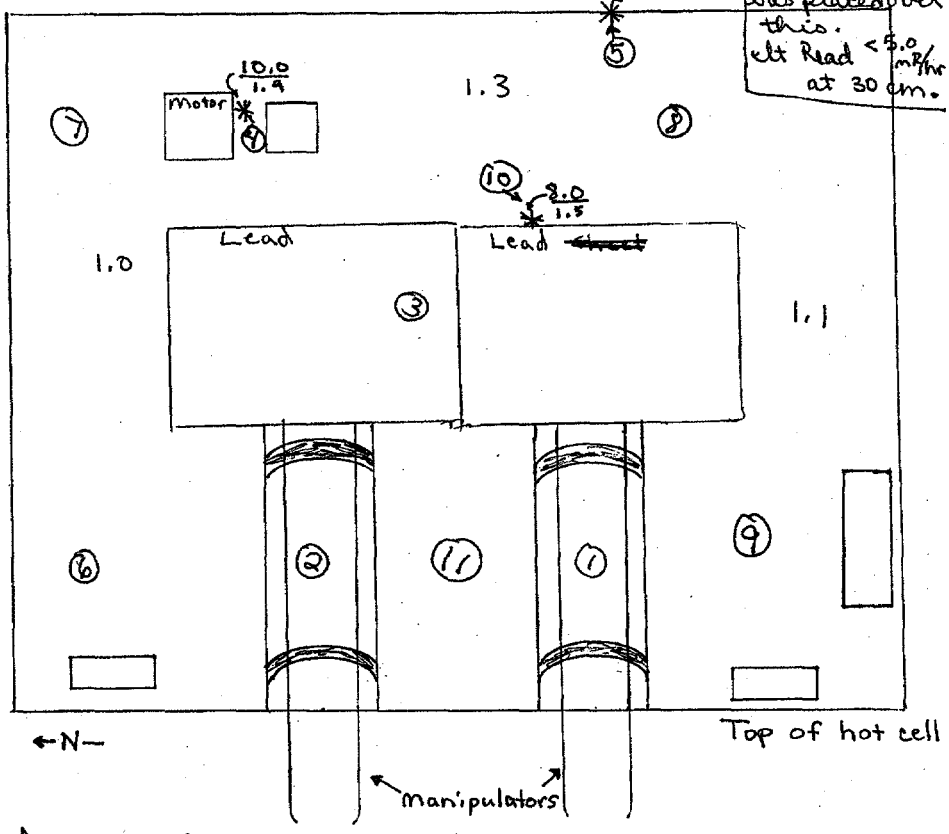
CTB-047, 3039-11

Bldg 3030

Give each DAM on smears over
N/A dpm/100 cm² α
200 dpm/100 cm² β

	β		β
1	—	34	
2	—	35	
3	1,309	36	
4	5,068	37	
5	4,186	38	
6	—	39	
7	273	40	
8	9975	41	
9	553	42	
10	329	43	
11	847	44	
12		45	
13		46	
14		47	
15		48	
16		49	
17		50	
18		51	
19		52	
20		53	
21		54	
22		55	
23		56	
24		57	
25		58	
26		59	
27		60	
28		61	
29		62	
30		63	
31		64	
32		65	
33		66	

8-28-96
After the manipulator pull leftover lead was placed over this. Lt Read < 5.0 mR/hr at 30 cm.



Average whole body dose ≈ 1.1 mR/hr BY on 8-28-96.

#	- Smear Location	Boundary Designations	
#—#	- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
#	- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
#	- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
#	- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP	- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS	- Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

Page: 2

The top of this cell was posted as a Contamination area after the manipulator pull.

ORNL Radiological Survey Data

Survey Number: 3038-95-1073 **3038 Field Office** **Date:** 9/7/95 **Time:** 09:00

Surveyor Badge Number: 740968 ☐ Routine Survey **RWP Number:** 3038-95-0015

Building: 3030 **Specific Location:** Roof and Attic

Description:

Personnel to enter roof and attic for inspections.

Instruments Used and Calibration Due Date:

3038-9B	2/13/96	3038-8P	10/16/95	CTB-047	2/20/96	CTA-041	2/20/96
3038-4I	1/29/95						

General Description of Radiological Conditions:

Max. beta-gamma contamination levels were 7000 dpm/100cm2. No alpha contamination was present. Max. Rad. field was 150 mr/hr at contact. The general working bkg was <1mr/hr.

Division or Group Needing the Survey: CT **Person-hours spent on the survey:** 2

# of Pages: 5 **Completed By:** [signature] **Reviewed by:** [signature] **Date:** 9-13-95

ORNL Radiological Survey Data

Survey Number: 3038-95-1093 | 3038 Field Office | Date: 9-1-95 | Time: 0700

#	B
1	<200
2	<200
3	<200
4	3000
5	1000
6	<200
7	<200
8	<200
9	<200
10	<200
11	<200
12	<200
13	<200
14	5000
15	<200
16	<200
17	7000
18	<200
19	<200
20	<200
21	<200
22	350
23	<200
24	<200
25	<200
26	<200
27	<200
28	<200
29	<200
30	<200
31	<200
32	<200
33	<200
34	5000
35	<200
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
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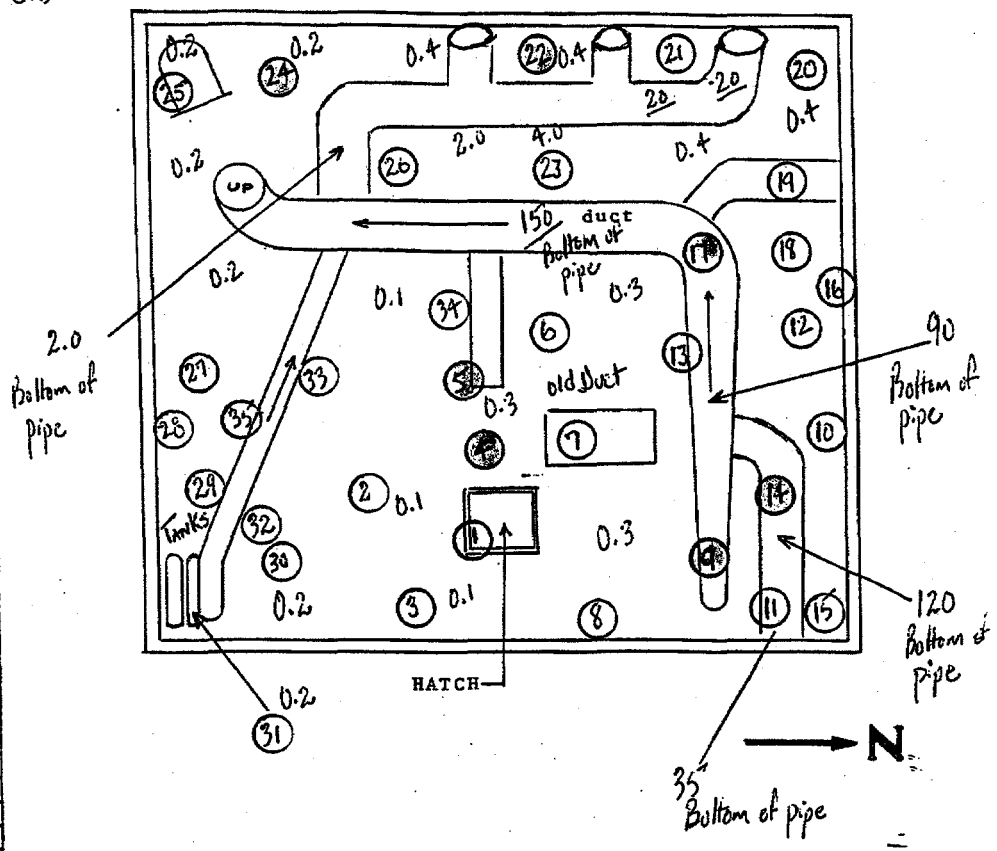
51	

3038 04I
3038 08P
3038 09B
CTA041
CTB047

Radiation/Contamination Survey.
Dose rates are mr/hr.
in BLDG 3030 ATTIC

Gerard Bamilton 74968
Jay Davis 626444



⊕ - Smear Location	Boundary Designations	
⊕—⊕ - Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
g - Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
g - 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
g - General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP - Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS - Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

Page: ____

ORNL Radiological Survey Data

Survey Number: 3038-94-0047 | 3038 Field Office | Date: 9/15/94 | Time: 09:00

Surveyor Badge Number: 32721 | ☐ Routine Survey | RWP Number: 102130

Building: 3030 | Specific Location: Hoods

Description:

Final smear results before deconners paint the strippable coating in all three hoods.

Instruments Used and Calibration Due Date:

CTB-047 2/23/95

General Description of Radiological Conditions:

See attached maps for the final smear results. The hoods were painted today with the yellow strippable coating.

Division or Group Reading the Survey: CT | Person-hours spent on the survey: 0

# of Pages: 4 | Completed By: Janet Cox | Reviewed by: Slater | Date: 9-19-94

ORNL Radiological Survey Data

Survey Number: ORNL-94-0027 (ORNL-94-0031) 3038 Field Office Date: 9/9/94 Time: 1440

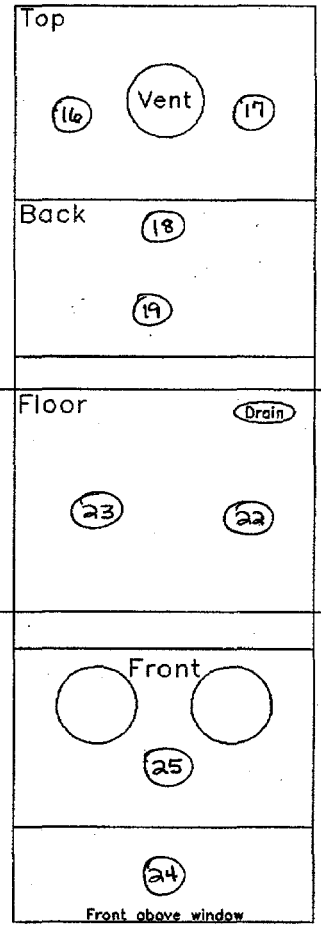
Give only D/M on smears over
N/A dpm/100 cm² α
200 dpm/100 cm² β

	β		β
1		34	
2		35	
3		36	
4		37	
5		38	
6		39	
7		40	
8		41	
9		42	
10		43	
11		44	
12		45	
13		46	
14	<200	47	
15	952	48	
16	1022	49	
17	609	50	
18	336	51	
19	1799	52	
20	238	53	
21	1050	54	
22	721	55	
23	308	56	
24	567	57	
25	511	58	
26		59	
27		60	
28		61	
29		62	
30		63	
31		64	
32		65	
33		66	

3030

Hood #1

counter: CTB-047
cal. due: 2/95



Final Contamination survey of hood before painting.

General bkgd. in hood is 1.5 mR/hr.

Janet Cox
#32721
9/9/94

#	- Smear Location	Boundary Designations	
#—#	- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
#	- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
#	- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
#	- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP	- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS	- Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

Page: 2 of 4

ORNL Radiological Survey Data

Survey Number: 3038-94-0046 **3038 Field Office** Date: 9/14/94 Time: 1345

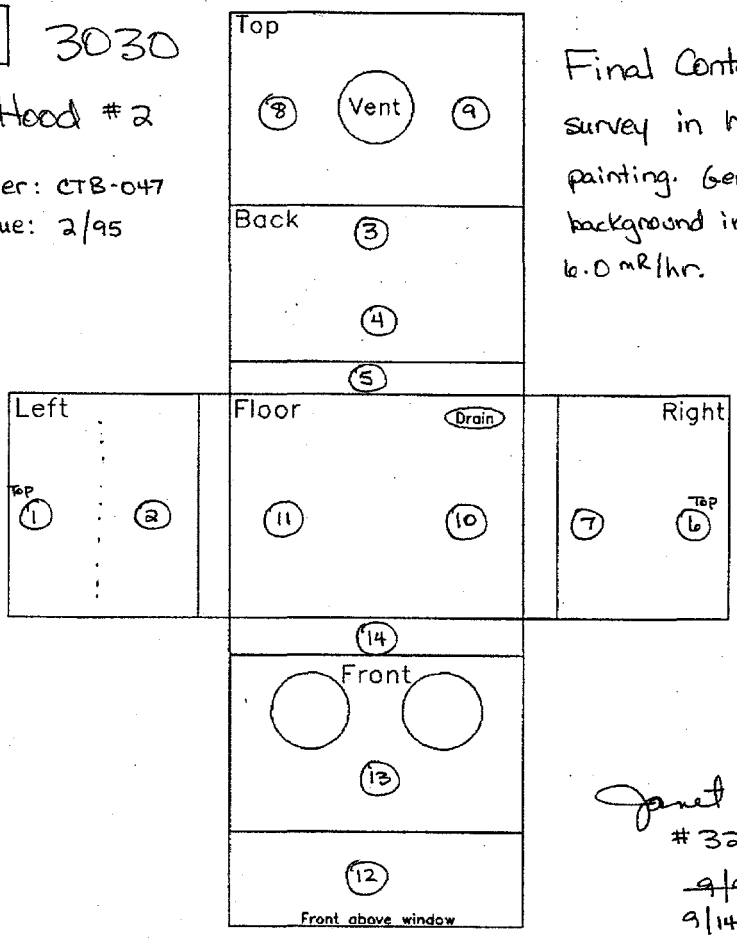
Give only D/M on smears over
N/A dpm/100 cm² α
200 dpm/100 cm² β

	β		β
1	280	34	
2	784	35	
3	910	36	
4	5943	37	
5	819	38	
6	245	39	
7	3871	40	
8	2240	41	
9	1841	42	
10	371	43	
11	609	44	
12	1820	45	
13	399	46	
14	210	47	
15		48	
16		49	
17		50	
18		51	
19		52	
20		53	
21		54	
22		55	
23		56	
24		57	
25		58	
26		59	
27		60	
28		61	
29		62	
30		63	
31		64	
32		65	
33		66	

3030

Hood #2

Counter: CTB-047
Cal. due: 2/95



Final Contamination survey in hood before painting. General background in hood is 6.0 mR/hr.

Janet Cox
#32721
~~9/9/94~~
9/14/94

#	- Smear Location	Boundary Designations	
#—#	- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
#/#	- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
#/#	- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
#	- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP	- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS	- Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

Page: 3 of 4

ORNL Radiological Survey Data

Survey Number: ~~ORNL-94-0027~~ 3038-94-0031 (#3038) 3038 Field Office Date: 9/9/94 Time: 1440

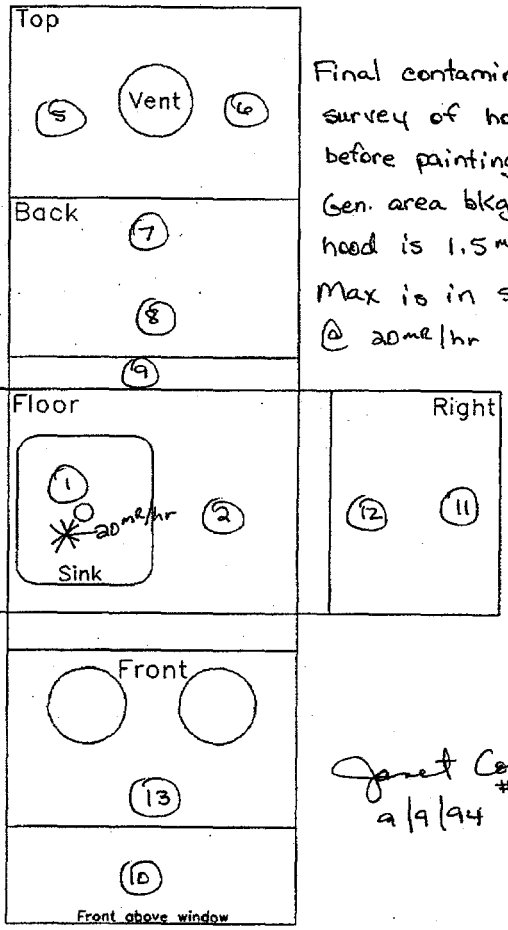
Give only D/M on smears over
N/A dpm/100 cm² α
200 dpm/100 cm² β

	β		β
1	<200	34	
2	<200	35	
3	392	36	
4	868	37	
5	315	38	
6	456	39	
7	805	40	
8	385	41	
9	1134	42	
10	<200	43	
11	<200	44	
12	651	45	
13	371	46	
14		47	
15		48	
16		49	
17		50	
18		51	
19		52	
20		53	
21		54	
22		55	
23		56	
24		57	
25		58	
26		59	
27		60	
28		61	
29		62	
30		63	
31		64	
32		65	
33		66	

3030

Hood #3

Counter: CTB-047
cal. due: 2/95



Final contamination survey of hood before painting. Gen. area bkgd. in hood is 1.5 mR/hr. Max is in sink @ 20 mR/hr

#4 was a re-smear of spot. See ~~of~~ 3038-94-0027

Janet Cox #32721
9/9/94

#	- Smear Location	Boundary Designations	
#—#	- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
$\frac{\#}{\ }$	- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
$\frac{\#}{\ }$	- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
#	- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP	- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS	- Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

Page: 4 of 4

ORNL Radiological Survey Data

Survey Number: 3038-96-1743 **3038 Field Office** **Date:** 8/16/96 **Time:** ~~14:00~~ 10:10

Surveyor Badge Number: 626079 ☒ Routine Survey **RWP Number:** N/A

Building: 3030 **Specific Location:** Roof

Description:

Bi-annual radiation survey.

Instruments Used and Calibration Due Date:

3038-41 11/25/96

General Description of Radiological Conditions:

The average whole body dose is ~ 0.24 mR/hr beta-gamma. The highest background reading was 0.8 mR/hr on the northeast side near building 3029. The filter bank read about the same as the background.

Division or Group Needing the Survey: CT **Person-hours spent on the survey:** 1

# of Pages: 2 **Completed By:** Deborah Cusano **Reviewed by:** J. Slate **Date:** 8-20-96

ORNL Radiological Survey Data

626079

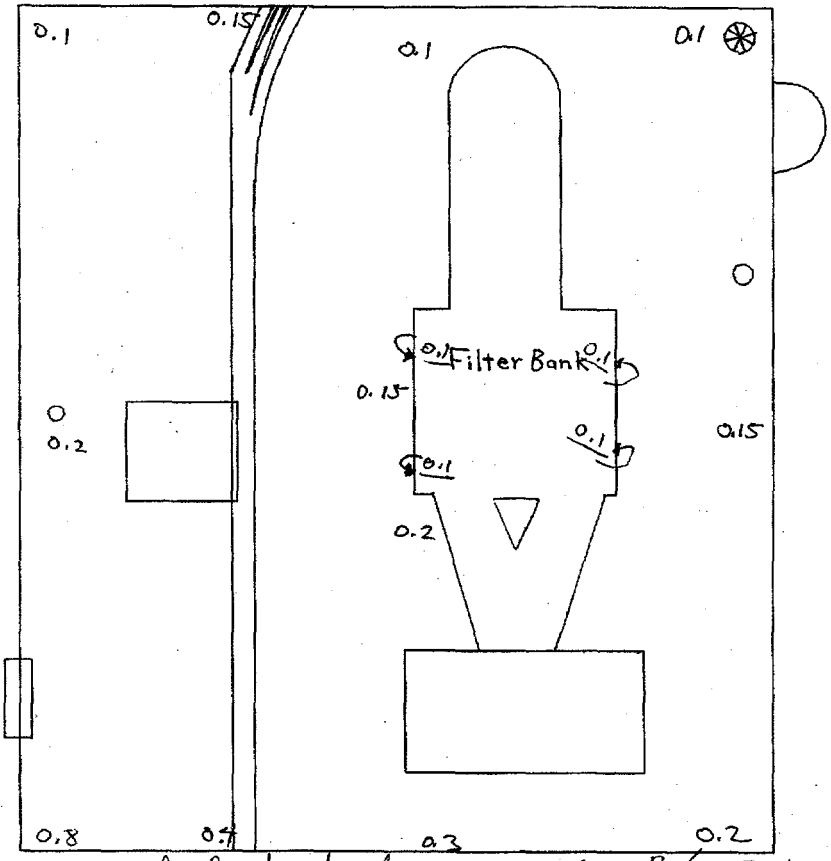
Survey Number: 3038-96-1743 3038 Field Office Date: 8-15-96 Time: 1010

3038-4I

Give only D/M on smears over
_____ dpm/100 cm² α
_____ dpm/100 cm² β

α	β
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33

3030 Roof

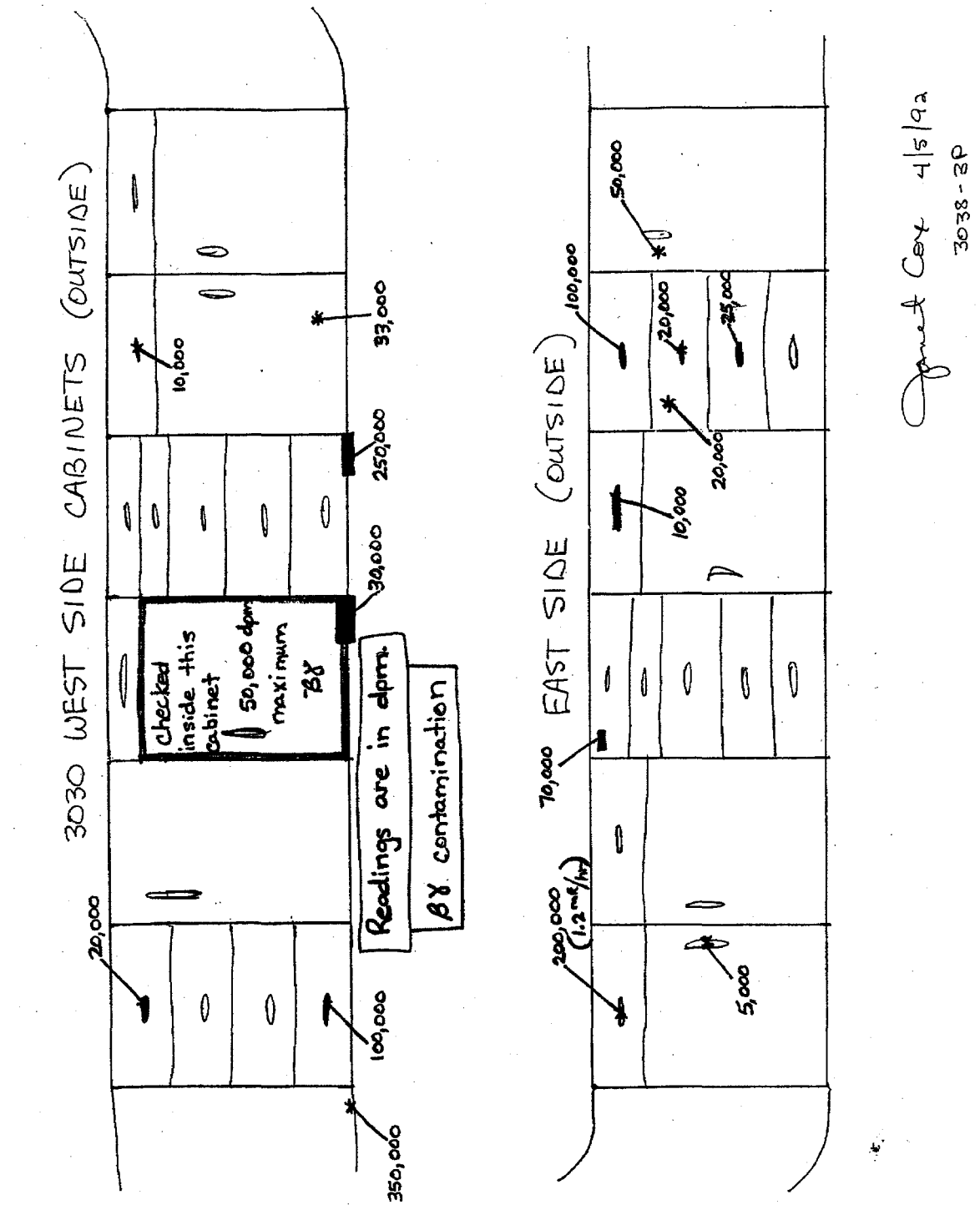


Average whole body dose ≈ 0.24 mR/hr BK

#	- Smear Location	Boundary Designations	
#—#	- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
#	- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
#	- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
#	- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP	- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS	- Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

Page: 2


3030 WEST SIDE CABINETS (OUTSIDE)
checked inside this cabinet
50,000 dpm maximum
βγ
Readings are in dpm.
βγ contamination
20,000
10,000
33,000
250,000
30,000
100,000
350,000
EAST SIDE (OUTSIDE)
100,000
50,000
20,000
25,000
20,000
10,000
70,000
200,000 (1.2 mR/hr)
5,000
Janet Cox 4/5/92
3038-3P

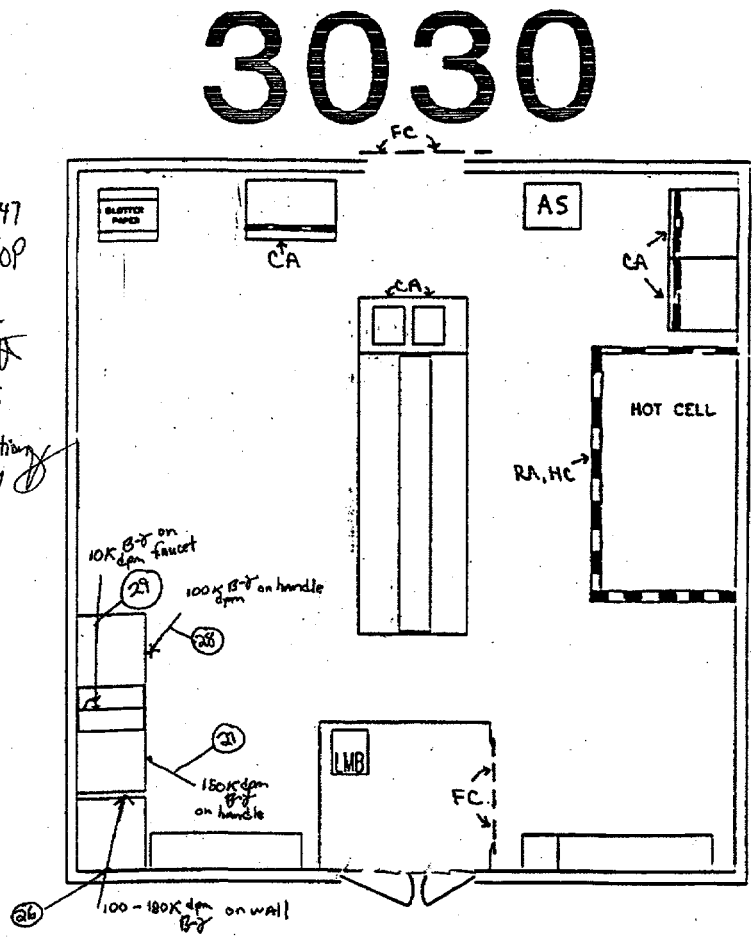
ORNL Radiological Survey Data

Survey Number: 3038-95-1285 **3038 Field Office** Date: 12/14/95 Time: 0800

Give only D/M on smears over
NA dpm/100 cm² α
98 dpm/100 cm² β

	β		β
1		34	
2		35	
3		36	
4		37	
5		38	
6		39	
7		40	
8		41	
9		42	
10		43	
11		44	
12	N	45	A
13		46	
14		47	
15		48	
16		49	
17		50	
18		51	
19		52	
20		53	
21		54	
22		55	
23		56	
24		57	
25		58	
26	/MDA	59	NC
27	/MDA	60	NC
28	/MDA	61	NC
29	150	62	NC
30		63	
31	N	64	A
32		65	
33		66	

CTB-047
3038-109
Shawn Burnett
740165
contamination survey



#	- Smear Location	Boundary Designations	
#—#	- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
#__	- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
#	- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
#	- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP	- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS	- Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

Page: 3

Deborah Grissom
626079

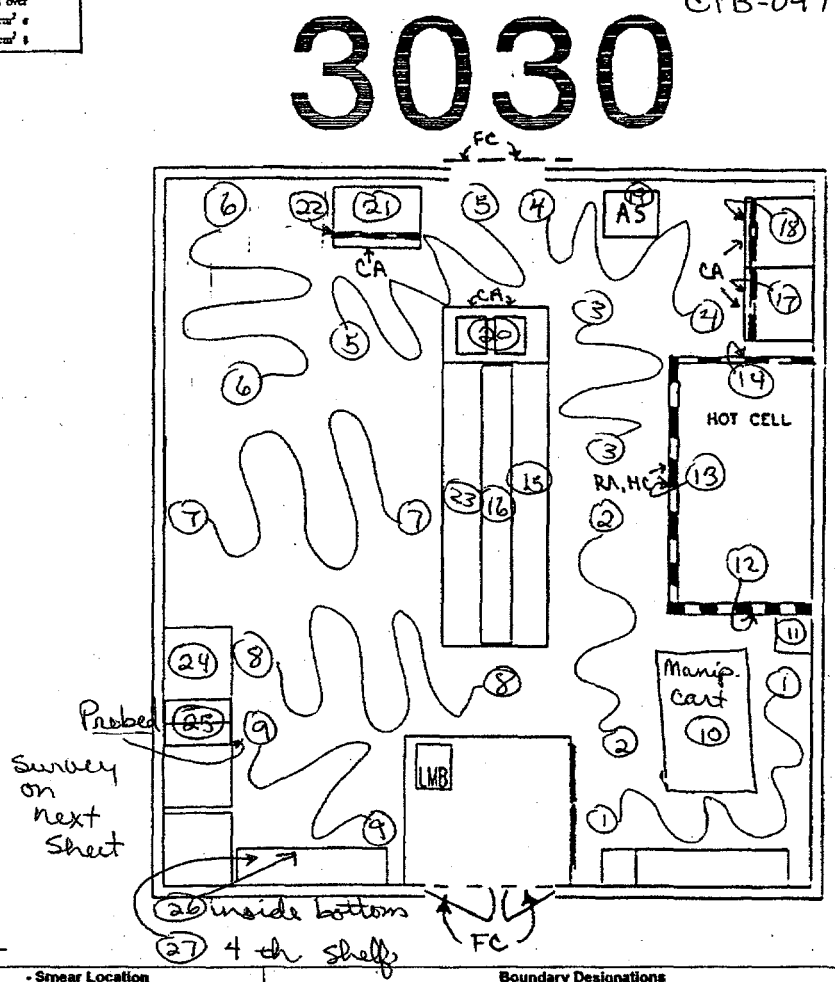
ORNL Radiological Survey Data

Survey Number: 3038-96-1362 3038 Field Office Date: 1-12-96 Time: 1500

3038-6P
CTB-047

Give only D/M on smears over
20 dpm/100 cm² α
200 dpm/100 cm² β

	β		β
1	N/A/SMT	34	
2		35	
3		36	
4		37	
5		38	
6		39	
7		40	
8		41	
9		42	
10		43	
11		44	
12		45	
13		46	
14		47	
15		48	
16		49	
17		50	
18		51	
19		52	
20		53	
21		54	
22		55	
23		56	
24		57	
25		58	
26		59	
27		60	
28		61	
29		62	
30		63	
31		64	
32		65	
33		66	



#	- Smear Location	Boundary Designations	
#—#	- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
#	- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
#	- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
#	- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP	- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS	- Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

Page: 2

ORNL Radiological Survey Data

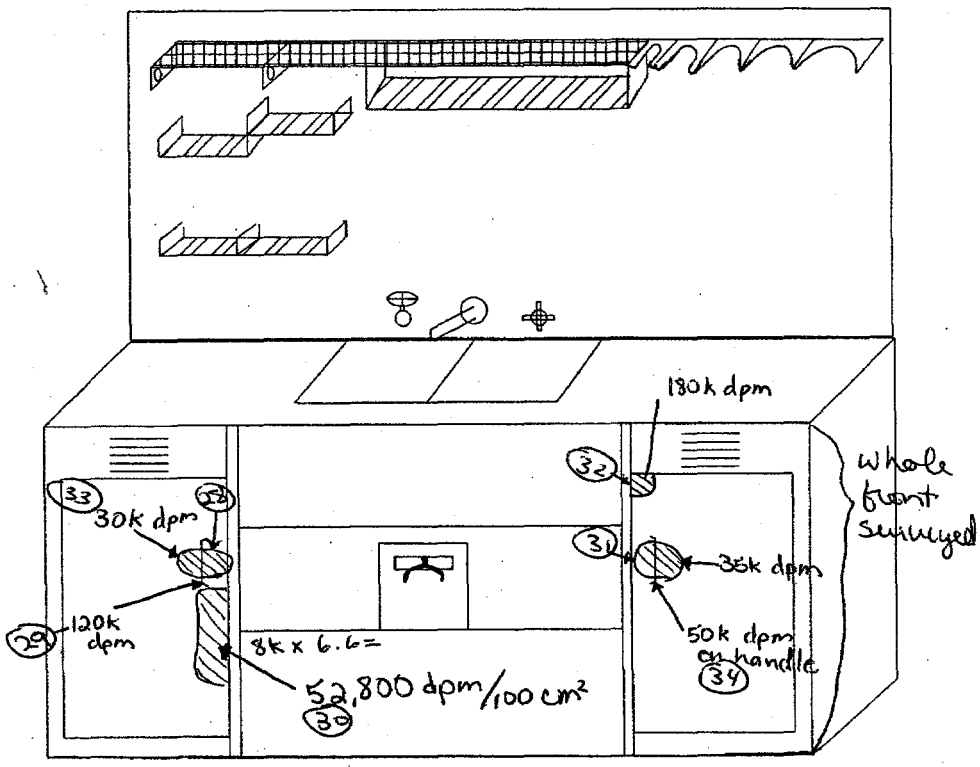
Survey Number: 3038-96-1362 3038 Field Office Date: 1-16-96 Time: 1300

3038-7P&4B CTB-047

α | β

See first Map

3030 Sink + cabinets in Southwest corner



Background from 2k to 3k on this side

Readings are beta-gamma these areas probed < 500 dpm/100 cm² α

(3) - Smear Location	Boundary Designations	
(2) — (2) - Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
# - Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
# - 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
# - General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP - Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS - Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

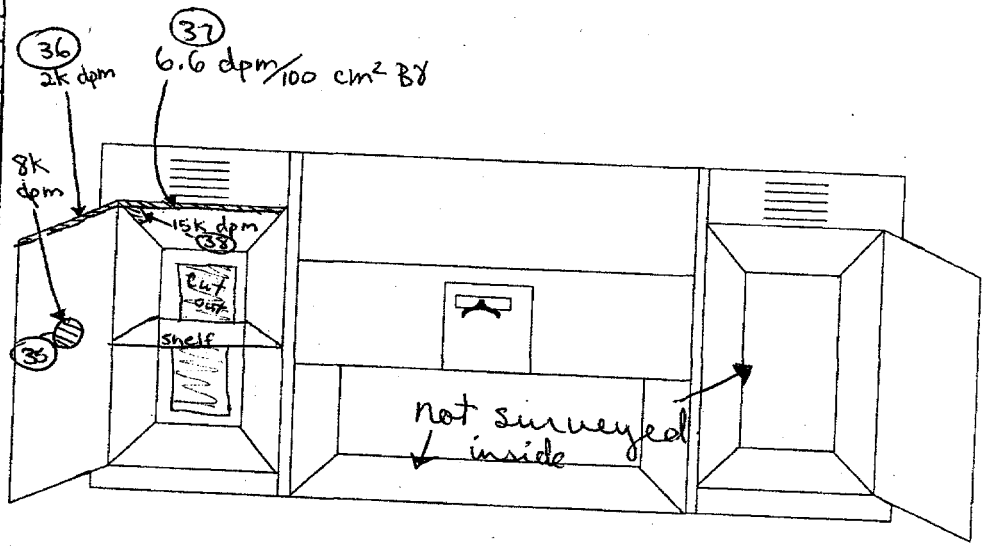
ORNL Radiological Survey Data

Survey Number: 3038-96-1362 3038 Field Office Date: 1-16-96 Time: 1300

3038-7P+4B
CTB-047

See first Sheet

3030 Cabinets under sink inside view



Background 4k to 3k

Readings are beta-gamma, these areas probed < 500 dpm/100 cm² α

- Smear Location	Boundary Designations	
- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
- Air Sample Location	UM - Underground Radioactive Materials Area	

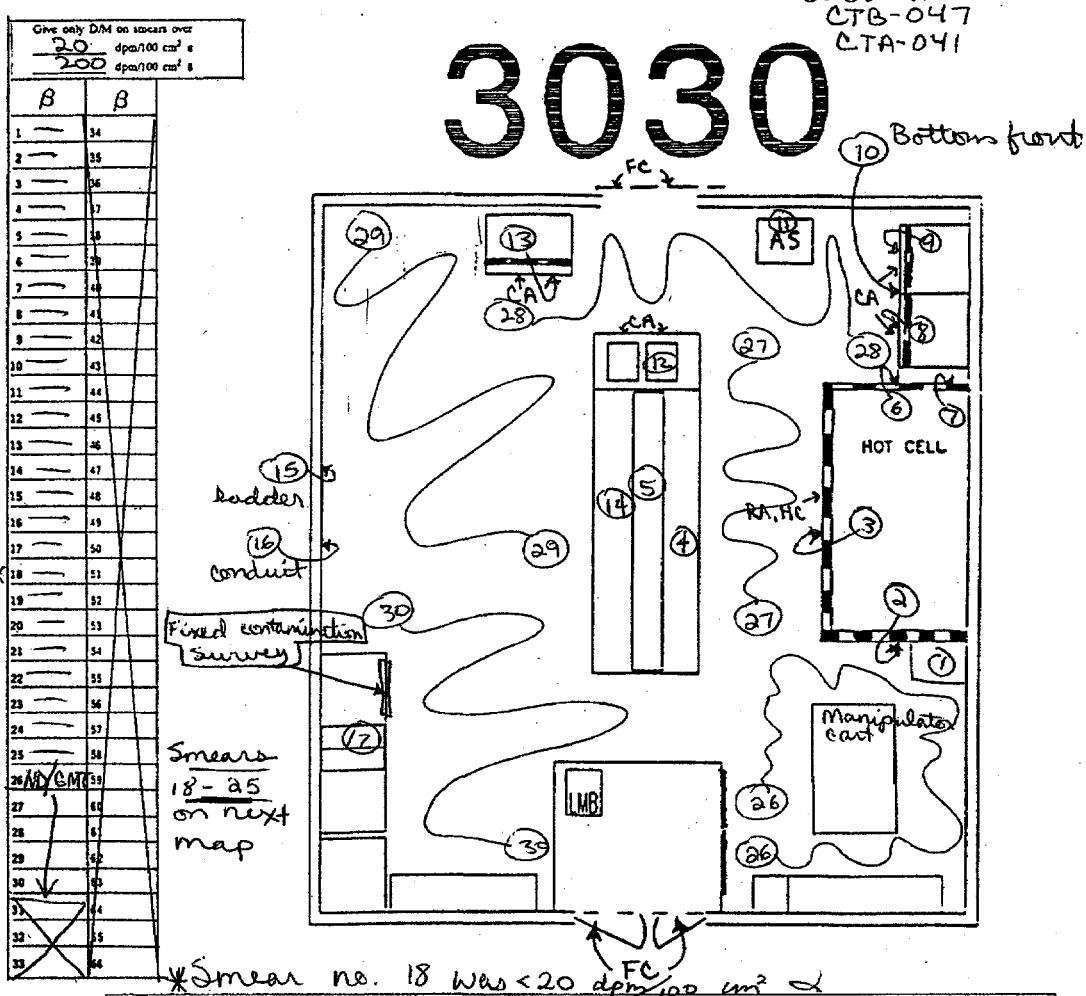
Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

Lockheed Martin Energy Systems
626079

ORNL Radiological Survey Data

Survey Number: 3038-96-1402 3038 Field Office Date: 2-12-96 Time: 1330

3038-7P & 5B + 1I
CTB-047
CTA-041



(#)	- Smear Location	Boundary Designations	
(#)—(#)	- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
#	- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
#	- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
#	- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP	- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS	- Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

Page: 2

Welds with Vossco 626079

ORNL Radiological Survey Data

Survey Number: 3038-96 — 3038 Field Office — Date: 2-12-96 Time: 1330

	α	B
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
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34		
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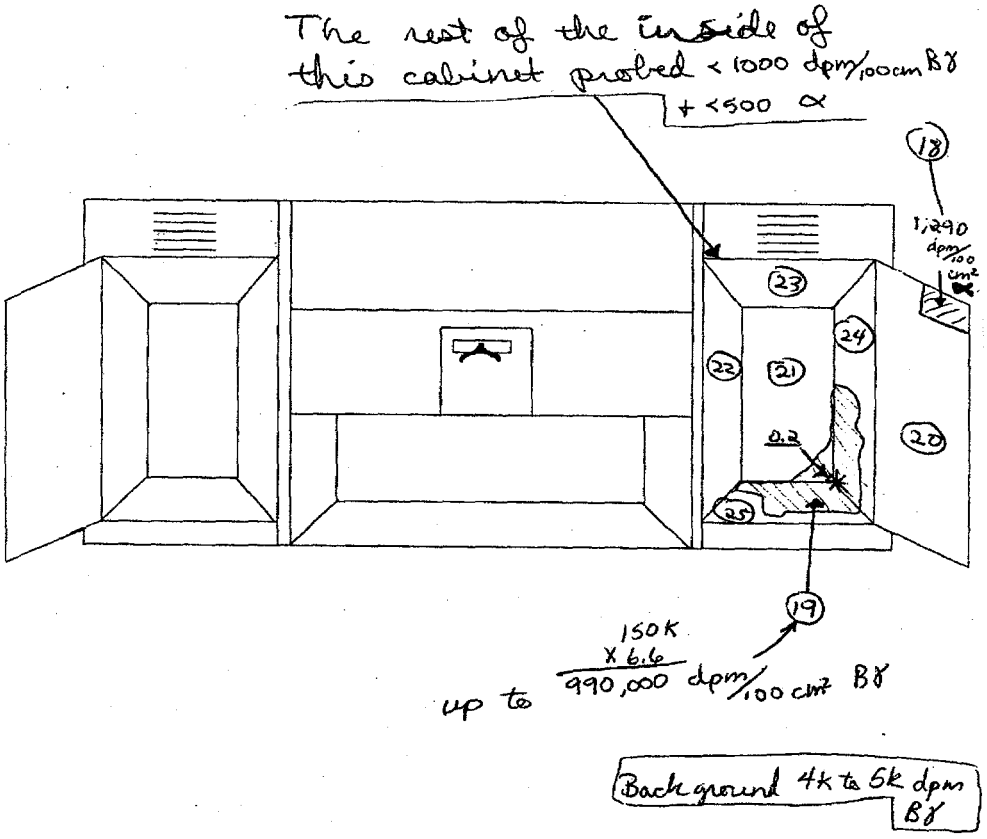
51		



(#)	- Smear Location	Boundary Designations	
(#)—(#)	- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
#	- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
#	- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
#	- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOF	- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS	- Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

3

ORNL Radiological Survey Data

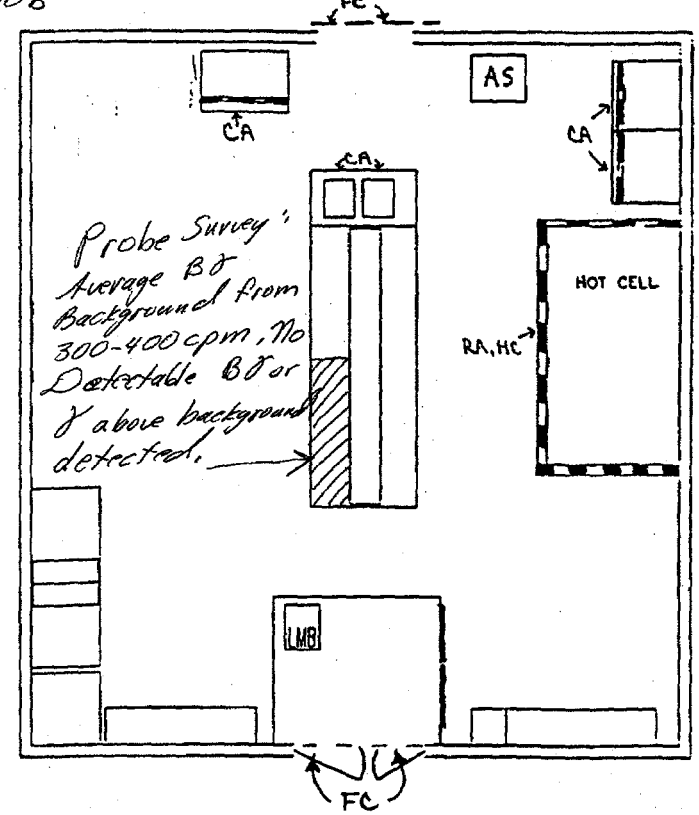
Survey Number: 3038-96-1584 3038 Field Office Date: 5-15-96 Time: 11:00

Give only D/M on spears over
dpm/100 cm² α
dpm/100 cm² β

β	β
1	34
2	35
3	36
4	37
5	38
6	39
7	40
8	41
9	42
10	43
11	44
12	45
13	46
14	47
15	48
16	49
17	50
18	51
19	52
20	53
21	54
22	55
23	56
24	57
25	58
26	59
27	60
28	61
29	62
30	63
31	64
32	65
33	66

3038-03P
3038-10B

3030 Coleman



#	- Smear Location	Boundary Designations	
#—#	- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
#	- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
#	- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
#	- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP	- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS	- Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

Page: 3

Deborah Lassano
626079

ORNL Radiological Survey Data

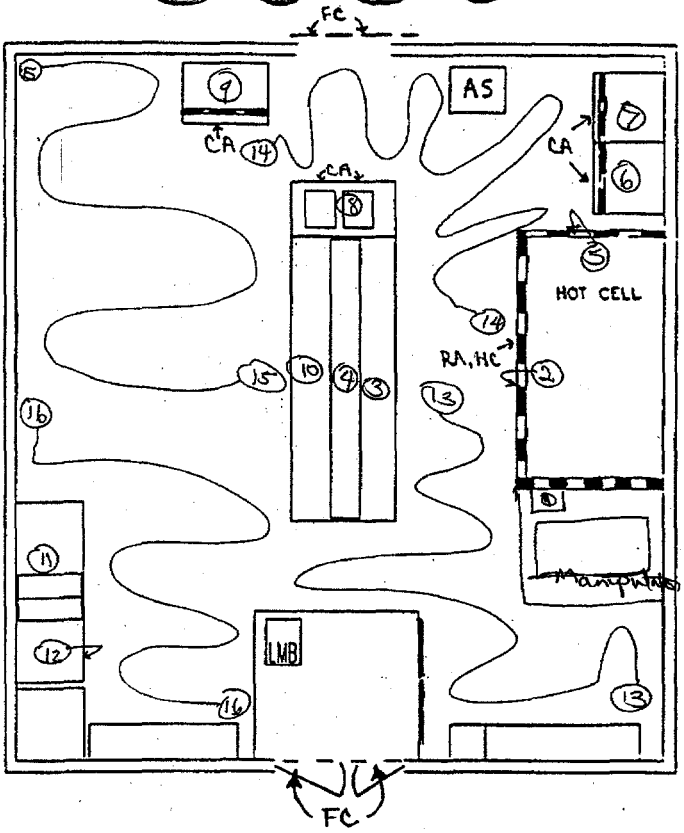
Survey Number: 3038-97-0155 3038 Field Office Date: 2-26-97 Time: 1500

Latest contamination survey CTB-047 3038-8P

Give only D/M on smears over
20 dpm/100 cm² α
200 dpm/100 cm² β

	β	β
1		34
2		35
3		36
4		37
5		38
6		39
7		40
8		41
9		42
10		43
11		44
12		45
13 ND/SMT		46
14		47
15		48
16		49
17		50
18		51
19		52
20		53
21		54
22		55
23		56
24		57
25		58
26		59
27		60
28		61
29		62
30		63
31		64
32		65
33		66

3030



#	- Smear Location	Boundary Designations	
#—#	- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
#	- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
#	- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
#	- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP	- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS	- Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

Page: ____

Deborah Wesorick
626079

ORNL Radiological Survey Data

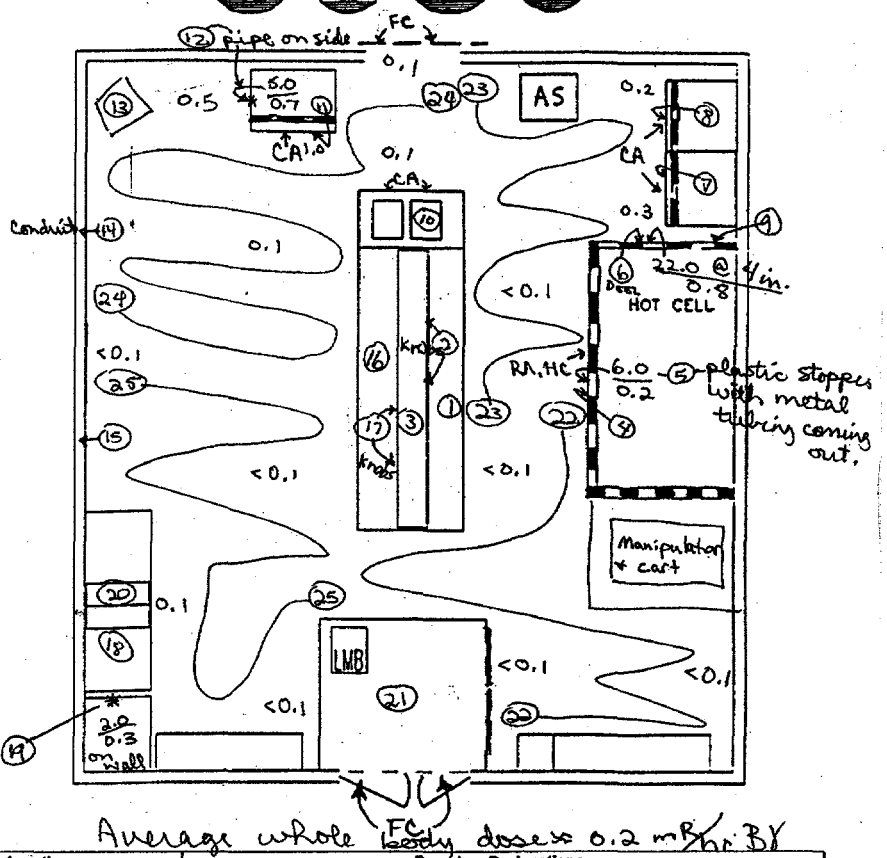
Survey Number: 3038-96-1847 | 3038 Field Office | Date: 10-18-96 Time: 1000

Monthly contamination / Quarterly radiation survey.
3038-1I + 2P
CTB-047

Latest radiation survey **3030**

Give only D/M as smears over
20 dpm/100 cm² α
200 dpm/100 cm² β

	β	β
1		34
2		35
3		36
4		37
* 5	2219	38
6		39
7		40
8		41
9		42
10		43
11		44
12		45
13		46
14		47
15		48
16		49
17		50
18		51
19		52
20		53
21		54
22	ND/CAL	55
23		56
24		57
25		58
26		59
27		60
28		61
29		62
30		63
31		64
32		65
33		66



Average whole body dose ≤ 0.2 mR/hr BY

#	- Smear Location	Boundary Designations	
#—#	- Large Area Smear	RA - Radiation Area	BA - Radiological Buffer Area
#	- Contact Dose Rate	HR - High Radiation Area	CA - Contamination Area
#	- 30 cm Dose Rate	VR - Very High Radiation Area	HC - High Contamination Area
#	- General Area Dose Rate	AR - Airborne Radioactivity Area	FC - Fixed Contamination Area
SOP	- Step-off Pad	RM - Radioactive Materials Area	SC - Soil Contamination Area
AS	- Air Sample Location	UM - Underground Radioactive Materials Area	

Default units are in mR/hr and are for open window beta/gamma readings. Letter suffixes with the number indicate specific radiations: B - Beta (mRad/hr), G - Gamma (mR/hr), N - Neutron (mRem/hr). Boundary designations are looking from the designations into the zoned area.

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* Smear no. 5 was < 200 dpm/100 cm² BY after decon'ning.
10-22-96 DC

ATTACHMENT 8
S&M TURNOVER
PACKAGE CHECKLIST

S&M Turnover Package Checklist

Item Number	Document	Applicable ?
1	Postdeactivation Surveillance and Maintenance Plan	Yes
2	Postdeactivation Surveillance and Maintenance Updated Effluent Monitoring Plan	No
3	Postdeactivation Surveillance and Maintenance Updated Safety Equipment List	Yes
4	Postdeactivation Surveillance and Maintenance Procedures	Yes
5	Postdeactivation Surveillance and Maintenance Recommendations	No
6	Mothballed Systems Lay-up and Restart Documentation	No

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