LOCKHEED MARTIN

Y/ER-256

**ENVIRONMENTAL
RESTORATION
PROGRAM**

**Surveillance and Maintenance Report
on the Alpha-4 Building at the Oak Ridge
Y-12 Plant for Fiscal Year 1995**

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Energy Systems Environmental Restoration Program

**Surveillance and Maintenance Report
on the Alpha-4 Building at the Oak Ridge
Y-12 Plant for Fiscal Year 1995**

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Date Issued—December 1995

Prepared for the
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Environmental Management Activities at the
OAK RIDGE Y-12 PLANT
Oak Ridge, Tennessee 37831-8169
managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the
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PREFACE

Surveillance and Maintenance Report on Building 9201-4 at the Oak Ridge Y-12 Plant for Fiscal Year 1995, Y/ER-256, was prepared to communicate the accomplishments of the Program during Fiscal Year 95. This work was performed within/under the work breakdown structure element 1.4.12.1.2.01.04.01 (activity data sheet 2701, "D&D Surveillance and Maintenance"). Publication of this document meets the Life Cycle Baseline milestone date of December 31, 1995.

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ABBREVIATIONS, ACRONYMS, AND INITIALISMS

Alpha-4	Building 9201-4
Colex	column exchange
D&D	decontamination and decommissioning
ECM	electrochemical machining
EM	Environmental Restoration and Waste Management
EUO	Enriched Uranium Operations
FMO	Facilities Maintenance Organization
FY	fiscal year
MK-Ferguson	MK-Ferguson of Oak Ridge Company
RAD	radiation
RADCON	Radiological Control
S&M	surveillance and maintenance
Y-12 Plant	Oak Ridge Y-12 Plant

EXECUTIVE SUMMARY

Part of the Environmental Restoration Division and funded by the Office of Environmental Management (EM-40) Program, the Oak Ridge Y-12 Plant Decontamination and Decommissioning Program strives to protect human health and the environment and reduce the number of hazardous-material-contaminated facilities by properly managing and dispositioning facilities when they are no longer required to fulfill a site mission. Building 9201-4, known as Alpha-4, is the only facility at the Y-12 Plant under the D&D Program, and it is the D&D Program that provides surveillance and maintenance (S&M) of the facility.

Alpha-4 housed uranium enrichment operations from 1945-47. In 1955 a process known as Colex, for *column exchange*, that involved electrochemical and solvent extraction processes began. These processes required substantial quantities of mercury as a solvent to separate lithium-6 from lithium-7 (in the form of lithium hydroxide). The Colex process was discontinued in 1962, leaving a legacy of process equipment and lines contaminated with mercury and lithium hydroxide. Now in the inactive-shutdown phase, Alpha-4 requires an S&M program that provides for risk mitigation, hazard abatement, and site preparation for subsequent D&D and/or long-term maintenance of the shutdown status of the building.

The specific objectives of the Y-12 Plant S&M Program are to contain hazardous materials, to ensure the safety and security of the facility, and to cost-effectively manage all of the D&D work. Hazardous materials are controlled in Alpha-4 by an aggressive program of mercury cleanup and the recovery and control of hazardous materials. Access to the facility is controlled through a single entry/exit point at which all personnel use their badges to sign to enter and exit the building. Access requirements are reviewed periodically to ensure that training for all persons who work in the building is up to date. Conduct of Operations provides guidance and direction in the cost-effective management of the D&D work at Alpha-4.

Daily surveillance activities of Alpha-4 emphasizes structural integrity, leak detection, safeguards, health of personnel, environmental issues, safety conditions, equipment, hazardous materials, mercury monitoring, and cleanup.

Because of a Y-12 Plant-wide stand down, from October 1994 through March 1995, all assigned personnel were involved in a comprehensive review of every facet of operations. After the restart was permitted, a number of major efforts were begun. The Y-12 Plant S&M Program had several accomplishments during FY 95. A summary of those accomplishments is as follows:

- Personnel at Alpha-4 intensively reviewed procedures, timely orders, safety and operational requirements, and assessed day-to-day operations. "Alpha-4 has done one of the best jobs we have seen in reviewing, identifying, and correcting their discrepancies," said the leader of the Independent Review and Validation Team.
- More than 750 lb of mercury was collected during cleanup operations in a process operations area of Alpha-4 known as the absorber room. In addition, while 100,000 lb of copper buss and 65,000 lb of steel pipe, along with electrical components and valves, were removed, their removal generated only 150 lb of waste material. Moreover, mercury vapor levels were reduced in this area by 30% between 1993 and 1994.

- Enriched Uranium Operations personnel completed Phase 2 of the electrochemical machining process decontamination project, thereby reducing the area of radioactive contamination by 25,000 ft² and eliminating the potential for “track out” from the area.
- The project to remove first-floor steam coils identified for disconnect was completed.
- A number of electrical projects were completed.
- Waste Management chemical operators assisted in the testing and evaluation of a new disposable respirator; they provided valuable information to a company concerning a new air-driven vacuum cleaner it was developing; they responded to the requests of the Y-12 Plant Shift Superintendent for mercury cleanup; and they assisted plant personnel with a dye test of the Alpha-4 sump system.
- Evaluation of the plan for disposal of the mercury-contaminated lithium hydroxide solution in the west storage tank was completed.
- The Alpha-4 Emergency Preparedness Plan was written, reviewed, revised, and submitted for approval.
- A data collection plan specific to Alpha-4 operations and tailored to the D&D Program was implemented.
- MK-Ferguson of Oak Ridge Company repaired a ramp sidewalk, completed asbestos abatement work, and installed eight new condensate tank and pump systems.
- RADIANT Corporation completed characterization studies for Alpha-4.

The accomplishments were achieved with the full involvement of Alpha-4 chemical operators, facility management, Enriched Uranium Operations, Facilities Maintenance Operations, and additional direct support to contract personnel as required.

These tasks will be the primary focus of the S&M activities at Alpha-4 during FY 96:

- the cleanup of the three remaining absorber rooms to significantly reduce the mercury vapor levels on the third floor of Alpha-4,
- the decontamination of radioactively contaminated areas identified by RADIANT Corporation,
- the removal and replacement of four steam coils on the second floor,
- the transference of ~200 drums to the K-25 Site storage facility, and
- the transference of a weak solution of lithium hydroxide from an outside storage tank to the Disassembly and Special Materials Division.

Also during FY 96, Plant Engineering will conduct a characterization study of piping associated with Alpha-4 and the Colex process.

1. INTRODUCTION

The Oak Ridge Y-12 Plant Decontamination and Decommissioning (D&D) Program is part of the Environmental Restoration Division and is funded by the Office of Environmental Management (EM-40). Building 9201-4, known as Alpha-4, is currently the only facility at the Y-12 Plant that is in the D&D Program.

This report communicates the status of the program plans and specific surveillance and maintenance (S&M) requirements for Alpha-4 as part of the Y-12 Plant D&D Program.

1.1 BACKGROUND

Alpha-4 began operating in 1945 as a uranium enrichment facility using the electromagnetic separation process. However, by 1947 the Oak Ridge Gaseous Diffusion Plant had demonstrated a superior ability to produce enriched uranium in sufficient quantities, and the electromagnetic process was abandoned. The building was on standby from 1947 until 1953, when the installation of the column exchange (Colex) process began. Facility retrofits were completed in 1955, the year the facility began operation. The Colex process involved electrochemical and solvent extraction processes that required substantial quantities of mercury as a solvent to separate lithium-6 from lithium-7 (in the form of lithium hydroxide). The Colex process was discontinued in 1962, and the equipment was subsequently drained of the majority of process materials (including mercury). However, systems were not cleaned, and residual amounts of mercury and lithium hydroxide remained in the process equipment and lines. In 1983 a decision was made to develop an approach for removing the Colex process systems and recovering as much process material as possible. The Office of Environmental Management assumed full ownership in 1993 and provides S&M through the Y-12 Plant D&D Program.

Alpha-4 is currently in the inactive-shutdown phase and is part of an active S&M Program that is being carried out in support of risk mitigation, hazard abatement, and site preparation for subsequent D&D and/or long-term maintenance of the shutdown status of the building.

1.2 OBJECTIVES OF THE Y-12 PLANT DECONTAMINATION AND DECOMMISSIONING PROGRAM

The strategic goals of the Y-12 Plant D&D Program are to protect human health and the environment and reduce the number of hazardous-material-contaminated facilities by properly managing and dispositioning facilities when they are no longer required to fulfill a site mission. The D&D Program objectives are as follows: (1) to provide S&M activities and facility stabilization in support of facilities that are on standby and are awaiting D&D; (2) to develop specific methods, schedules, and funding plans for the D&D of shutdown facilities; and (3) to implement plans to provide for facility disposition in a safe, compliant, and cost-effective manner.

1.3 OBJECTIVES AND STRATEGIES OF THE Y-12 PLANT SURVEILLANCE AND MAINTENANCE PROGRAM

The objectives of the Y-12 Plant S&M Program are to contain hazardous materials, to ensure the safety and security of the facility, and to cost-effectively manage all of the D&D work. The following are descriptions of the strategies being used to meet Program objectives:

Containment of hazardous materials. Hazardous materials are being controlled by an aggressive program of mercury cleanup and the recovery and control of hazardous materials in the facility. Potential risk was significantly reduced through the completion of activities for D&D of the electrochemical machining (ECM) basement, pipe galley, and wind tunnel areas. The area was monitored by a Radiological Control (RADCON) technician and released. A sealer was applied, and all walls, floor, and any remaining equipment were painted. Form 2109 (Request for Transfer, Storage, or Disposal of Wastes) has been completed to remove more than 90% of the drums currently stored in the Resource Conservation and Recovery Act-compliant storage area, and the first lot of 73 has been identified for shipment. Facility containment systems have been evaluated and checked to ensure the integrity of both primary and secondary containment capability. The soundness of the building containment is verified through an ongoing groundwater sampling program. The potential for generating mercury-contaminated water from steam condensate leakage was significantly reduced by isolating all defective steam coils from the active steam system. Potential for exposure and spread of hazardous materials is kept to a minimum by the removal of chemicals and other materials that may pose a potential health hazard and by the strict enforcement of administrative controls governing hazardous materials that could be brought into the facility.

Safety and security of the facility. Upgrade of the facility access control system continued during fiscal year (FY) 1995 and will carry on into FY 1996. Access will continue to be controlled through a single entry/exit point at which all personnel use their badges or sign to enter and exit the building. Access requirements are reviewed periodically to ensure that training for all persons who work in the building is up to date. Each job performed in the building was reviewed with all participants, and a walkdown was performed before the start of the job. A comprehensive review of all aspects of each job, building, personnel safety, and security activities by the restart team supported the thoroughness and soundness of the Alpha-4 program. A full-time, on-site building manager is located at Alpha-4, as is a site safety and health officer, maintenance and operator crews, and supervisors.

Cost-effective management. Conduct of Operations provided the guidance and direction to clarify the course of the D&D of Alpha-4. Weekly scheduling meetings, progress reviews, and close coordination of participants, coupled with in-depth manpower-use evaluations, cost accounting, equipment tracking and status activities, and the use of performance indicators focused the attention of each employee on these issues. Work flow is maintained through flexible work schedules and a strong, cooperative effort.

2. FISCAL YEAR 1995 SURVEILLANCE

Chemical operators from the Y-12 Plant Waste Management and D&D organizations helped to keep Alpha-4 environmentally safe. No production systems were active in the building. Daily surveillance activities emphasized structural integrity, leak detection, safeguards, health of personnel, environmental issues, safety conditions, equipment, hazardous materials, mercury monitoring, and cleanup. The sump water volume discharged to East Fork Poplar Creek was monitored, and daily rates were chronicled. Daily mercury vapor-in-air readings were taken in at least 3 locations in each of the 20 zones within Alpha-4, and a permanent record of the results was kept. During periods of elevated building temperatures or increased activities, additional readings were taken. Personnel exposure to mercury vapor was monitored through the Y-12 Plant Urinalysis Program. Samples were analyzed by lab personnel and the results were reviewed with the employee and placed in a permanent file. Ingress and egress of all persons transiting the building were recorded, and all events (entry and exit) were subsequently logged into a permanent database.

Facility surveillances were conducted by the facility manager, personnel assigned to Alpha-4, other Y-12 Plant personnel, Lockheed Martin Energy Systems employees, U.S. Department of Energy, and state and federal government employees. These surveillances consisted of the following:

- visual inspection of the facility and equipment for structural deficiencies, material degradation, any type of leak, unusual odors, equipment irregularities, and so forth;
- routine checks of primary and secondary containment systems for liquids;
- checks of building ventilation systems;
- observation of sump flow rates, storage tank integrity, and dikes around storage tanks;
- operability checks of tank, water, and sump pumps;
- verification that appropriate system checks have been performed on facility-specific steam, air, water, and air conditioning/heat systems to maintain safe protective storage and facility structural integrity; and
- a daily check of all emergency exits, stairways, and exit lights (Results of the inspections are logged on the daily mercury monitoring checklist).

In addition to operator surveillance activities, routine inspections of radiation (RAD) monitoring instruments, building condition (exterior and roof), overhead cranes, testing of high-efficiency particulate air filtration systems are performed by facility personnel and supervision. Y-12 Plant quality assurance requirements are met through these self-assessments and quality assurance audits. Frequency, roles and responsibilities, associated documentation, and work hours required for routine S&M activities are tracked and reviewed each month.

3. SAFETY AND SECURITY/PROTECTION SYSTEMS

3.1 ACCESS CONTROL

Alpha-4 is located on the west end of the Y-12 Plant Bear Creek Valley complex. This portion of the plant has specific badging and entry requirements and is controlled at access points (guard posts) that are manned continuously by security personnel. Access to Alpha-4 is controlled through a single point entry at the north side, in the center of the second floor of the building. A large mezzanine area houses the administrative, support, and supervisor offices. Access to the remainder of the building is controlled by a roto-gate activated by the employee identification badge. A stringent set of entry requirements is in place to control access; if requirements are not met, access to the facility is denied. These entry requirements are based on specified training criteria that must be periodically renewed. These requirements consist of either 24-h or 40-h Hazardous Waste Operations and Emergency Response training, building briefing, medical evaluation, and 3-d on-the-job training, and the person also must have a specific reason to be in the facility. The database control system for the roto-gate has been upgraded to incorporate completion dates of required training (24 h or 40 h) along with the medical requirements. If a person does not recertify within the required time, he or she will automatically be denied access. After the required recertification/retraining has been completed, the database will be updated and the person will again be allowed access.

3.2 DAILY WALKDOWNS

A walkdown of the building is performed by management, operators, and maintenance personnel each day. The daily routine consists of the inspection of fire suppression systems and other fire protection equipment, such as fire extinguishers and alarm boxes. Housekeeping and the proper storage of combustibles also is essential to a successful fire prevention program and are the focal points of each inspection and daily walkdown. Any findings are quickly resolved and results are reviewed with all personnel at safety meetings. This ensures thoroughness of corrective actions and awareness of all safety concerns.

3.3 SAFETY AWARENESS

As part of the effort to increase safety awareness, a *daily safety meeting program* was implemented. Since implementation, personnel assigned to Alpha-4 have worked more than 68,800 accident-/incident-free employee hours (20 months). The work consisted of the daily operational support of activities associated with the ECM decontamination project, the tray room project, and the restart inspection activities, and the support of contractors.

3.4 SAFETY EQUIPMENT

Personnel assigned to Alpha-4 participated in a program to test a new disposable respirator. This respirator proved to be very effective because of its light weight, good fit, and lower tendency to fog up during use. Additionally, the cost per unit was competitive with recyclable respirators.

4. ACCOMPLISHMENTS

FY 1995 was a year of both challenges and achievements for Alpha-4. Because of a Y-12 Plant-wide stand down, from October 1994 through March 1995, all assigned personnel were involved in a comprehensive review of every facet of operations. After the restart permission was issued, a number of major efforts were begun. The following is an overview of those activities and facility D&D/S&M efforts for FY 1995:

- October 1994 through March 1995, personnel assigned to Alpha-4 were involved in an intensive review of procedures, timely orders, safety and operational requirements, and overall assessment of day-to-day operations. The process involved all assigned personnel plus a number of subject-matter experts who guided and oversaw the process. A number of discrepancies were found, and most were corrected within 3 to 5 d. The largest number was Occupational, Safety, and Health Act related. Initially more than 100 discrepancies were noted. Corrective actions were planned and implemented, and the items were closed. Validation of actions began on February 27, 1995, when the Independent Review and Validation Team began their assessment of Alpha-4. One week of intensive review of operations, policies, and procedures revealed that "Alpha-4 has done one of the best jobs we have seen in reviewing, identifying, and correcting their discrepancies," the team leader said. Restart permission was issued on March 14, 1995, by the Y-12 Plant Manager. As a result of the thoroughness of the review process, the coordination of the pre-inspection, the quick correction of new findings, and the spirit of cooperation among all participants, the restart effort underscored Alpha-4's dramatic safety record and its leadership role as a D&D facility. The restart effort also brought the facility back into operation safely, quickly, efficiently, and in the most cost-efficient manner.
- Most of the efforts of Waste Management chemical operators and Facility Management Operations craft personnel in Alpha-4 were dedicated to facility stabilization and mercury vapor abatement. Work was centered in a portion of the process operations area known as the absorber room and began in March 1995. The project involved pipefitters, electricians, and chemical operators. The electrician removed copper buss bars and other electrical components, while pipefitters disconnected and removed piping associated with the demineralized water lines for the cooling system. Removal of those items was necessary to gain access to a subfloor between the absorber area and the main floor. During process operations, large quantities of mercury accumulated in the subfloor area and are some of the main contributors to elevated mercury vapor levels on the third floor. More than 750 lb of mercury was collected during cleanup operations and 100,000 lb of copper buss and 65,000 lb of steel pipe, along with electrical components and valves, were removed, yet they generated only 150 lb of waste material. The copper and steel were free of any contamination and will be disposed of as clean scrap. The mercury will be analyzed, flaked, and stored. The results of efforts to reduce the mercury vapor levels in this area were dramatic, as a comparison of the same periods in 1993 and 1994 showed that a 30% reduction had been achieved. Except for a 1-month period (September), which was the period of highest level of work activity in the area, mercury vapor levels were reduced below threshold value limits, thus significantly reducing exposure of personnel and the requirements and cost of personnel protective equipment.
- Work continued concurrently to complete Phase 2 of the ECM decontamination project. Enriched Uranium Operations (EUO) personnel decontaminated the basement area associated with the ECM operation that housed the piping and pumps required for the process. All

accessible pipe was removed, decontaminated, cut to length, and placed in B-25 boxes. Floors, walls, and ceilings in the area were decontaminated, monitored, and released by a Y-12 Plant RADCON technician. Painters sealed and painted the doors, walls, ceilings, and any equipment that remained in the area, and temporary RAD Storage Areas associated with the project were cleaned and closed out. Completion of Phase 2 marks the successful culmination of the ECM Decontamination Project. The area of RAD contamination in Alpha-4 was reduced by 25,000 ft², the potential for "track out" from this area was eliminated, and the boundary control station required for this task was removed after the project was completed.

- The remaining first floor steam coils identified for disconnect from the steam system were removed from service, thus completing the project. This significantly reduces the risk of pipe and system freeze up due to leaking or defective piping to <1% and lowers the demand on the Y-12 Plant steam system. The risk of steam condensate leaking into the sump system also was greatly diminished, reducing the volume of sump water that exits Alpha-4. The project was completed ahead of schedule and well below estimated cost.
- A number of electrical projects were completed.
 - Switches for area ventilation fans were relocated to provide safer access for Maintenance and Utility personnel.
 - Work continued on upgrading emergency lights and exit lights throughout the building (~50% complete). The new systems have built-in self-test systems that will provide greater reliability, less system maintenance, and greater flexibility for required inspections.
 - A study to upgrade the high bay lighting using off-the-shelf components and existing equipment was completed. The use of off-the-shelf components was a joint effort between Environmental Restoration Division engineering personnel, the Alpha-4 building engineer, and the building coordinator. Work is planned to take place in FY 96 and will cost <\$10,000 vs the \$80,000 for the original project. The improved lighting system will provide greater reliability, require less servicing, and will reduce waste because of the 2-year life expectancy of the new bulbs. Risk to maintenance personnel also will be reduced because fewer bulb changes will be required (60-d cycle vs 760-d cycle).
 - Two primary building ventilation motors were removed and sent for repair and rewiring. They will be reinstalled in FY 96. The additional ventilation fans will provide greater flexibility in managing the building environment/atmosphere.
- Waste Management chemical operators were involved in a number of projects and test programs.
 - Operators assisted in a program to test and evaluate a new disposable respirator. Initial results show that the new respirator fits better, is lighter, and does not fog up during use. This helps reduce possible worker exposure to mercury vapors, keep down fatigue, and provide the user with equipment that does not encumber their ability to maintain safety awareness of the work area. The Y-12 Plant Respirator Program coordinator is reviewing the results.
 - Operators provided valuable information to the Nilfisk Corporation on the results of the "on the job effectiveness" of the new Nilfisk air-driven vacuum cleaner. The unit is ~50% more effective than the electric-motor-driven units, operates at a much lower temperature, and provides greater operational flexibility; however, it does require large volumes of high-pressure air for operation.

- Alpha-4 chemical operators provided mercury cleanup response to the Y-12 Plant Shift Superintendent. Approximately 50 incidents of mercury spills, finds, or unplanned releases were responded to and cleaned up. Quick response to Plant Shift Superintendent requests has provided the Plant with the ability to quickly evaluate conditions, contain as necessary, and clean up any mercury found within the Y-12 Plant quickly, efficiently, and without incident.
- Operators also assisted Plant personnel with a dye test of the Alpha-4 sump system. The test provided information on flow rates from each sump and the direction flow from the building. It also confirmed the effectiveness of the building secondary containment system.
- Notable progress was made in a number of facility-related areas.
 - Evaluation of the plan for disposal of the mercury-contaminated lithium hydroxide solution in the west storage tank was completed. Based on the results of the study, the treatment of the mercury/lithium solution is planned for FY 96. Through the efforts of Environmental Restoration, Development, Waste Management, Plant Environmental Protection, and facility personnel, new ideas surfaced. The blending of them resulted in a different approach to handling the solution that is safer, quicker, and more cost-efficient.
 - The Alpha-4 Emergency Preparedness Plan was written, reviewed, revised, and submitted for approval. The Emergency Plan is an essential element of the hazard assessment for the building and ongoing operations. It also is the cornerstone of the building safety program, providing detailed information and guidelines for responding or reacting to nonroutine events.
 - A data collection plan specific to Alpha-4 operations and tailored to the D&D Program was implemented. The system will provide real time data and will allow the facility manager to maintain control over all aspects of facility maintenance and operations.
- Contract personnel also worked in Alpha-4 during FY 95.
 - MK-Ferguson of Oak Ridge Company completed three projects.
 - Removal and placement of the ramp sidewalk, repair of the ramp, and paving of the approach to the ramp were completed in May 1995. The repair of the ramp sidewalk eliminated a potentially hazardous situation that would have resulted from the failure of the existing structure. If the sidewalk had failed, the possibility of personal injury and damage to property and equipment was very high, and a vital roadway would have been blocked for an extended period. One area of contamination on the northeast side of the approach ramp was covered in conjunction with the paving project. The area was first decontaminated by EUO, and final paving and cement work was accomplished by MK-Ferguson. The refurbishment of the ramp, replacement of the sidewalk, and paving was completed ahead of schedule and below budget. The decontamination and capping closed out a finding from an earlier assessment.
 - Asbestos abatement work in Alpha-4 was completed at the end of August, except for the removal of a small amount of scaffold and other equipment. Upgrading active steamline system insulation to a nonasbestos material reduces the risk level of the building and places the facility in a position of enhanced system reliability.

- Installation of eight new condensate tank and pump systems was completed in September 1995. The new system isolates the steam condensate system from the building sump system except in case of a complete system failure that would route the overflow to the sump. This isolation of steam condensate from the sump system further reduces the possibility of contamination of the sump water. The new system also provided greater dependability because it features a set of new motors and pumps at each of the eight collection points. The unavailability of replacement or repair parts for the old system was problematic for maintenance personnel. Completion of this project is another step toward making Alpha-4 a safer facility and placing it in a position for future use.
- RADIANT Corporation completed characterization studies for Alpha-4. Results of the RAD survey will be used by EUO personnel as a baseline for decontaminating the facility in FY 96. Additionally, RADCON technicians used the RAD data to identify RAD zones within the building and demarcate these areas, providing further assurances that the tracking out of any form of contamination from Alpha-4 will be prevented. Characterization results also will be used to chart future D&D activities within the building.

The accomplishments listed in this chapter were completed with the full involvement of Alpha-4 chemical operators, facility management, EUO, and Facilities Maintenance Operations (FMO) and additional direct support to contract personnel as required. Beginning in February 1994, an enhanced safety-awareness program was implemented for Alpha-4, and, as was noted in Sect. 3.3, through the end of FY 95 personnel assigned to the facility have worked >68,000 employee hours without a first aid, recordable, or lost-time injury.

5. GOALS OF THE DECONTAMINATION AND DECOMMISSIONING PROGRAM FOR FISCAL YEAR 1996

The desire to build upon the accomplishments of FY 95 will bolster management activities in FY 96. A great deal of time and effort have been directed toward developing and planning short, intermediate, and long-range objectives. The following tasks will be the primary focus of the D&D Program in FY 96:

- The cleanup of the three remaining absorber rooms will achieve a number of objectives of the mercury cleanup and mitigation goal by significantly reducing the mercury vapor levels on the third floor of Alpha-4. Through the removal of peripheral equipment, accurate sampling data will be obtained on mercury contamination on the exterior of hardware and equipment. Cleanup of additional amounts of residual mercury will be achieved when access is gained to formerly inaccessible areas. This effort will involve chemical operators, maintenance and other crafts, safety, engineering, Industrial Hygiene, and Health Physics.
- During the characterization of the facility by RADIAN Corporation in FY 95, a number of radioactively contaminated areas were identified. These areas contain both "fixed and transferable" contamination. Each area was properly identified, and appropriate boundaries were established. EUO will decontaminate these areas during FY 96.
- Steam coil work was completed in FY 95 except for the removal and replacement of four coils. These coils are in strategic locations that require heat during winter months.
- The plan for transfer of materials stored in the Resource Conservation and Recovery Act-compliant interim storage area on the first floor of the K-25 Site storage facility has been completed. The initial phase of the identification of drums for shipment and finalization of K-25 Site acceptance criteria has been completed, and the first lot will consist of 73 drums. All drums will be re-marked to comply with current requirements and directives. Transfers are scheduled to be completed during FY 96.
- A weak solution of lithium hydroxide (0.3% by volume) will be transferred from an outside storage tank to the Disassembly and Special Materials Division. The solution contains mercury that will be removed before transfer. Lithium operation personnel will recover the lithium, and the remaining solution will be transported to the Waste Treatment Facility for final disposition.
- Assistance will be provided by Plant Engineering, who will conduct a characterization study of piping associated with Building Alpha-4 and the Colex process. The objective is the identification of pipes or systems that may contain process materials that could be released to the environment.

Appendix

Fig. A.1. Tray room start. Note the number of pipe, buss connectors, and other hindrances to the cleanup operation. Personnel shown are FMO pipefitters.

Fig. A.2. Work underway. A number of pipes have been removed, and the FMO electricians have begun to remove copper buss bars.

Fig. A.3. Clean scrap. Pipe and buss bars were sampled and found to be free of mercury contamination. Material has been placed on a skid and banded.

Fig. A.4. Mercury and mercury cleanup. After the removal of pipes, buss bars, and other items, mercury can be located and cleaned up.

Fig. A.5. Buss bar removal. Removal of buss bars is difficult because of the location and close quarters the electricians are working in.

Mercury Vapor Levels

Fig. A.6. Alpha-4 tray room cleanup.

Fig. A.7. ECM Phase 2. The upstairs area before painting.

Fig. A.8. ECM Phase 2 (continued). The upstairs area after painting.

Fig. A.9. ECM Phase 2 (continued). The decontamination of floors and other areas involved the use of both elaborate equipment and "elbow grease."

Fig. A.10. ECM Phase 2 (continued). The basement floor has been decontaminated (bead blasted), sealed, painted, surveyed, and released by RADCON.

Fig. A.11. ECM Phase 2 (continued). Some of the pipe, tank, and pumps removed from the basement area.

Fig. A.12. Ramp and sidewalk before refurbishment by MK-Ferguson. Note that the walkway is flagged and unusable.

Fig. A.13. Sidewalk refurbished and approach ramp resurfaced by MK-Ferguson. The area in the lower left corner was decontaminated by EUO and capped by MK-Ferguson.

Fig. A.14. Scaffolding erected for the asbestos removal and reinsulation project by MK-Ferguson.

Fig. A.15. Building characterization. Some small zones of radiological contamination were found during the characterization study by RADIANT. The area was identified, and the proper boundary control was established.

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