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BUILDING 776/777 RECONNAISSANCE LEVEL CHARACTERIZATION REPORT
Rev. 0

August 28, 1998

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DOES NOT CONTAIN
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NUCLEAR INFORMATION

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TABLE OF CONTENTS

3

LIST OF TABLES

LIST OF FIGURES

4

1.0 INTRODUCTION

The Building 776/777 Cluster Closure Project is part of the overall Rocky Flats Closure Project (RFCP). The Building 776/777 cluster includes Buildings 701, 702, 703, 710, 712, 712A, 713 713A, 730, 776, 777, and 781.

The purpose of the Reconnaissance Level Characterization Report (RLCR) is to establish a preliminary estimate of the type of contamination and safety hazards present in the Building 776/777 cluster. The scope of the document is as follows: to provide input to the Project Execution Plan (PEP) and Decommissioning Operations Plan (DOP)and to support and facilitate planning specific decontamination and decommissioning (D&D) tasks up until the point the building has been stripped of the majority of the equipment and piping and is ready for demolition. At this time additional radiological level characterization will be performed that can be used to support building demolition plans.

Information in the report is as follows. The methodology used to identify the contaminants and hazards and associated issues and regulatory criteria in each facility is presented first. This section is followed by summary and conclusions sections. Physical and operating descriptions of each building are presented next. Finally, contaminants and hazards identified in each building are presented. There are four appendices that contain detailed building and operating descriptions and data quantifying the identified contaminants and hazards.

2.0 METHODOLOY

The methodology followed to prepare the RLCR is summarized in Figure 1. An explanation of each step in the methodology is considered next.

2.1 Decontamination & Decommissioning Sets

To facilitate the characterization process and future decontamination and decommissioning activities, the Building 776/777 cluster was divided into 83 D&D sets. Sets are logical groups of buildings and rooms and equipment within buildings that take into account physical associations and shared functions. In addition, sets were grouped with the expectation that D&D of a set could be accomplished within a one-year period.

Six types of sets were defined: glovebox, tank, equipment, room, equipment and room and building structure. Glovebox sets include gloveboxes, equipment in the gloveboxes, associated external equipment and instrumentation, and piping from the gloveboxes to the nearest cutoff point. Tank sets include the tank, associated external equipment and instrumentation, and piping from the tank to the nearest cutoff point. Equipment sets include a specific piece of equipment, associated external equipment and instrumentation, and piping from the equipment to the nearest cutoff point. Room sets include all equipment and instrumentation not associated with gloveboxes, tanks, or equipment sets, tools, miscellaneous items, and piping not removed with glovebox, tank, or equipment sets that is

5

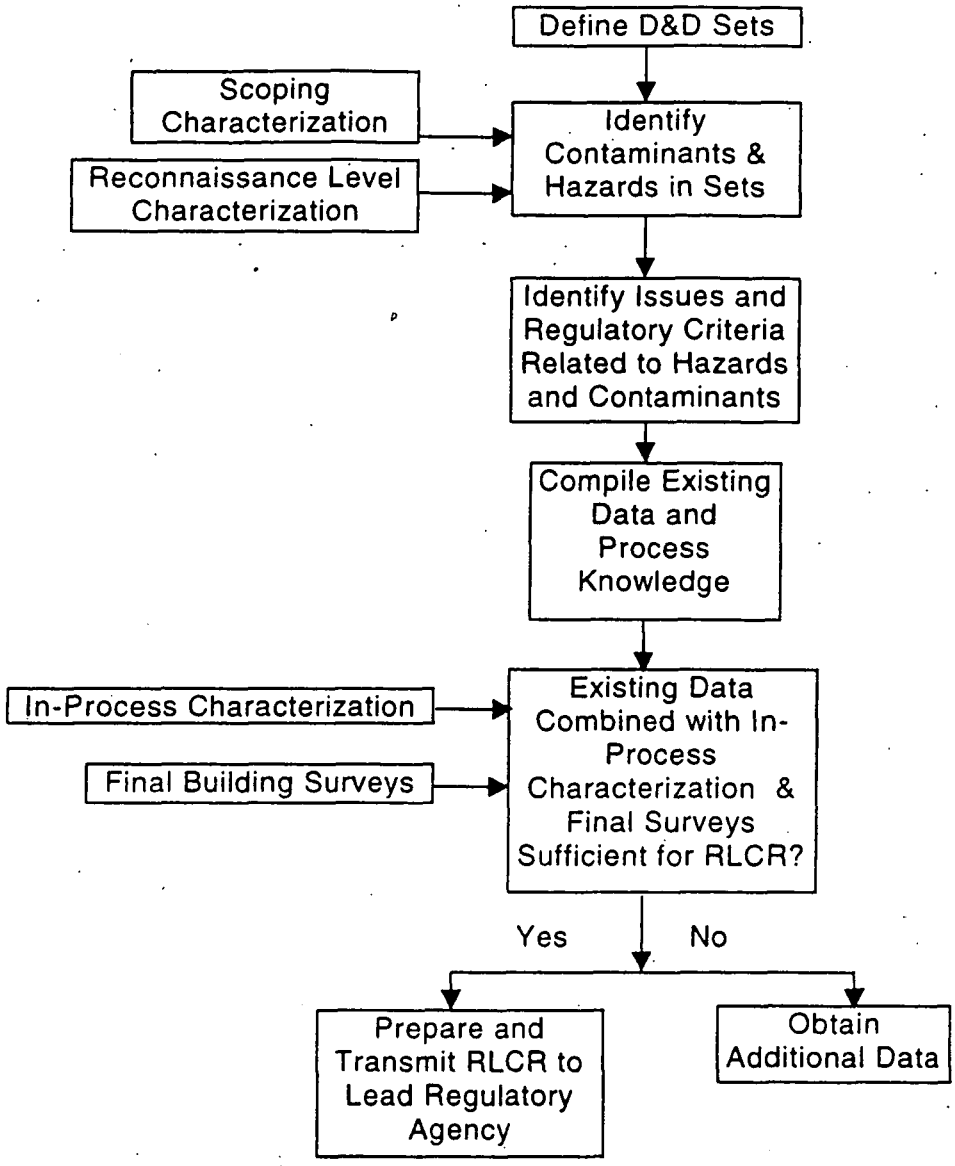

Figure 1. Building 776/777 Reconnaissance Level Characterization Methodology

below eight feet. Room and equipment sets can include up to several rooms and contain items that are listed above as being in room and equipment sets. The building structure sets include all walls, floors, ceilings, and piping that is above eight feet.

Set descriptions and a map indicating set locations are in Appendix A.

2.2 Identify Contaminants and Hazards

The type of contaminants and hazards in the Building 776/777 cluster were identified by completing scoping and reconnaissance level characterizations. A contaminant is defined as the presence of a substance where it should not be present. A hazard is defined as a substance that is used as part of a process or that is built into equipment or instrumentation that has potential for compromising worker health and safety and environmental protection.

Other information collected during scoping and reconnaissance level characterization is summarized in the following sections. This information will provide input to the Decommissioning Operations Plan, Project Execution Plan, and support specific D&D tasks.

2.2.1 Scoping Characterization

The purpose of this phase was to collect Building 776/777 cluster records and documents to characterize the extent of historical and present physical, hazardous, radiological, and chemical conditions of the building. Interviews were also conducted with RFETS employees who had first-hand knowledge of the 776/777 cluster operations. This phase also identified that reconnaissance level characterization was needed to document the configuration of equipment, piping, and ventilation systems and types and levels of contamination within the building.

Approximately 500 man-hours were spent retrieving and reviewing records, engineering drawings, legal records, and reports and interviewing retirees and other people who worked in the Building 776/777 cluster from the 1960's to present.

2.2.2 Reconnaissance Level Characterization

Reconnaissance level characterization was performed by completing detailed walkdowns of each D&D set from November 1997 to June 1998. The walkdowns verified all of the equipment, gloveboxes and tanks and their respective sizes, capital equipment inventories, classified matter inventories, contamination areas and contaminant levels, chemical inventories, utility and process service connections including piping, ventilation, electrical, and alarms and documentation of the construction materials. Approximately 4,800 man-hours were spent collecting this information.

2.3 Identify Issues and Regulatory Criteria Related to Building 776/777 Cluster Hazards and Contaminants

The issues and regulatory criteria relevant to contaminants and hazards were defined. Specific waste acceptance criteria for contaminants and hazards were also reviewed.

2.4 Compile Existing Data Related to Contaminants and Hazards

Characterization files containing the information documented during the walkdowns are on file in the project office. The files contain information on

contaminants and hazards identified during scoping and reconnaissance level characterization. The files also contain detailed walkdown sheets and maps, photographs of equipment and rooms, drawings, and other relevant information.

2.5 Determine if Existing Data Combined With In-Process and Final Surveys Is Sufficient

Existing data contained in set files combined with in-process and final surveys is sufficient if enough information is available to resolve issues and criteria relevant to identified contaminants and hazards. If enough data is available, the RLCR can be issued for approval by the lead regulatory agency.

If it is determined that existing data combined with additional surveys is not adequate, additional sampling will be required before the RLCR can be issued.

2.6 In-Process Characterizations/Final Building Surveys

In-process characterization and final building surveys will be conducted within the Integrated Safety Management (ISM) System. The ISM System has procedures and programs in place to implement Federal, State, Department of Energy, and Kaiser-Hill regulations and guidelines. The 5 core functions of the ISM are as follows: (1) define the scope of work, (2) identify and analyze the hazards, (3) identify and implement controls, (4) perform the work, and (5) provide feedback.

The information collected during reconnaissance level characterization will provide input to step (2) of this planning process. At the time work on each set is started, an assessment will be made to determine if in-process characterization or final surveys are required to begin doing the work. Details of ISM System applied to Building 776/777 cluster D&D will be included in the Building 776/777 Closure Project Health and Safety Plan and Project Execution Plan.

2.6.1 In-Process Characterization

Additional sampling and surveys will be completed as necessary to further characterize contaminants and hazards to prepare appropriate work authorization documents. These sampling and survey activities are called in-process (IP) characterization. This type of sampling or survey is typically completed shortly before a work activity is initiated to ensure conditions have not changed since the work planning stage. As work progresses and hazards are removed, further characterization is completed to verify the effectiveness of decommissioning work efforts.

2.6.2 Final Decommissioning Survey

The final decommissioning survey will be conducted prior to demolition in order to demonstrate that the radiological and industrial contaminants within the facility have been reduced to levels that comply with the established release criteria.

2.6.3 Confirmatory/Verification Survey

The confirmatory/verification survey will be performed by DOE or another independent party approved by DOE (if appropriate) to verify that the facility and material removed meet established release criteria. The independent party performs a review of the final decommissioning survey methodology and survey data. Typically, a confirmation survey of one to ten percent of the area is performed. The independent and project confirmation verification surveys are then compared to project data for consistency. If discrepancies are identified, they will be evaluated and resolved by the project team.

2.7 Stakeholder Involvement

Stakeholders have been active in the preparation of the RLCR through formal and informal discussions. The Department of Energy (DOE) and the Colorado Department of Public Health and Environment (CDPHE) are the primary stakeholders in the preparation of the RLCR; meetings and telephone discussions have been held with these groups to make sure the type and quality of information in the report meets their expectations. The stakeholders from the Citizens Advisory Board (CAB) and the public will be briefed on the RLCR and DOP.

RFTES environmental management personnel and the D&D program office are also stakeholders. Information exchanges have taken place with these groups to apply site knowledge to the development of the characterization plan and to provide them with lessons learned from Building 776/777 characterization efforts. Building operations, industrial hygiene and radiological control staff are also stakeholders; periodic meetings have been held with these groups for characterization planning.

3.0 SUMMARY

Reconnaissance level characterization was performed for the Building 776/777 cluster. The Building 776/777 cluster includes Buildings 701, 702, 703, 710, 712, 712A, 713 713A, 730, 776, 777, and 781. The methodology shown in Figure 1 was followed to perform the characterization. First, the cluster was divided into 83 D&D sets. Detailed set descriptions and a map showing set locations are in Appendix A.

Next, scoping and reconnaissance level characterizations were completed to determine contaminants and hazards associated with each set. Radiological and beryllium contamination were identified in the Building 776/777 cluster during the scoping and reconnaissance level characterization. Asbestos, lead and other heavy metals, PCBs, special nuclear material holdup in gloveboxes and ventilation ducts, chemicals and radioactive sources were the hazards identified in the cluster. Appendix A lists which contaminants and hazards are present in each set. Table 1 lists which contaminants and hazards are present in each building in the cluster.

The extent of contaminants and hazards present was also determined. These are summarized in Table 2 for Building 776/777 and in Tables 3 and 4 for the other buildings in the cluster.

The issues and regulatory criteria relevant to the contaminants and hazards were then identified. These are protecting worker health and safety, protecting the environment, and waste disposal. Waste disposal criteria were also identified and are summarized in Table 5.

Existing data and process knowledge compiled during characterization were then reviewed. It was determined this information combined with in-process characterization and final building surveys was sufficient to resolve issues and meet regulatory criteria. No additional sampling was required to complete reconnaissance level characterization.

Table 1. Building 776/777 Cluster Contaminants and Hazards

Building	Sets Included In Building	Radiological	Asbestos	Lead/ Heavy Metals	PCB	Beryllium	Special Nuclear Material Holdup	Chemical	Radioactive Sources
776/777	*	X	X	X	X	X	X	X	X
701	76	X	X	X	X			X	
702	74		X	X				X	
703	83		X						
710	76		X	X	X				
712	74		X	X	X				
713	83		X						
712A	74			X					
713A	83			X					
730	76	X				X			
781	75			X				X	

*All sets with the exception of Sets 75, 75, and 76 are in Building 776/777; Set 83 contains parts of Building 776/777 and Buildings 103, 713, and 713A

Table 2. Extent of Contamination and Hazards Present in Building 776/777

Radiological Contamination	*Building Structure*: The building floors, walls, roof, and ceilings are assumed to be contaminated to the levels that existed after the May 1969 plutonium fire shown in Figures 9, 10, and 11. *Equipment*: Plutonium production equipment surface contamination levels are in Appendix B. Equipment internal contamination levels are assumed to be $>10^6$ cpm. *Process Piping*: Process piping is contaminated to levels shown in Figures 9 and 10. *Electrical Panels & Conduit*: Electrical panels and conduit on the first and second floors are posted as contamination areas as a result of the 1969 plutonium fire. *Soil Contamination*: Soil contamination under the building is expected from two sources: fire water used to put out the 1969 fire and groundwater fluctuations that have resulted in seepage of contaminated groundwater from surrounding Individual Hazardous Substance Sites (IHSS). *Ventilation*: Zone I and IA ventilation system contamination levels are assumed to be $>10^6$. *Buried Equipment*: Contaminated equipment was buried in various locations under the floor after the 1969 fire.
Beryllium Contamination	Resulted from machining, welding, handling and storage of beryllium parts. Beryllium contamination locations are shown in Figure 14. Beryllium sample results are in Appendix D.
Asbestos	Present or potentially present in floor and ceiling tiles, walls, piping and equipment insulation, and roof tar. Asbestos sample results are in Appendix C.
Lead & Other Heavy Metals	Lead is present/potentially present throughout the facility in the following items: lead aprons, lead tape, leaded glass, solder in printed circuit boards, lead shielding, leaded gloves, tank sludge, incandescent lights, and paint. Mercury is present in sodium vapor lights, fluorescent lights, incandescent lights, thermostats, switches, magnahelics and other instrumentation. Barium is present in leaded glass and tank sludge. Chrome is present in Fluid Bed Incinerator equipment and oil. Cadmium is present in sludge and oil in FBI tanks. Silver is present in tank sludge. Paint may contain other heavy metals in addition to lead.
PCBs	PCBs are present/potentially present in ballasts in fluorescent light fixtures, capacitors, electrical transformers, oils and chlorinated solvents, and paint.
Special Nuclear Material Holdup	Special Nuclear Material Holdup is present in Zone I and IA ventilation systems and gloveboxes.
Chemicals	Waste chemicals will be removed during deactivation. The exception to this are excluded chemicals and chemicals that will be used for D&D. Chemical solutions in tanks and piping will be sampled during deactivation.
Radioactive Sources	SAMM's and CAMM's and radiological instrumentation needed on a daily basis are the sources that will be in the building during D&D.

12

Table 3. Extent of Contaminants and Hazards in Buildings 701, 702, 703 and 710*

	Building 701 Research Laboratory	Building 702 Pump House	Building 703 Pump House	Building 710 Steam Reducing Station
Radiological	Building was previously contaminated from two sources: (1) process waste tanks backing up into the building and (2) personnel tracking in contamination from Building 730. The building was decontaminated after both occurrences.			
Asbestos	The insulation sprayed on the walls and ceiling may contain asbestos.	Pipe insulation inside and outside the building may contain asbestos.	Pipe insulation inside the building contains asbestos.	Pipe insulation inside the building may contain asbestos.
Lead & Other Heavy Metals	Fluorescent light bulbs contain mercury. There are leaded gloves in the building.	Incandescent lights contain lead.	Fluorescent light bulbs contain mercury.	Fluorescent light bulbs contain mercury.
PCBs	Ballasts in the fluorescent light bulbs may contain PCBs.		Ballasts in fluorescent light fixtures may contain PCBs.	Ballasts in fluorescent light fixtures may contain PCBs.
Chemicals	Chemicals are contained in motors, pumps, and piping.	Containerized chemicals will be removed during deactivation; chemicals in motors, pumps and piping will be drained during deactivation		

*Special nuclear material hold-up and sources are not present in these buildings.

Table 4 Extent of Contaminants and Hazards in Buildings 712, 713, 712A, 713A, 730 and 781*

Contaminant/ Hazard	Building 712 & 713 Cooling Towers	Building 712A Propane Valve House	Building 713A Valve Pit	Building 730 Pit	Building 781 Pump House
Radiological				Radiological contamination is present from radioactive solutions previously stored in the pit.	
Asbestos	Pipe insulation inside and outside the building and cooling tower baffles may contain asbestos.		Pipe insulation inside the building contains asbestos.		
Lead & Other Heavy Metals	Fluorescent light bulbs contain mercury.	Mercury is present in switches. Incandescent lights contain lead.	Incandescent lights contain lead.		Incandescent lights contain lead.
PCBs	Ballasts in the fluorescent light bulbs may contain PCBs.		Ballasts in fluorescent light fixtures may contain PCBs.		
Chemicals					A helium cylinder in the building will be removed during deactivation.

*Note: Sources and Special Nuclear Material Holdup were not present in these buildings.

Table 5. Waste Acceptance Criteria

Transuranic Waste: Waste contaminated with alpha-emitting transuranic radionuclides having half-lives greater than 20 years and concentrations greater than or equal to 100nCi alpha activity/gram at the time of assay.

Low Level Waste: Waste that is not classified as TRU waste, spent nuclear fuel, or by-product material as identified in DOE Order 5820.A. It contains less than 100 nCi alpha activity/gram TRU activity at the time of assay.

Mixed Waste: RCRA hazardous waste containing measurable amounts of radioactive isotopes. It is characterized as either low level or TRU based on the amount of radioactivity at the time of assay.

Hazardous Waste: Waste that is listed or exhibits the characteristics of corrosivity, ignitability, reactivity, toxicity or that is listed in 6 CCR 1007-3, Section 261, or 40 CFR 261, Subpart D.

TSCA Waste: PCBs are regulated under 40 CFR Part 761 if the PCB concentration is greater or equal to 50 ppm.

Asbestos Containing Material: Any material that contains more than one percent asbestos.

Sanitary Waste: Waste that meets RCRA Subtitle D requirements

4.0 CONCLUSIONS

Historical information and process knowledge combined with in-process characterization indicate no additional sampling is needed for the Building 776/777 cluster at the present time. In-process characterization will be conducted using the Integrated Safety Management (ISM) System. The ISM System has procedures and programs in place to implement Federal, State, Department of Energy and Kaiser-Hill regulations and guidelines. The five core functions of ISM are as follows: (1) define the scope of work, (2) identify and analyze the hazards, (3) identify and implement controls, (4) perform the work, and (5) provide feedback.

The information collected during reconnaissance level characterization will provide input to step (2) of this planning process. At the time work on each set is started, as assessment will be made to determine if in-process characterization or final surveys are needed to begin doing work. In-process characterization criteria for radiological contamination, beryllium contamination, asbestos, lead and other heavy metals, and PCBs will be included in the DOP and PEP. The criteria will provide guidelines for conducting in-process characterization so that enough information will be collected to protect worker health and safety, to protect the

15

environment, to dispose of waste, and to provide information for future D&D planning. Tables 6, 7, and 8 summarize where in-process characterization will be required.

16

Table 6 In-Process Characterization Required for Contamination and Hazards Present in Building 776/777

Radiological Contamination	*Building Structure*: In-process surveys are required to confirm the contamination levels shown in Figures 9, 10, and 11. *Equipment*: In-process surveys and final equipment assays are required to dispose of the equipment. *Process Piping*: In-process samples from solutions being drained from tanks and building systems during deactivation will confirm contamination levels within the piping and will be used to determine if additional information is needed to support D&D activities. *Electrical Panels & Conduit*: In-process characterization is required to confirm internal contamination levels. *Soil Contamination*: Environmental restoration personnel will assume responsibility for developing characterization plans for soil contamination. *Ventilation*: Special nuclear material hold-up scans will be used to select decontamination/waste disposal methods for Zone 1 and 1A ventilation systems. *Buried Equipment*: Environmental restoration personnel will assume responsibility for developing characterization plans for buried contaminated equipment.
Beryllium Contamination	In-process surveys are required to confirm beryllium contamination levels in storage, handling, and production areas.
Asbestos	In-process sampling is required to determine if asbestos is present in roof tar and cement block insulation. Mapping will be done to determine if asbestos is present in ceiling and floor tiles. Pipe and equipment insulation will be removed as asbestos; no additional sampling is required.
Lead & Other Heavy Metals	In-process sampling is required to determine the presence of lead and other heavy metals in paint and incinerator equipment and insulation. Sodium vapor, incandescent and fluorescent lights that contain heavy metals will be managed as hazardous waste and do not require further sampling. Items known to contain lead & other heavy metals (i.e. leaded gloves) will be managed as hazardous waste and no additional sampling is required.
PCBs	In-process sampling is required to determine if PCBs are present in paint. Equipment known to contain PCBs will be managed as PCB waste and no additional sampling is required.
Special Nuclear Material Holdup	No in-process sampling required.
Chemicals	No in-process sampling is required. Most containerized chemicals will be removed during deactivation. Chemical solutions will be drained from tanks during deactivation. Containerized chemicals used for D&D and containerized excluded chemicals will be handled according to hazardous waste disposal regulations.
Radioactive Sources	No in-process characterization is required.

Table 7. In Process Characterization Required for Contaminants and Hazards Present Buildings 701, 702, 703 and 710

Contaminant/ Hazard	Building 701 Research Laboratory	Building 702 Pump House	Building 703 Pump House	Building 710 Steam Reducing Station
Radiological	In-process surveys are required to determine if radiological contamination is present.			
Asbestos	Mapping will be done to determine if asbestos is present in the wall and ceiling insulation; in-process samples will be taken if necessary.	No in-process sampling required.	No in-process sampling required due to age of insulation and existing sample results.	Pipe insulation inside the building may contain asbestos.
Lead & Other Heavy Metals	No in-process sampling required. Fluorescent lights and leaded gloves will be managed as hazardous waste.	No in-process sampling required. Incandescent lights will be managed as hazardous waste.	No in-process sampling required. Fluorescent lights will be managed as hazardous waste.	No in-process sampling required. Fluorescent light bulbs will be managed as hazardous waste.
PCBs	No additional sampling is required. Ballasts in the fluorescent lights will be managed as PCBs if not marked as containing no PCBs.		No in-process sampling required. Ballasts in fluorescent light fixtures will be managed as PCBs if not marked as containing no PCBs.	No in-process sampling required. Ballasts in fluorescent light fixtures will be managed as PCBs if not marked as containing no PCBs.
Chemicals	No in-process sampling is required. Chemicals in motors, pumps, and piping will be drained during deactivation.	No in-process sampling is required. Containerized chemicals will be removed during deactivation; chemicals in equipment will be drained during deactivation.		

Table 8. In-Process Characterization Required for Buildings 712, 713, 712A, 713A, 730 and 781*

Contaminant/ Hazard	Building 712 & 713 Cooling Towers	Building 712A Propane Valve House	Building 713A Valve Pit	Building 730 Pit	Building 781 Pump House
Radiological				In-process sampling will be required.	
Asbestos	In-process sampling required for cooling tower baffles. Pipe insulation inside and outside the building will be managed as asbestos due to age of insulation.		Pipe insulation inside the building contains asbestos.		
Lead & Other Heavy Metals	No in-process sampling required. Fluorescent lights will be managed as hazardous waste.	No in-process sampling required. Mercury switches and incandescent lights will be handled as hazardous waste.	No in-process sampling required. Incandescent lights will be managed as hazardous waste.		No in-process sampling required. Incandescent lights will be managed as hazardous waste.
PCBs	No in-process sampling required. Ballasts in the fluorescent light fixtures will be managed as PCBs if not marked as containing no PCBs.		No in-process sampling required. Ballasts in fluorescent light fixtures will be managed as PCBs if not marked.		

Table 8. (con't) In-Process Characterization Required for Buildings 712, 713, 712A, 713A, 730 and 781*

Contaminant/ Hazard	Building 712 & 713 Cooling Towers	Building 712A Propane Valve House	Building 713A Valve Pit	Building 730 Pit	Building 781 Pump House
Chemicals					No additional in-process sampling is required. A helium cylinder in the building will be removed during deactivation.

*Note: Sources and Special Nuclear Material Holdup were not present in these buildings.

5.0 FACILITY AND OPERATING DESCRIPTION OF THE BUILDING 776/777 CLUSTER

The Building 776/777 cluster is located in the north-central portion of the plant site (Figure 2). To the north end of Building 776/777 are eight supporting buildings: Building 701 (research laboratory), Building 702 (a pump house for Building 712), Building 703 (a pump house for Building 713), Building 710 (a steam pit), Buildings 712 and 713 (cooling towers for 776/777 and 779A), Building 712A (a natural gas building), 713A (a tank), Building 730 (a process waste pit for 776 LLW liquid storage), and Building 781 (a compressor for 777).

In addition to the above buildings, there is one buried 5,000 gallon diesel fuel oil tank which has been emptied and foamed in place.

The following sections contain a facility and operating description for Building 776/777.

5.1 Building 776/777 Facility Description

Building 776/777 is a two-story structure with a small basement (Room 001) located under Room 127. A common wall separates Building 776 from Building 777. Plan views of the first and second floors of the building are shown in Figures 3 and 4, respectively. The total floor area of both buildings is 224,600 square feet; this includes ten additions to the building that have occurred since construction. The first floor includes production and waste storage areas, and the second floor is almost exclusively occupied by utilities. There is also a tunnel that connects Building 776/777 to Building 771 and a hallway that connects Building 776/777 to Building 779.

The original Building 776/777 was constructed in 1955; the building additions were constructed from 1961 to 1969.

5.1.1 General Construction and Foundation

The foundations for the Building 776/777 structure consist of reinforced concrete. There are individual spread footings (ranging from 2.5 to 6 feet with a thickness of 1 to 1.5 feet) with concrete pedestals (ranging from 1 feet 4 inches by 1 feet 6 inches to 1 feet 10 inches by 2 feet 8 inches), and reinforced concrete grade beams (10 inches thick with depths varying from 4.5 feet to 5.5 feet). The structure is framed with steel columns supported by concrete pedestals, except for x-ray and betatron vaults, which have reinforced walls 1.5 ft. to 7.5 ft. thick adjacent to existing walls. Some of the steel columns have been coated with heat shielding materials.

5.1.2 Walls

The original portion of building 776/777 has bare corrugated cement asbestos (transite), steel, or epoxy painted concrete block exterior walls. Various additions

21

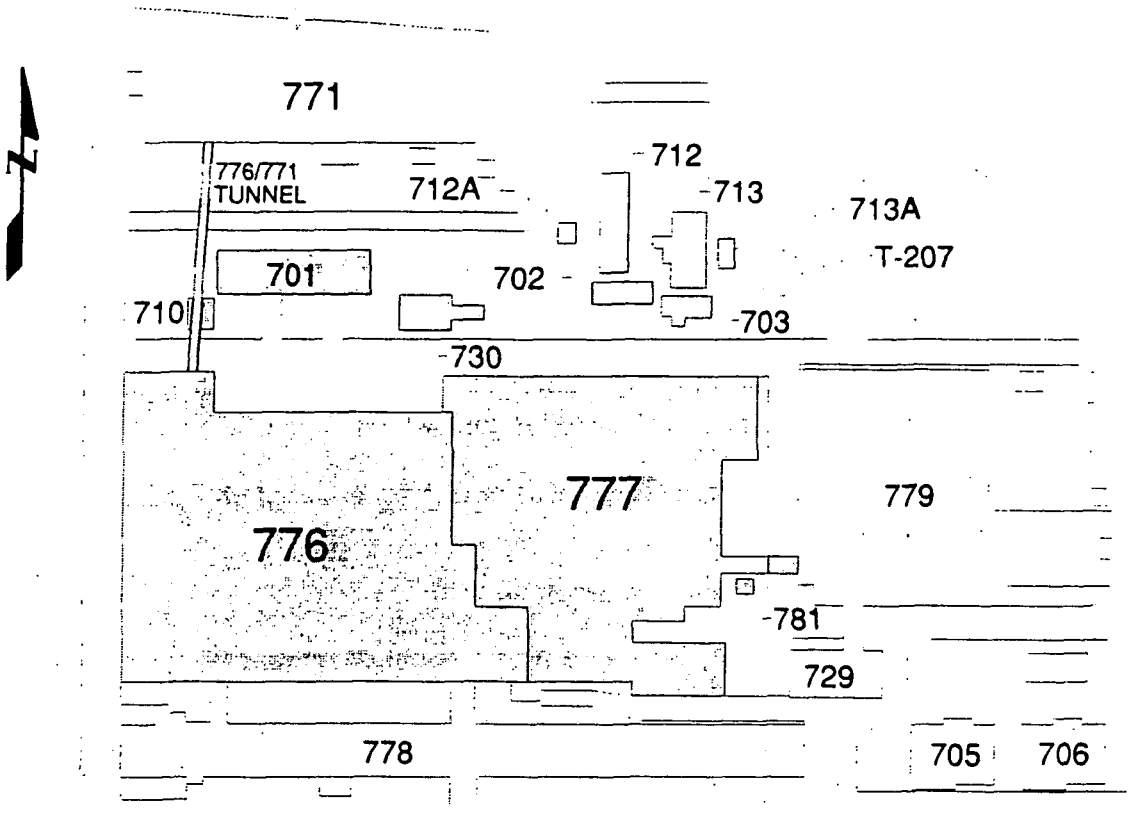

Figure 2. Building 776/777 Cluster

to the structure have 8 inch thick concrete block walls, while others have galvanized steel wall panels. The exterior walls for the vaults are reinforced concrete (1 foot thick for the document vault; 4 feet thick for the x-ray vault; and 7.5 feet thick for the betatron vault).

The original Building 776/777 structure has plain cement asbestos panels and 1.5 inch thick fiberglass insulation on the interior walls. The super-dry room and tritium sampling area have stainless steel walls. Interior walls of the document vault, storage basement, x-ray vault, and betatron vault are concrete. The second floor mechanical equipment area is bare cement asbestos, with rest rooms and locker rooms having tile on walls and floors.

Prior to a fire in 1969 (See Section 7.1), the majority of the building space was in one large open room. Since that time, the building has been compartmentalized into several areas separated by physical barriers to confine any radioactive material releases and to serve as fire walls. Concrete block walls separate major production areas. Elsewhere in the facility, gypsum board on metal studs form dividing walls for offices, training rooms, and some laboratories.

22

Figures 5 and 6 are maps of the first and second floors of Building 776/777 showing materials of construction used for the walls in the facility. Figures 7 and 8 show the walls that were present in the buildings during the 1969 fire and walls constructed after the fire.

5.1.3 Floors

All floors in Building 776/777 are cast in place, reinforced concrete slabs. Most of the first floor slabs are 6 inch thick on grade. The autoclave facility has a 10 inch thick slab on grade. Most of the second floor consists of 5 inch thick concrete on metal decking. The second floor of the assembly plant addition has 4 inch thick concrete on metal decking. The second floor of the inert surveillance addition has precast concrete tees with concrete topping. Production area floors are painted with epoxy. Corridors and office floors are finished with vinyl asbestos or carpet.

5.1.4 Ceilings

Ceilings in Building 776/777 are generally the exposed underside of floor or roof slabs. There are suspended acoustical tile ceilings in some corridors and office areas. The super-dry room and the tritium sampling areas have stainless steel ceilings, and the modular laboratories have painted metal ceilings.

5.1.5 Roof

A new roof was constructed over the original roof of Building 776/777 in 1974 to improve the structural stability for wind and snow after the 1969 fire and to contain contamination on the original roof that resulted from the fire. Structural columns of the original roof were extended to support the new structural steel framing. The new roof carries 4 inches of insulating concrete, reinforced with wire mesh, covered with built-up roofing. Roofing for various additions consists of metal decking with insulation and built-up roofing. The betratron vault roof consists of 5 feet 4 inch thick reinforced concrete, waterproofed with neoprene hypalon roofing.

The original roof on Building 776/777 was a Livonia type roof. This type of roof is composed of metal decking covered with ½ inch sheet plywood, tar paper, molten tar, and rock.

5.1.6 Doors

Most doors in Building 776/777 consist of steel construction with a 1 ½ hour fire rating. These doors are either solid or have wire glass windows. Metal roll-up doors are used for the main entrance to loading docks. The document vault door consists of stainless construction, whereas the x-ray and betatron vaults have steel and concrete doors.

25

5.1.7 Interfaces

A tunnel at the northwest corner of Building 777 leads to Building 771. This tunnel is ventilated by the Building 776/777 ventilation system and controlled as part of the Building 771 Material Access Area. There is an annex on the south side of Building 777 connecting to Building 707 via the Building 778 hallway. An above ground cross over on the east end of Building 777 connects to Building 779.

Building 776/777 is also connected to Buildings 778 and 779 via tunnels. The tunnel between Building 776/777 and Building 779 is ventilated and controlled by Building 779. The hallway between Building 776/777 and Building 778 is ventilated by Buildings 776/777 and 778, with the Building 707 Facility Complex Inert System providing ventilation for the ventilation chainveyor also in the hallway.

5.1.8 Utilities

Utilities are shared between Buildings 776 and 777. These include supply and control of potable water, eye wash and emergency showers, cooling water, sanitary sewage, building heating and air conditioning, glovebox and vacuum air supply, emergency electrical power and compressed air In addition, the building had an air drying system that contained Kathene as the drying agent. The Kathene solution was treated with a chromium anti-microbial additive. This air drying system ceased operations in the early 1990's. The building also has a liquid nitrogen tank system that is used as a secondary source of high purity nitrogen for the glovebox inert atmosphere system. The process drains in the buildings are no longer usable and are filled with concrete. Instead, the liquid waste is collected in sumps and is transferred to the process waste tanks in 776 and disposed of through liquid waste processing in Building 374.

The building also shares some utilities with surrounding buildings. Breathing air is provided from Building 707. Steam from Building 776/777 heats the hot water for the B778 locker rooms. Plant air is shared between Buildings 776/777, 779, and 771. Emergency power for criticality alarm panels for Building 776/777 (located in B750) is supplied from Building 708. The classified telecommunications center for the site is located in Building 777. The chainveyor between Building 707 and Building 776/777 is a common line that has inert gas supplies from both buildings.

5.1.9 Building 777 Laundry Facility

A contaminated laundry facility in Building 777 was used to wash worker protective clothing and respirators with measurable radioactivity levels of 250 to 20,000 counts per minute. Laundry facilities are no longer operational in the building.

5.1.10 Heating, Ventilating and Air Conditioning

The two primary purposes of the HVAC system are to limit the release of airborne radioactive or other hazardous materials to the environment, and to prevent or minimize the spread of contamination within the building. For these purposes, the

26

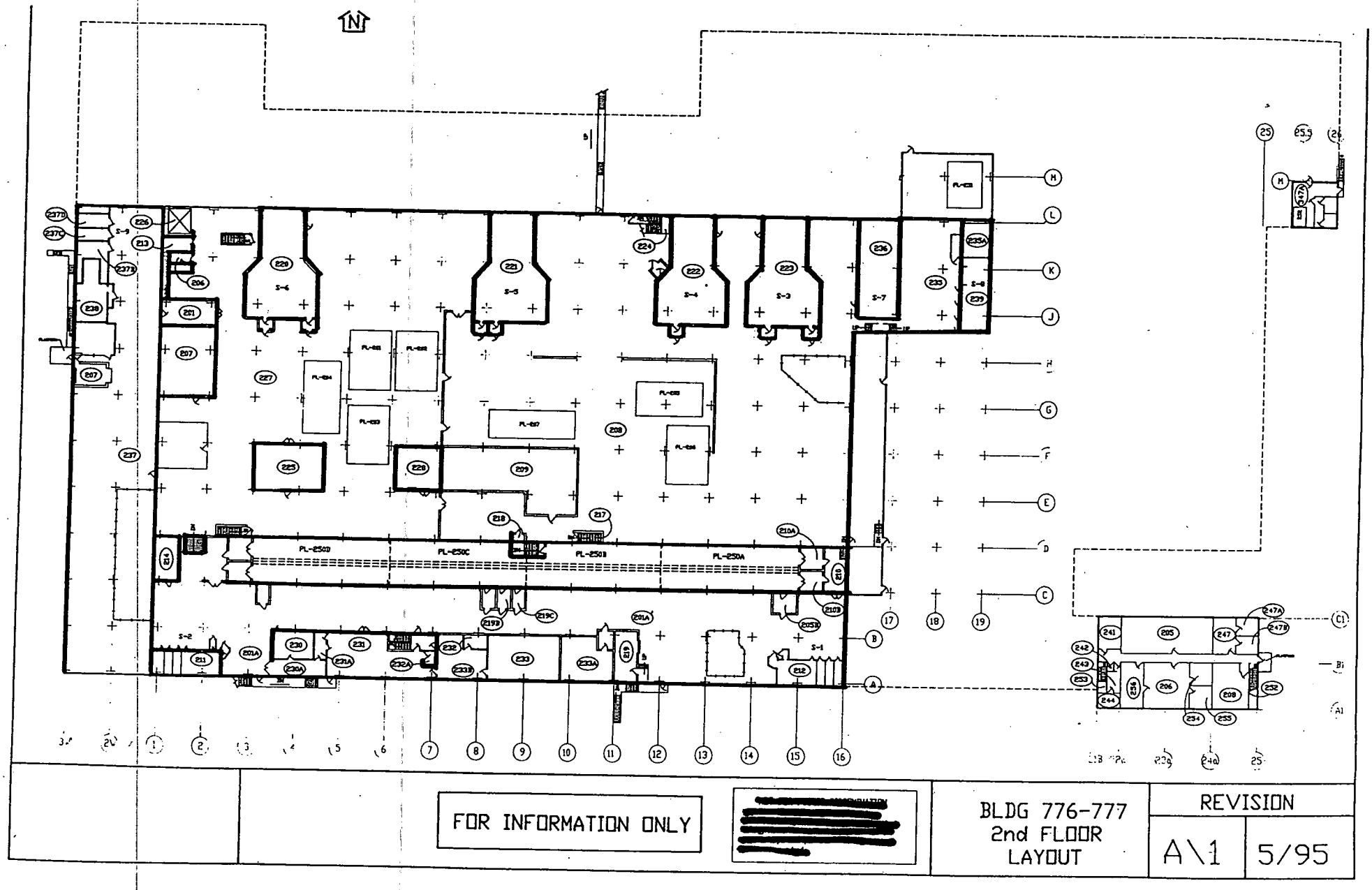

Figure 8 Building 776/777 Second Floor Walls Present During the 1969 Plutonium Fire

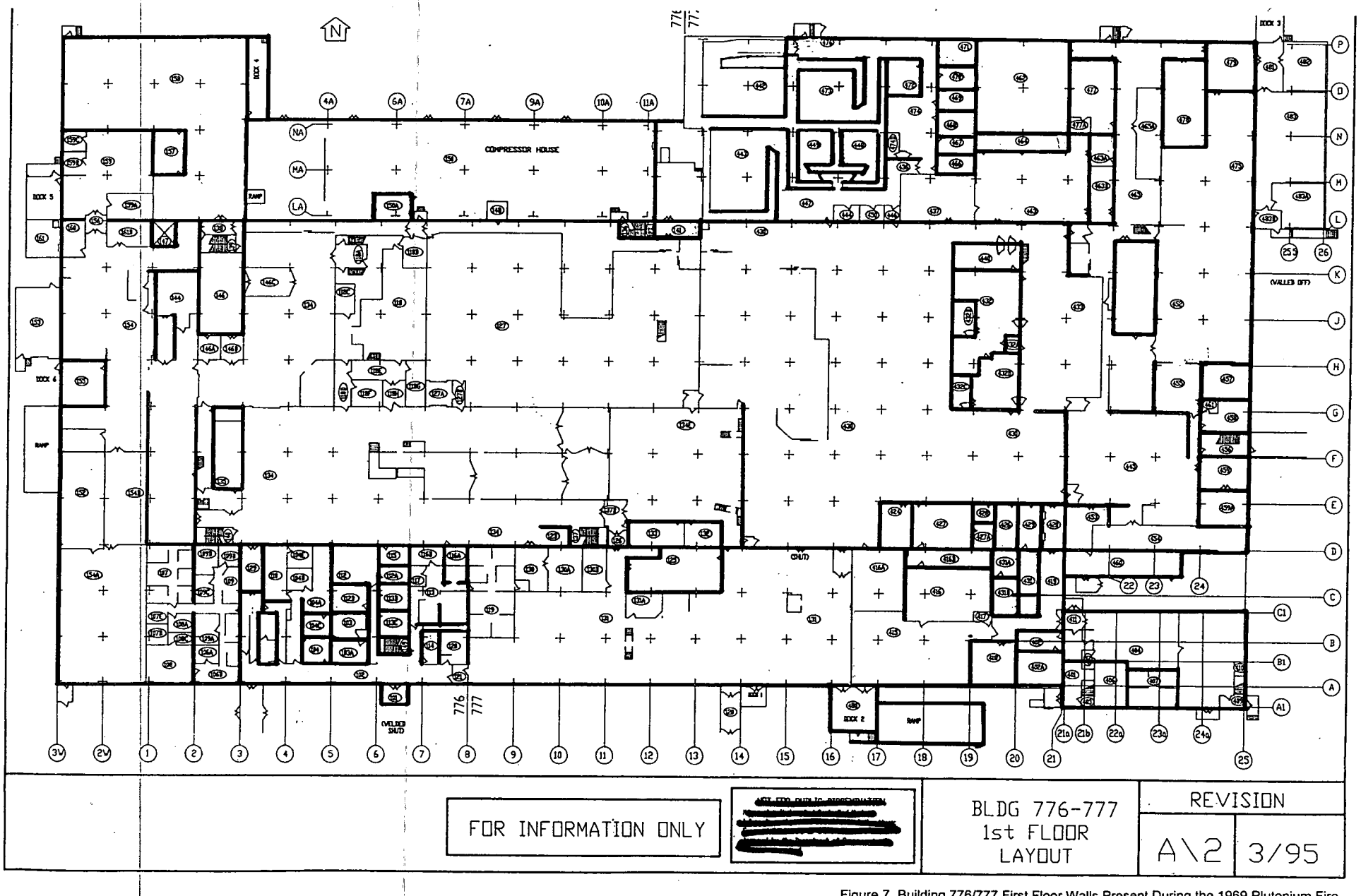

Figure 7 Building 776/777 First Floor Walls Present During the 1969 Plutonium Fire

HVAC system forms a confinement system in conjunction with physical barriers, maintaining a cascade flow pattern from areas of least contamination potential to areas of greatest contamination potential.

The HVAC system consists of five zones: Zone I, gloveboxes; Zone IA hoods and B-Boxes; Zone II, operational areas; Zone III, all second floor areas; and Zone IV, office areas. Only Zone I and Zone IA are expected to have radiological and beryllium contamination.

5.2 Description of Building 776/777 Operations

Building 776/777 began operations in 1957 and has undergone several major production changes since that time. These can be divided into three time periods: pre-1969 fire, post-1969 fire to the 1989 production curtailment, and current operations. A summary of building operations is listed in Table 9. Included in the table is a list of metals and chemicals used for different operations during each time period. The set descriptions in Appendix A specify building locations where each metal and chemical listed in the table is considered a contaminant or hazard at the present time.

Beginning in 1958 and continuing through 1969, Building 776 was the main manufacturing facility for plutonium weapons components and housed a plutonium foundry and fabrication operations. Building 777's main function was assembly of parts.

After a major fire in Building 776/777 in 1969, the majority of the foundry and fabrication operations were transferred to Building 707. After several months of clean-up following the fire, limited production operations were resumed in Building 776/777; however, the main focus of the building turned towards waste and residue handling, disassembly of site returns and special projects. Processes conducted in Building 776 included size reduction, advanced size reduction, pyrochemistry, coatings operations and test runs with a fluidized bed incinerator unit. Building 777 operations included machining, product assembly and disassembly functions, testing and inspection special weapons projects and support operations such as laboratories.

Current operations in Building 776/777 have been vastly reduced compared to operations prior to the 1989 production curtailment. Current operations in Building 776 include support for mission program activities and waste handling and maintenance activities. Building 777's current activities include a mass spectroscopy lab for gas analysis, container repackaging operations, nuclear material storage and waste storage.

Decommissioning will be phased in; some sets will be in normal operating mode and a majority of the sets will be deactivated before decommissioning begins. At the start of decommissioning of each set, the typical status of a set will be as follows: classified material will be gone from the sets; loose combustibles will be removed and dispositioned; solutions in vessels, machines, pumps and associated piping will be drained and dispositioned; loose equipment will be removed and dispositioned; radioactive and chemical contamination will be controlled or fixed; and loose hazardous materials will be removed and dispostioned. Note that the

status is provided for general information only and is subject to change as will be described in the DOP.

30

Table 9. Building 776/777 Operating History Summary

Operation	Time Period: 1957-1969	Post 1969 fire – 1989	1989 – Present
	Metals and Chemicals Used in Production		
Casting	Pu	-	-
Fabrication	Pu, machine oil, PCE, CCl_4	Pu, CCl_4	-
Assembly and/or Testing	Pu, U, steel, Beryllium, copper, silver, TCE	Plutonium, TCA, TCE	-
Disassembly	U, Pu, TCE	Plutonium, beryllium, aluminum, TCA, tritium	-
Recovery			
Plutonium scrap, turnings, & residue processing	Pu, CCl4, machine oil	-	-
Briquetting	-	Plutonium, CCl_4, machine oil	-
Molten Salt Extraction	-	Americium, Plutonium	-
Electrorefining	-	Plutonium	-
Salt Scrub Process	-	Actinide metals	-
Direct Oxide Reduction	-	Plutonium	-
Waste Handling			
Carbon Tetrachloride System	-	Plutonium, CCl_4, coolant oil, vacuum pump oil, sight gauge oil	-
TCA Collection and Filter System	-	Plutonium, americium, uranium	-
Low-level Waste Baler	-	Solvent contamination	-
Fluidized Bed Unit	-	Plutonium, Chromium oxide catalyst, oils, PCBs	-
Size Reduction		-	Plutonium
Supercompaction		-	
Low Specific Activity		-	

Operation	Time Period: 1957-1969	Post 1969 fire – 1989	1989 – Present
	Metals and Chemicals Used in Production		
Counters.			
Inspection & Testing			
Non-destructive Testing	-	Plutonium, , TCA, CCl_4, Be	-
Inspection	-	Plutonium, oil	-
Density Balance Operations	-	Plutonium	-
Component Integrity Testing	-	Plutonium	-
Special Projects			
Materials Coatings	-	Chromate & manganese coatings, acids, TCA,	-
Special Weapons Projects	-	TCA., cutting oils	-
Non-plutonium metal parts joining	-	Vanadium, depleted uranium, , beryllium	-
Support Operations			
Gauge Calibration Laboratory	-	None	-
Plutonium Metallography Laboratory	-	Plutonium, kerosene, , TCA	-
Tritium Surveillance Laboratory	-		Nitric acid
Container Repacking	-	-	
Maintenance	-	-	Oil, batteries

Note: The term solvent as used here means a material used for its solvent properties. If it became waste, it would be regulated as hazardous waste.

6.0 Building 776/777 Cluster Outbuilding Facility and Operating Description

6.1 Building 701 Research Laboratory

Building 701 is a single story building that is 5,170 square feet. It has structural steel framing and galvanized steel siding and roofing. The interior is partitioned with concrete block walls. It is built on a reinforced concrete foundation and slab. The building was constructed in the early 1960's. Originally, this building provided an area for developing new equipment and processes related to processing plutonium. Currently, it is used for miscellaneous storage for Building 707, glovebox mockups, and "cold" lab tests in support of the residues program.

6.2 Building 702 Pump House

Building 702 contains the pumps that serve the Building 712 cooling tower. The building is 870 square feet, has structural steel framing and galvanized steel siding and roofing. It is built on a reinforced concrete foundation and slab. The building was constructed in the 1960-1961 time frame. This building contains the natural gas/propane motor driven pumps serving the Building 712 cooling tower. The equipment was to be used during loss of electrical power conditions but is currently out of service. Two propane/air mixers are also in the building for use during loss of natural gas supply but are currently out of service.

6.3 Building 703 Pump House

Building 703 contains the process cooling water pumps serving Buildings 776/777. The building is 1080 square feet, has structural steel wall and roof framing covered with galvanized steel siding and roofing. Reinforced concrete grade walls support structural steel columns. The floor is a reinforced concrete slab on grade. The building was constructed in 1960-1961 time frame. This building contains the pumps currently serving the Building 713 Cooling Tower.

6.4 Building 710 Steam Reducing Station

Building 710 is 352 square feet, and has a steel column frame and roof and galvanized sheet metal exterior. The building is insulated with 3 inch thick foil backed fiberglass. The floor is a reinforced concrete slab on grade. The building was constructed in the early 1980's. The building contains a steam reducing valve that reduces steam from the steam plant at 140 pounds per square inch (psi) to 125 psi for distribution to Buildings 771, 776, 777, and 779, and directs condensate from these buildings back to the steam plant.

6.5 Building 712 Cooling Tower

Building 712 provides tower water for Buildings 776/777. It is 3,552 square feet. The wood and fiberglass superstructure of the building is constructed on reinforced concrete pedestals on a reinforced concrete foundation. It is protected by a fire water sprinkler system. The interior of the foundation has a reinforced 12 inch thick concrete slab. The building was constructed in the 1961-1962 time frame. This cooling tower formally served as the heat sink for the tower water system loads. This cooling tower is currently out-of-service.

6.6 Building 713 Cooling Tower

The Building 713 cooling tower is a wood superstructure protected with a fire water sprinkler system. It is 3,072 square feet. It is supported by reinforced concrete pedestals on a reinforced concrete foundation. The interior of the foundation has a concrete slab on grade. The building was constructed in the 1961 - 1962 time frame. This cooling tower is the heat sink for all tower water system loads.

6.7 Building 712A Propane Valve House

Building 712A is 90 square feet and is constructed of 3 inch angle frame with a galvanized sheet metal exterior. *The foundation is reinforced concrete slab on grade.* Building 712A was constructed in the 1961-1962 time frame. This building contains a propane pressure reducing valve. The propane was originally used in Building 776/777, Room 150, and in Building 702. The propane supply has been removed.

6.8 Building 713A Valve Pit

Building 713A is 250 square feet and has concrete walls with a 2 in x 6 in plank roof. Building 713A was constructed in the 1961 - 1962 time frame. This building contains service valving for the Building 713 cooling tower.

6.9 Building 730 Pit

Building 730 is 698 square feet with 1 foot 8 inch concrete walls and roof. Building 730 was constructed in the late 1950's. This building contains the HVAC Zone II plenum deluge drain tanks. Two of the four tanks have been filled with foam and remain in place.

6.10 Building 781 Helium Pump House

Building 781 is a compressor house that is 1,200 square feet with 1 foot concrete walls, floor and ceiling. Part of the building is below grade. Building 781 was constructed in the early 1960's. This building originally provided gas for testing in Building 777, but is currently out of service.

7.0 SCOPING AND RECONNAISSANCE LEVEL CHARACTERIZATION RESULTS BUILIDING 776/777

The following sections present the characterization findings for Building 776/777. Radiological and beryllium contamination are present. Asbestos, lead and heavy metals, PCBs, special nuclear material holdup, chemicals and radioactive sources are the hazards present.

The issues and regulatory criteria associated with these contaminants and hazards are protecting worker health and safety, protecting the environment, and complying with waste disposal criteria.

The following sections summarize existing data and process knowledge for each contaminant and hazard, and if additional sampling and analysis is required at the present time.

7.1 Radiological Contamination

7.1.1 Existing Data and Process Knowledge

At the present time, the first floor of Building 776/777 is primarily posted as a Contamination Area (CA)[1] and the second floor is posted as a Radiological Buffer

Area (RBA)[2]. These postings are based on general area surveys of the building; survey maps are on file in the Building 776/777 radiological control office. Pre-job radiological surveys are done to verify radiological contamination levels in specific areas not covered by general area surveys. Both types of surveys as well as process knowledge have led to the present understanding of radiological contamination in the building.

Radioactive contamination is present in the following areas: (1) building structure-roof, floors, walls and ceiling, (2) production equipment such as gloveboxes and tanks, (3) process piping, (4) electrical conduit and panels, (5) ventilation systems, and (6) ground underneath the building.

Building Structure The contamination of the building structure is primarily the result of the1969 plutonium fire and operations that have occurred since the fire. The 1969 fire started in Room 134 of Building 776, which was a large, open area with interconnecting gloveboxes at the time of the fire; this provided a pathway for the fire to spread quickly throughout gloveboxes, ventilation systems and surrounding rooms. The ventilation system was shut down and the smoke carrying the contamination spread into the floors, walls, and through piping and column penetrations to the second floor.

During the fire, the tar on the roof melted from the heat generation and began to seep through the structure. One of the filter plenums had a small breach of containment through the HEPA filters. Plutonium contamination came through an inverted exhaust stack to be collected in the molten tar.

A fine spray of water was used to put out the fire. Since plutonium is hygroscopic, it absorbed water and became sticky, combined with combustion products (smoke), and then plated out on the surfaces the building. About 60,000 gallons of water were used to put out the fire.

The extent of the plutonium contamination after the fire on the first and second floors is shown in Figures 9 and 10 respectively; contamination levels on the roof and outside areas are shown in Figure 11. The contamination that spread to the first floor of Building 771 through the underground tunnel that connects Building 776/777 to Building 771 is shown in Figure 12. The basement below Room 127 (Room 001) is assumed to be contaminated at the same levels as the tunnel to Building 771. The contamination that spread to the second floor of Building 779 through the above ground hallway that connects Building 776/777 to Building 779 is shown in Figure 13.

[1]Contamination Area – An area where radioactive contamination levels are greater than the levels specified in Appendix D of 10 CFR 835 or [RCM Table 2-2] but less than or equal to 100 times those levels.

[2]Radiological Buffer Area – Limits radiation doses to general employees to less than 100 mrem per year.

35

Decontamination of the Building 776/777 took place over a four-year period after the fire. No information is available regarding specific contamination levels immediately after the decontamination process occurred. Operating personnel present at the time of the fire have stated that the contamination was hard to remove; the primary method of containment was to paint over the contamination.

Building operations that contributed to radiological contamination occurred in Rooms 131, 134E, 154A, and 430; there were spills during bag-in/bag-out glovebox operations that contributed to the contamination of floors, equipment, and possibly walls.

There are cracks in the floors of Rooms 127 and 154 that exhibit contamination. A pre-job survey for recent maintenance work in Room 127 indicated levels of 10^6 counts per minute (cpm) removable at the crack in the floor. This measurement is in line with the map of contamination levels after the fire shown in Figure 9.

Production Equipment Data in Appendix B lists fixed surface radiological contamination readings for production equipment. Production equipment includes tank systems, gloveboxes, and special equipment associated with such systems as the fluid bed incinerators and advanced size reduction facility. Most of the foundry and associated gloveboxes in the building during the fire have been removed. Inside gloveboxes where plutonium was handled can have readings in excess of 10^6 cpm. Some equipment still contains solutions that may be radioactive. These solutions will be drained during the deactivation phase prior to D&D. Analytical data obtained during the draining of tank solutions will confirm existing process knowledge and radiological data.

Tritium releases have occurred within the gloveboxes in Rooms 430 and 452 from the 1960s to the 1980s. Possibly tritium contaminated equipment exists in Building 777.

Process Piping The pipe runs between the first and second floors could not be decontaminated after the 1969 fire because of limited access space. Based on

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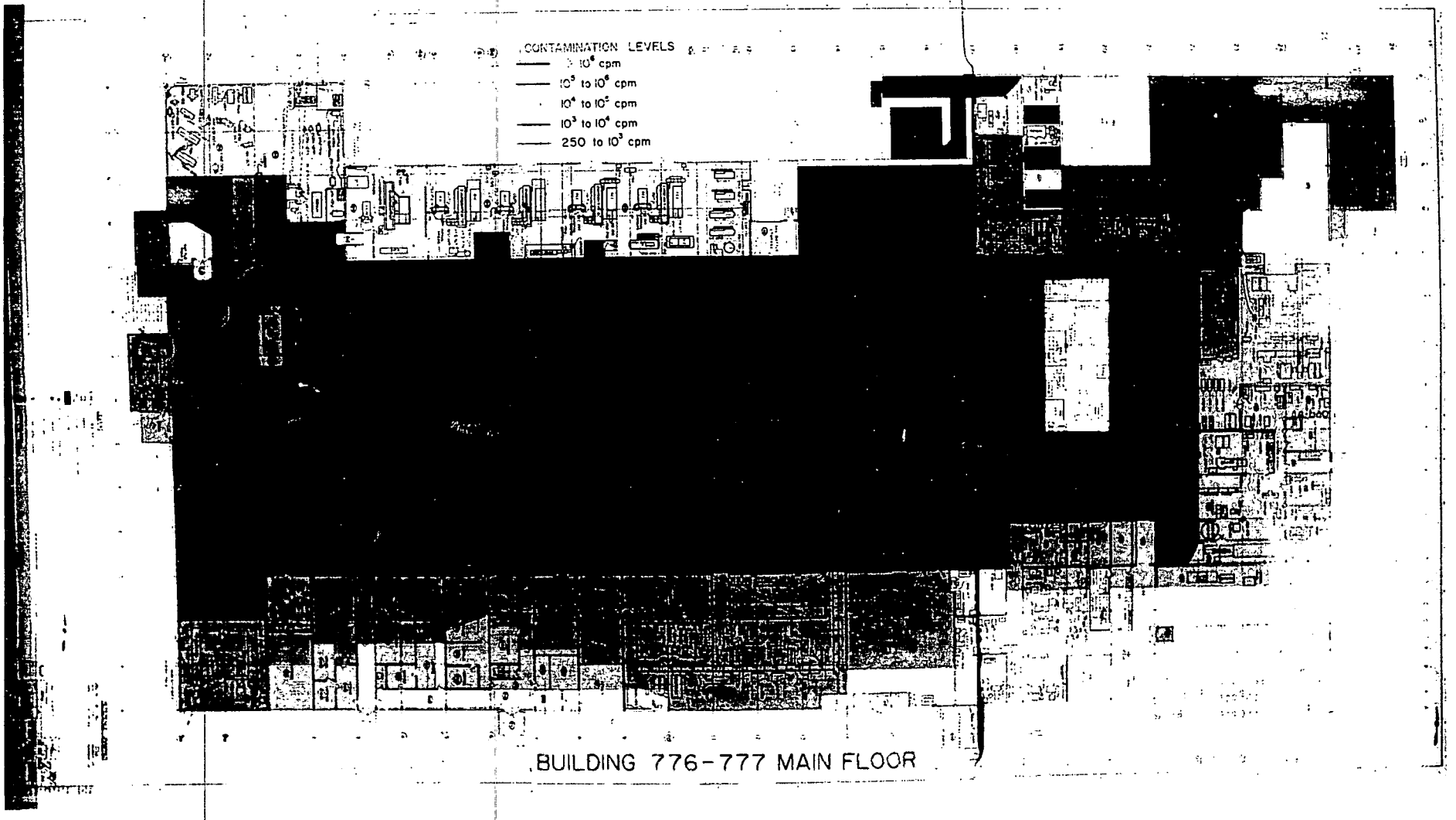

Figure 9 Building 776/777 First Floor Contamination Levels After the 1969 Plutonium Fire

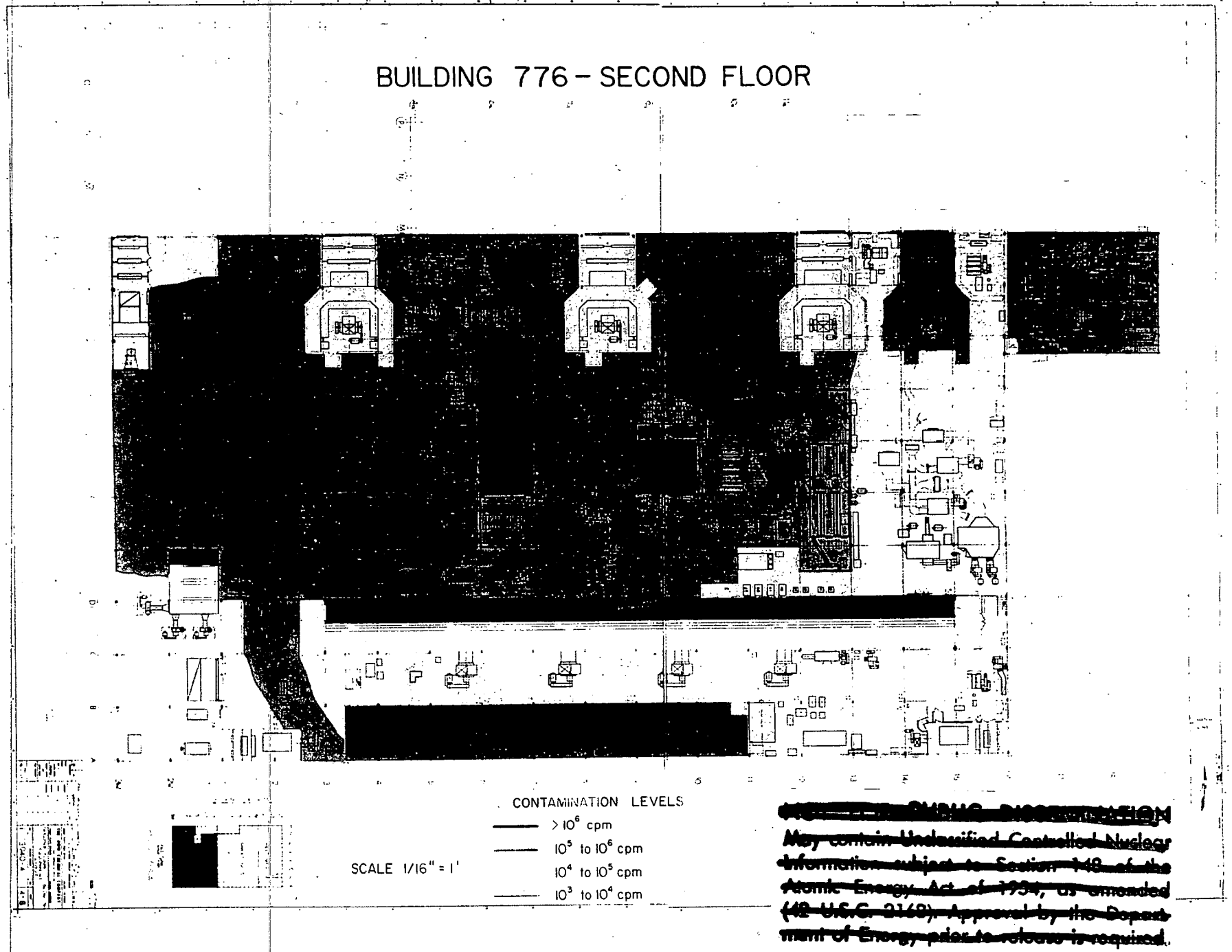

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Figure 10 Building 776/777 Second Floor Contamination Levels After the 1969 Plutonium Fire

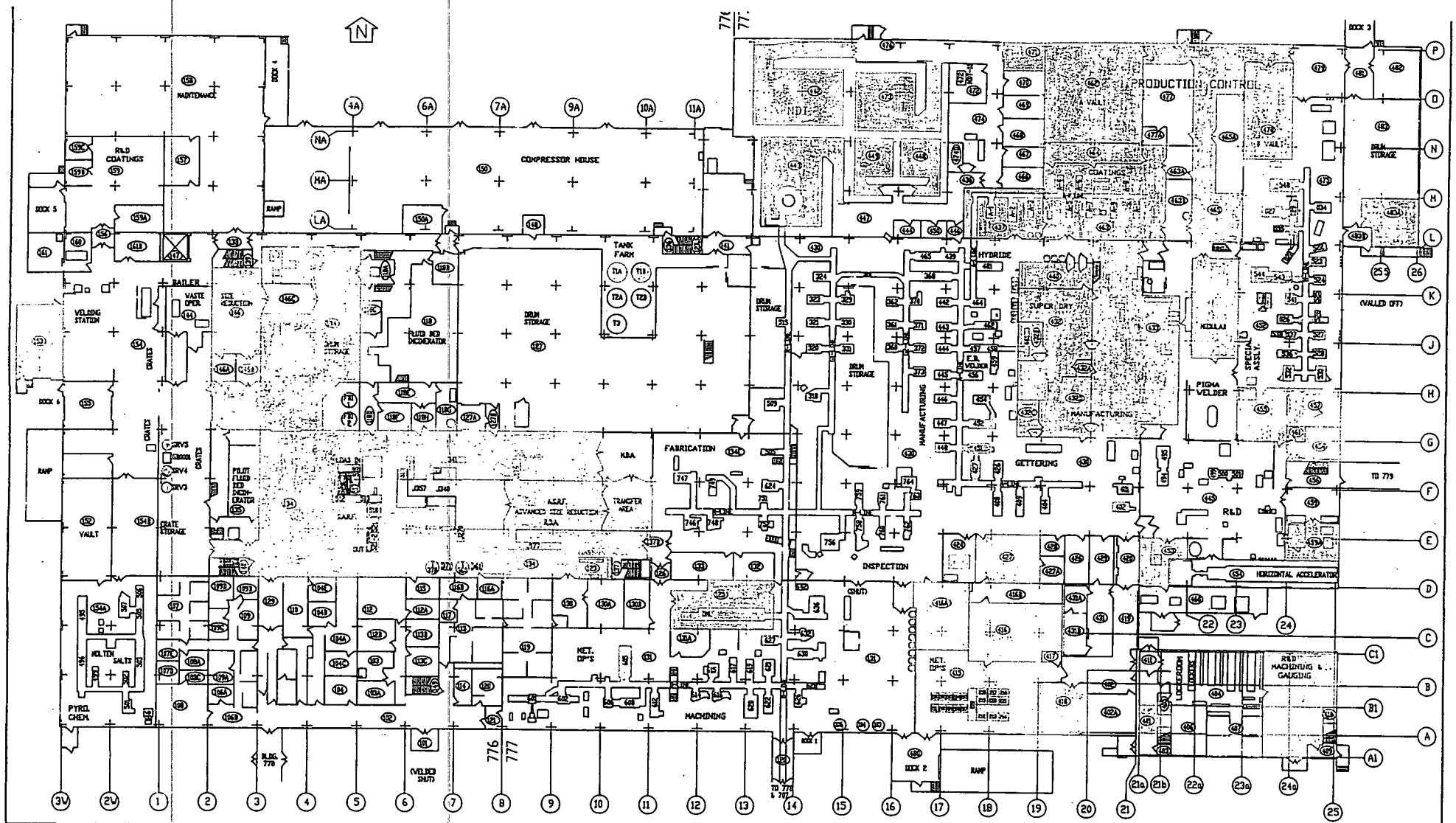

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Figure 14 Building 776/777 Beryllium Contamination Areas

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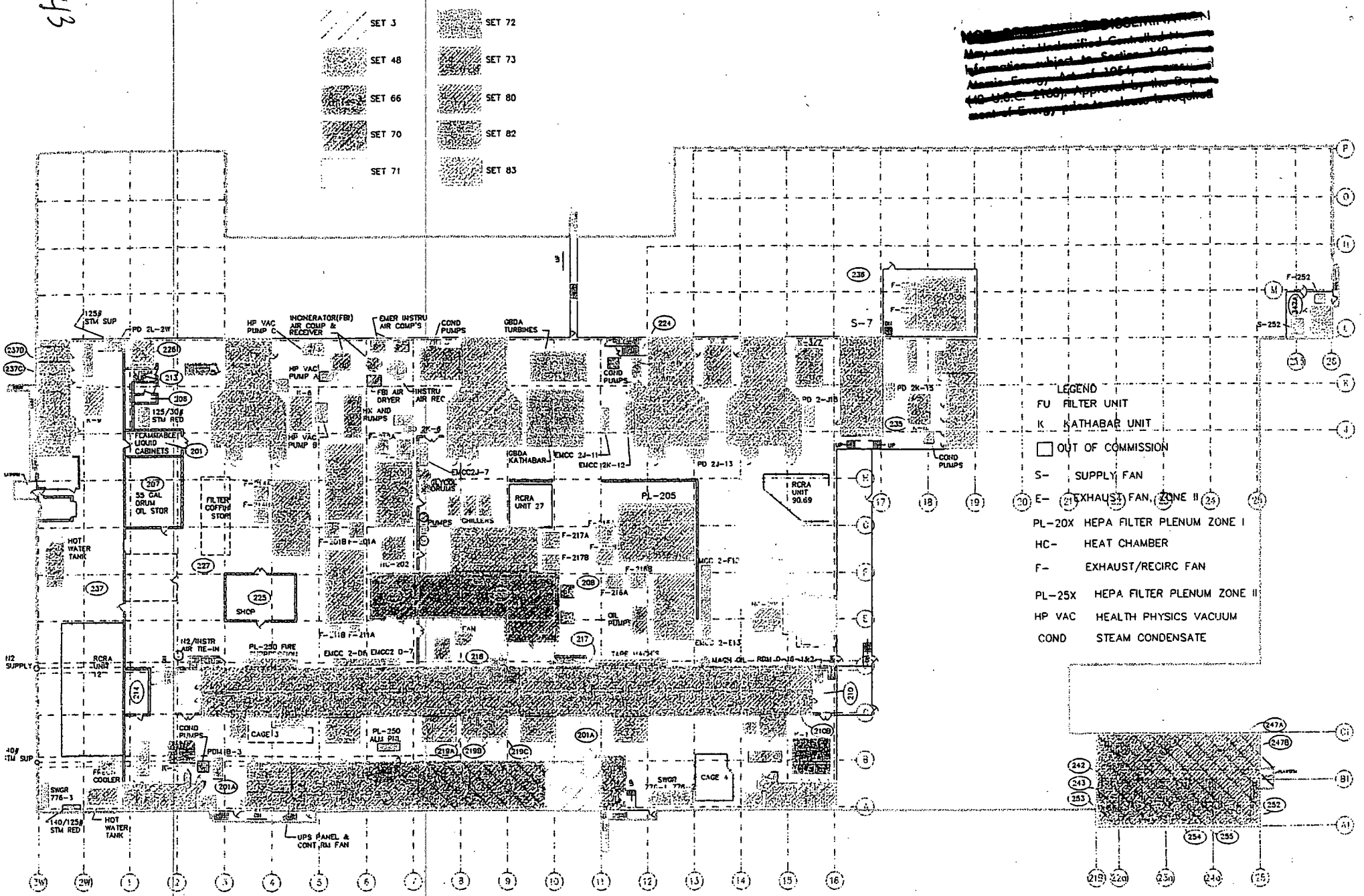
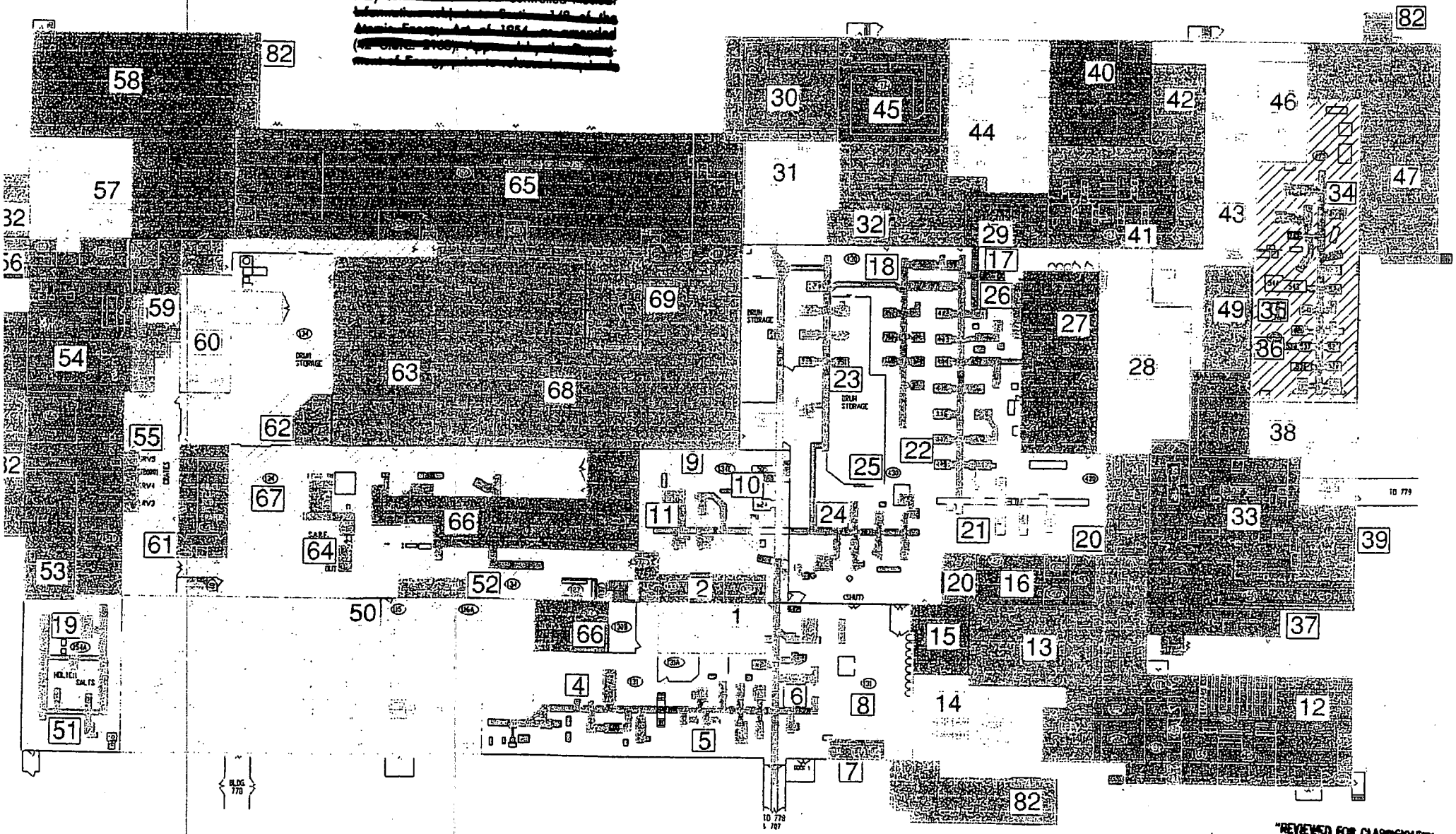

SET 3
SET 48
SET 66
SET 70
SET 71
SET 72
SET 73
SET 80
SET 82
SET 83
LEGEND
FU FILTER UNIT
K KATHABAR UNIT
OUT OF COMMISSION
S- SUPPLY FAN
E- EXHAUST FAN, ZONE II
PL-20X HEPA FILTER PLENUM ZONE I
HC- HEAT CHAMBER
F- EXHAUST/RECIRC FAN
PL-25X HEPA FILTER PLENUM ZONE II
HP VAC HEALTH PHYSICS VACUUM
COND STEAM CONDENSATE
PL-205
SHOP
CAGE 3
CAGE 4
HOT WATER TANK
UPS PANEL & CONT RM FAN

24

[redacted]



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Date 06/23/98

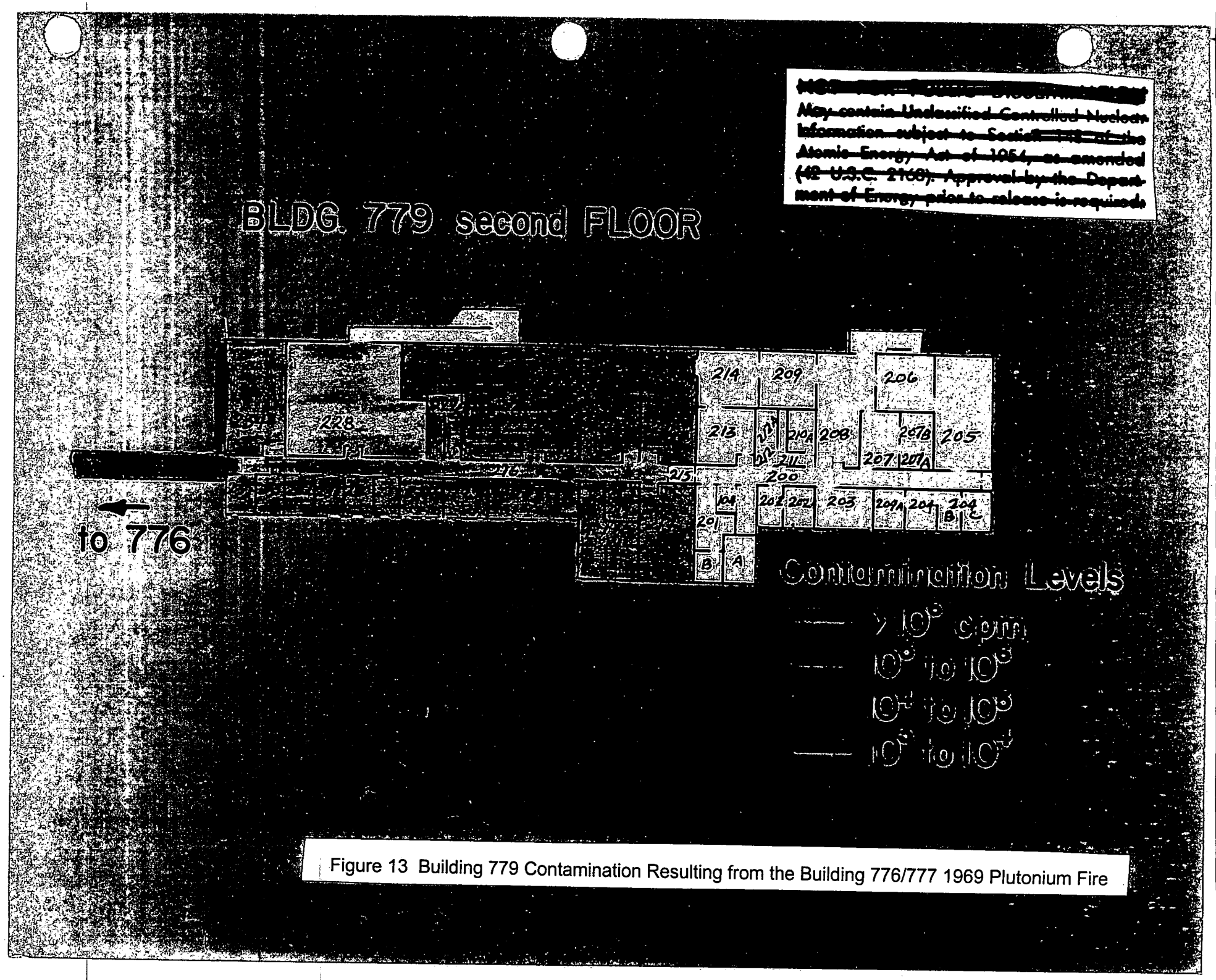


Figure 13 Building 779 Contamination Resulting from the Building 776/777 1969 Plutonium Fire

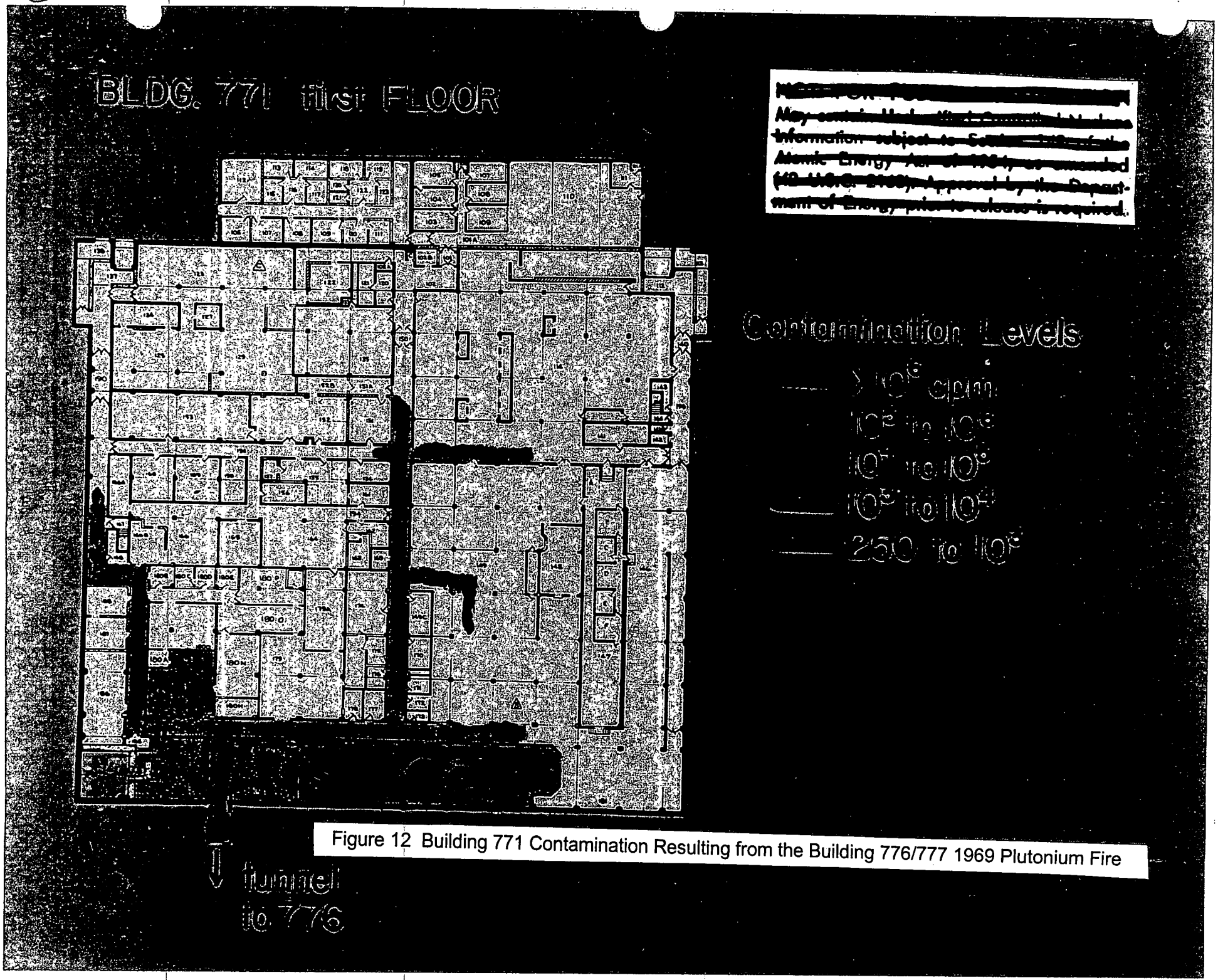
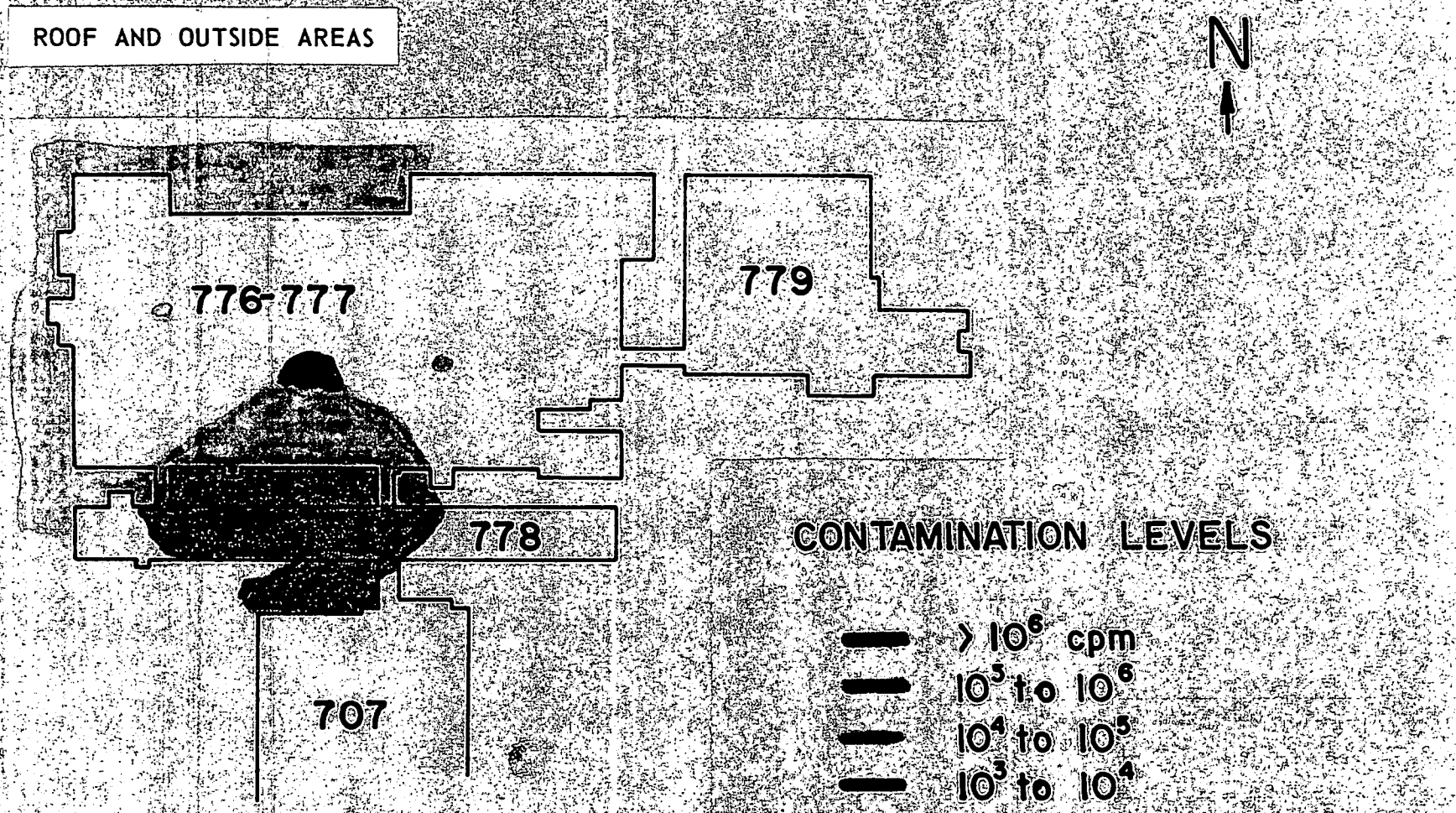


Figure 12 Building 771 Contamination Resulting from the Building 776/777 1969 Plutonium Fire



[redacted]

Figure 11 Building 776/777 Roof and Outside Area Contamination Levels After the 1969 Plutonium Fire

surveys completed for previous jobs with these systems, contamination levels are in line with the contamination levels shown in Figures 9 and 10 and have not been contained.

Electrical Panels and Conduit The inside of electrical panels and conduit throughout the first and second floor production areas are posted as contamination areas as a result of the1969 fire.

Soil Contamination Soil contamination under the building is expected from at least two sources. First, water used in putting out the fire went down the elevator shaft in building 776 and tunnels that connect Building 776/777 and Building 771 and 779. Some of this water seeped through the floor expansion joints and penetrations and was absorbed by the ground under the building. Second, seasonal fluctuations in groundwater result in seepage of groundwater from the surrounding Individual Hazardous Substance Site (IHSS) into this area.

Buried Equipment Equipment was buried under the floors of Building 776 after the 1969 fire. In February 1998, Kaiser-Hill Construction Management performed ground penetrating radar of the floors in Building 776 to confirm the presence of material buried under the floors. Fire testimony documentation mentioned material that was buried in existing equipment pits in Building 776. The original construction drawings for the foundation indicated numerous below grade areas (equipment pits, underpasses, and sumps) that are no longer visible or accessible. Based on the fire testimony and construction drawings, the original below grade areas were mapped. The carpenter shop at the west end of the building, the basement in Room 127, Room 133, Room 134, and Room 118 were suspected sites that were investigated with the ground penetrating radar. Some of the original underpasses were filled with contaminated concrete and the void spaces were filled with new concrete; since ground penetrating radar can only identify changes in density, these underpasses were not investigated.

The used paint and solvent pit located in Room 133 was filled in to cover contamination. It is believed that nothing is buried there because it is only 12 inches deep.

The floor under the fluidized bed incinerator in Room 118 was confirmed to have a definite change in density that is believed to be the roller from the old rolling mill. The area in Room 134 adjacent to the MDA on the Advanced Size Reduction Facility (ASRF) was inconclusive. The area adjacent to the existing basement in Room 127 was the largest equipment pit (approximately 1,000 square feet and it appears to have been sealed but based on the radar it is airspace and not equipment.

Room 127 was investigated not because of the construction drawings but because of ongoing problems with the floor. During a maintenance job to repair the floor in late 1994, the concrete appeared soft and as the floor was scraped to remove paint, high levels of contamination developed along with a "puff" of air and the maintenance crew encountered what they believed to be metal plates. The radar can not penetrate through the steel plate and this area will be left as a suspect area.

45

The radar was used in the carpenter shop to determine if old autoclaves were abandoned in place. It appears from the radar that the autoclaves are still present and based on drawings extend approximately 30 feet below grade.

The radar images from this study are on file in the project record.

Ventilation Zone 1 and Zone 1A ventilation systems are assumed to have radiological contamination $>10^6$ cpm.

7.1.3 Additional Sampling and Analysis Required

Existing data and process knowledge in conjunction with in-process surveys indicates there is enough information about radiological contamination to resolve issues and meet regulatory criteria. Guidelines for in-process surveys will be included in the in-process characterization criteria in the DOP and PEP.

Building structure- It is assumed that the original floors and walls in the building have radiological contamination to the documented levels shown in 9, 10 and 11. In-process surveys will confirm actual contamination levels and indicate where further sampling is needed to support final building surveys, demolition plans and waste disposal.

Equipment Existing process knowledge and analytical data combined with in-process surveys and final assays completed before waste disposal will provide enough data to dispose of equipment. Also, scans completed for SNM holdup removal (see Section 7.6) will help determine disposal/decontamination methods for gloveboxes and Zone 1 ventilation duct.

Site wide packaging procedures (References 1 and 2) mandate line generated material will be considered TRU/TRM waste until the final assay of the waste is completed.

Based on the radiological contamination levels of the feedstock, the internal parts of the pilot scale fluid bed incinerator will be considered LL/LLM and the internal parts of the full-scale incinerator will be considered TRU/TRM waste until the final assay of the waste is completed.

In process samples will be taken as necessary to determine the radiological content of any chemicals during deactivation (see Section 7.7).

Piping In-process samples from solutions being drained from tank and building systems during deactivation will confirm contamination levels within the piping and determine if additional information is needed to support decommissioning the phase and final building surveys.

Ventilation Systems Scans completed for SNM holdup will assist in selecting decontamination/ waste disposal methods for the Zone 1 ventilation system.

Soil Contamination and Buried Equipment Soil contamination and buried equipment is beyond the scope of D&D. Environmental restoration personnel will assume responsibility for the area and develop appropriate sampling plans.

7.2 Asbestos

7.2.1 Existing Data and Process Knowledge

Asbestos data in Appendix C was compiled from sample results and a 1993 asbestos inventory. Information in the appendix and process knowledge indicate that asbestos has been detected in the following areas: office area floor tiles; original building walls and some interior walls; black tar on the Building 776/777 roof; structural steel beams used in the construction of the roofs are encased in asbestos; piping insulation located on the roof and first and second floors; and equipment insulation.

There is potential for asbestos to be present in the following areas: as insulation inside the cement blocks in Room 127 and Room 134E and in other equipment and piping insulation and ceiling and floor tiles other than those already listed in Appendix C.

7.2.2 Additional Sampling and Analysis Required

Existing process knowledge in conjunction with in-process sampling indicates enough information to resolve issues and meet regulatory criteria. The type of in-process sampling done will vary depending on the location and the type of asbestos containing material present. Guidelines for asbestos sampling will be a included in the in-process characterization criteria in the DOP and PEP.

The guidelines will include details of mapping that will be done to determine if asbestos is contained in the ceiling and floor tiles, in roofing tar, and in the cement brick insulation.

For the most part, pipe and equipment insulation will not be included in the in-process characterization criteria for the following reasons. The asbestos information in Appendix C indicates the first floor and roof piping contains asbestos. The original insulation on pipes in Building 776 either burned or was removed as a part of decontamination after the 1969 fire; positive asbestos tests indicate the insulation replaced after the fire was also asbestos. Therefore, all insulation on the first floor will be removed as asbestos unless newly replaced areas are identified and tested.

The asbestos information in Appendix C indicates that asbestos has been detected or observed extensively in piping and equipment insulation in the second floor utilities area. Over the years damaged areas of this insulation has been repaired so that asbestos and small sections of non-asbestos insulation is interspersed on piping runs and equipment. Due to the difficulty of separating asbestos and non-asbestos insulation in this case, all insulation on the second floor will be considered asbestos unless large areas are identified that are known to be non-asbestos. These areas will be confirmed by analytical tests prior to strip out.

7.3 Lead and Other Heavy Metals

7.3.1 Existing Data and Process Knowledge

Lead, cadmium, mercury, selenium, barium, chromium and silver are the heavy metals present in Buildings 776/777. Lead can be found throughout the building in the following items: lead aprons; lead tape; leaded glass; solder in printed circuit boards; lead shielding on gloveboxes, equipment, and walls; leaded gloves; sludge in the Kathabar units; incandescent lights; and paint that is on equipment walls, ceilings, floors, and piping.

Other heavy metals can be found throughout the building. Mercury is present in sodium vapor lights, fluorescent lights, thermometers, switches, incandescent lights, magnahelics and other instrumentation. Barium is present in leaded glass and TK1103 sludge. Chromium is present in the Fluid Bed Incinerator (FBI) equipment, FBI oil, TK1103 sludge, and Kathabar sludge. Cadmium may be present in Kathabar unit sludge and in FBI oil. Silver may be present in the TK1103 sludge. Other heavy metals in addition to lead may be present in paint.

7.3.2 Additional Sampling and Analysis Required

Existing information in conjunction with in-process sampling will provide enough information to resolve issues and meet regulatory criteria. Lead and other heavy metals will be included in the in-process characterization guidelines.

The in-process characterization criteria will contain guidance for confirming the presence of lead and other heavy metals in paint, chrome in the incinerator equipment and insulation. Sodium vapor, incandescent and fluorescent lights will be managed as hazardous waste and do not require further sampling. Tank sludges will be sampled during deactivation and do not require additional sampling.

7.4 PCBs

7.4.1 Existing Data and Process Knowledge

Potential sources of PCBs throughout the building include ballasts in fluorescent light fixtures, capacitors, electrical transformers, oils and chlorinated solvents, There is the possibility paint used throughout the facility may contain PCBs.

7.4.2 Additional Sampling and Analysis Required

In-process sampling for PCBs will be required in some cases. Criteria for PCB in-process sampling will be included in the PEP and DOP. The criteria will include sampling paint for PCBs.

Since all organic solutions (oils, chlorinated solvents, etc.) will be drained from the equipment and tested for PCBs during deactivation, organic solution sampling will not be included in the in-process characterization criteria. The ballasts within the fluorescent light fixtures may contain PCBs. A final PCB determination will be

made when the ballasts are removed based on markings; if the ballasts are not marked as containing no PCBs, they will be managed as PCBs. Therefore, these items will not be included in the in-process characterization criteria.

7.5 Beryllium

7.5.1 Existing Data and Process Knowledge

Beryllium operation areas included areas where machining was done and areas for handling and storage. These areas are shown in Figure 14. Appendix D contains a listing of beryllium sample results.

7.5.2 Additional Sampling and Analysis Required

Existing data in conjunction with in-process sampling will provide enough information to resolve issues and meet regulatory criteria. Beryllium sampling will be included in the in-process characterization criteria.

7.6 Special Nuclear Material Hold-up

7.6.1 Existing Data Process Knowledge

Special nuclear material hold-up is a safeguards and security issue. Safeguard scans for remaining holdup will be completed in FY99 and special nuclear material above safeguard termination limits will be removed by the end of FY00.

High hold up areas will be identified by the use of low resolution scans and the amount of material will be identified by high resolution scans. The analysis is affected by other equipment components in the vicinity of that which is being reviewed. These effects may produce error or increased uncertainty in the analytical results. Precise location of the hold-up is not known and it is expected that the hold-up is spread throughout the tanks, gloveboxes, ventilation ducts and piping. Much of the SNM is manually unrecoverable and dispersed through out system components. This material may be in the form of sludge and scale, or is deposited in porous substrates.

The SMN hold-up identified by scanning will be removed to safeguard termination levels if physically possible; scans will be completed at the end to determine removal goals have been met. The SNM hold-up remaining when termination

49

levels have been reached will be in areas that cannot be reached until equipment is taken apart during D&D.

7.6.2 Additional Sampling and Analysis Required

No additional scans are required in addition to the scans already planned to meet safeguards and security requirements for SNM removal.

7.7 Chemicals

7.7.1 Existing Data and Process Knowledge

As a result of the Waste Chemical Program (WCP) mandated by Consent Order 97-08-21-02, waste chemicals will be removed from all facilities in the Building 776/777 cluster during deactivation. The exception to this are excluded chemicals and chemicals that will be used for D&D. Excluded chemicals are those inside of inoperable equipment which cannot be accessed at the present time. These chemicals will be removed during D&D activities as equipment is taken apart.

Facility walkdowns identified machine oils and other chemicals in tanks and process equipment that required sampling for radioactive contamination, plutonium content, and PCBs. Chemical solutions contained in piping and equipment that will require in-process sampling during deactivation activities are identified in Appendix A.

7.7.2 Additional Sampling and Analysis Required

Existing information in conjunction with in-process sampling completed during deactivation is adequate to resolve issues and meet regulatory criteria. Containerized excluded chemicals and D&D chemicals will be managed according to chemical waste disposal procedures. Therefore, additional in-process sampling is not required for these chemicals.

7.8 Sources

7.8.1 Existing Data and Process Knowledge

Most accountable and unaccountable sources located in Buildings 776/777 will be removed as a part of deactivation activities. Accountable sources to be removed include ^{137}Cs, ^{60}Co, ^{226}Ra, and ^{239}Pu. Unaccountable sources to be removed included sources from alpha mets, combos, and RCT test sources.

The only sources that will remain in the building throughout D&D activities are selective alpha air monitors (SAAM's), continuous air monitors (CAM's) and radiological detection instrumentation that are needed on a daily basis.

7.8.2 Additional Sampling and Analysis Required

Locations of SAAM's and CAM's are on file in the Radiological Control Office. No additional sampling and analysis is required.

8.0 BUILDING 776/777 CLUSTER OUTBUILDINGS SCOPING AND RESONNAISSANCE LEVEL CHARACTERIZATION RESULTS

8.1 Building 701 Research Laboratory Scoping and Reconnaissance Level Characterization Results

Radiological contamination, asbestos, heavy metals, PCBs and chemicals are the contaminants and hazards present in Building 701. The issues and regulatory criteria related to these hazards are protecting worker health and safety, protecting the environment, and waste disposal.

The building has had radiological contamination due to a process waste tank backing up into the building and from radiological contamination transferred by personnel from Building 730. The building has since been decontaminated. Final building surveys will verify radiological contamination levels in the building.

Asbestos sample results in Appendix C indicate that the sprayed on insulation on the walls and ceilings in Building 701 do not contain asbestos. Sample results indicate that the Beckley furnace located in the building does have asbestos insulating material.

The insulation sprayed on the ceiling and walls will be included in the in-process characterization criteria so a determination can be made if all the insulation on the ceiling and walls is non-asbestos. No further sampling and analysis is required for the furnace insulation. The asbestos inside the furnace will be stripped and disposed of as asbestos waste.

Florescent light bulbs in the building contain mercury and there are leaded gloves; both will be managed as hazardous waste. Ballasts in florescent light fixtures may contain PCBs. A final PCB determination will be made when the ballasts are removed based on markings; the ballasts will be managed as PCBs if they are not marked as containing no PCBs. Therefore, no additional sampling is required for heavy metals or PCBs.

Liquids from motors, pumps, and piping will be drained during deactivation, therefore, no additional sampling will be required for chemicals.

8.2. Building 702 Pump House Scoping and Reconnaissance Level Characterization Results

Asbestos, heavy metals, and chemicals are the hazards that might be present in Building 702. The issues and regulatory criteria related to these hazards are protecting worker health and safety, protecting the environment and waste disposal.

Asbestos might be present in piping insulation inside and outside the building. Since most of the original insulation is still in place, and since asbestos was still

51

used as insulation when the facility was built, it will be assumed that the insulation is asbestos. Therefore, no additional sampling and analysis is required for the piping insulation. The cooling tower baffles may contain asbestos; the baffles will be added to the asbestos in-process characterization criteria.

The incandescent lights in the building contain lead and will be managed as hazardous waste. Therefore, no additional sampling is required.

Containerized chemicals in the building will be removed during deactivation. Liquids in motors, pumps and piping will also be drained during deactivation. Therefore, no additional sampling is required for chemicals.

8.3 Building 703 Pump House Scoping and Reconnaissance Level Characterization Results

Asbestos, mercury and PCBs are the hazards present in Building 703. The issues and regulatory criteria related to asbestos, mercury, and PCBs are protecting worker health and safety, protecting the environment and waste disposal.

One sample result in Appendix C indicates the insulation on the inside piping contains asbestos. Since one sample result indicates the insulation is asbestos, and since asbestos was still used as an insulation material when the facility was built, it will be assumed that the insulation is asbestos. Therefore, no additional sampling and analysis is required.

The fluorescent light bulbs contain mercury and will be managed as hazardous waste. The ballasts within the fluorescent light fixtures may contain PCBs. A final PCB determination will be made when the ballasts are removed based on markings; the ballasts will be managed as PCBs if they are not marked as containing no PCBs.

8.4 Building 710 Steam Reducing Station Scoping and Reconnaissance Level Characterization Results

Asbestos, heavy metals, and PCBs are the hazards that might be present in Building 710. The issues and regulatory criteria related to these hazards are protecting worker health and safety, protecting the environment and waste disposal.

Samples taken to date (see Appendix C) indicate that the inside piping insulation in Building 710 does not contain asbestos. The piping in the building will be included in the in-process characterization criteria; mapping will be done to determine if the existing sample results can be used to demonstrate the insulation is non-asbestos.

The fluorescent light bulbs in the building contain mercury and will be managed as hazardous waste. No additional sampling is required for heavy metals.

The ballasts in the fluorescent light fixtures may contain PCBs. A final PCB determination will be made when the ballasts are removed based on markings; the ballasts will be managed as PCBs if they are not marked as containing no PCBs.

8.5 Building 712 and 713 Cooling Tower Scoping and Reconnaissance Level Characterization Results

Asbestos and heavy metals are the hazards that might be present in Buildings 712 and 713. The issues and regulatory criteria related to asbestos are protecting worker health and safety, protecting the environment and waste disposal.

Asbestos might be present in piping insulation inside and outside the buildings and in the cooling tower baffles. Since most of the original piping insulation is still in place, and since asbestos was still used as insulation when the facilities were built, it will be assumed that the piping insulation is asbestos. Therefore, no additional sampling and analysis is required for piping insulation. The cooling tower baffles will be included in the in-process characterization criteria.

The incandescent lights contain lead. The lights will be managed as hazardous waste, therefore, no additional sampling is required.

8.6 Building 712A Propane Valve House Scoping and Reconnaissance Level Characterization Results

Lead and mercury are the hazards present in Building 712A. The issues and regulatory criteria related to heavy metals are protecting worker health and safety, protecting the environment and waste disposal. The mercury is contained in two switches. Lead is contained in incandescent lights. The switches and lights will be managed as hazardous waste, therefore, no additional sampling is required.

8.7 Building 713A Valve Pit Scoping and Reconnaissance Level Characterization Results

Lead is a hazard that is present in Building 713A. The issues and regulatory criteria related to heavy metals are protecting worker health and safety, protecting the environment, and waste disposal criteria. Lead is present in incandescent lights. These lights will be managed as hazardous waste, therefore, no additional sampling is required.

8.8 Building 730 Pit Scoping and Reconnaissance Level Characterization Results

Radiological contamination is present in the Building 730 Pit. The issues and regulatory criteria related to radiological contamination are protecting worker health and safety, protecting the environment and waste disposal. The radiological contamination resulted from radioactive liquids handled in the pit. Existing radiological contamination surveys combined with in-process surveys will provide enough information to protect worker health and safety, to protect the environment and to characterize waste. No additional sampling is needed at the present time.

8.9 Building 781 Helium Pump House Scoping and Reconnaissance Level Characterization Results

Lead and chemicals are hazards that may be present. Issues and regulatory criteria related to lead and chemicals are protecting worker health and safety,

protecting the environment, and waste disposal. Incandescent light bulbs in the building contain lead; the light bulbs will be managed as hazardous waste, therefore, no additional sampling is needed for lead. There is a cylinder of helium in the building will be removed during deactivation, therefore, no additional sampling is needed for chemicals.

9.0 REFERENCES

1. 4-D99-WO-1100, "Solid Radioactive Waste Packaging Inside of the Protected Area"

2. 1-M12-WO-4034, "Solid Radioactive Waste Packaging Requirements"

54

Process Number: 776_777-001-00

Title: SET 1 - Room 125 and Dimensional Metrology Lab Glovebox

Physical Description:
Room 125 is the Dimensional Metrology Lab, which was used for the calibration of gauges by the Metrology organization. The major equipment in the room is a long glovebox called the TGIS glovebox. The glovebox passes through the east wall of Room 125 and connects to the Development Line in Room 131. There are a number of gauges and surface plates (granite blocks) of various sizes, in addition to hand tools within the glovebox.

Process Description:
This area is indicated as Room 126 on a 1956 blueprint. The original Room 125 no longer exists and is part of Room 430 (reference drawing 1-7971-76). The glovebox was added to the room after the 1969 fire (reference drawing RF-AG/76-L3). This area was originally a laundry (reference 1955 floor plan). The laundry was removed in the 1960s.

The glovebox is very clean by appearance but the contents of the glovebox are assumed to be Pu contaminated. Prior to 1973, the Nuclear Materials Safety Limits (NMSLs) for the glovebox allowed the contents of a part carrier in the glovebox. The item to be placed in the glovebox was allowed to be "hosed off" in the connecting section to the Development Line. There is a reference to a comparator glovebox in a 1970 NMSL. There is no other documentation regarding another glovebox or its use. The glovebox was not permitted to contain greater than contamination levels of Pu by the NMSLs (i.e. no Pu processing) after 1973 (reference history copy of CD70-3059).

The operations within the room consisted of gage calibration. Contaminated tools were calibrated within the glovebox while uncontaminated tooling was calibrated in Room 125. There are cabinets with calibration standards and worktables on the north side of Room 125.

Constituent	Present?	Comments
Asbestos	No	There are no floor tiles, insulation, or fire blankets associated with this set.
Beryllium	Yes	Based on building records, beryllium metal was not processed in this area. However, beryllium contaminated clothes could have been laundered in the 1950s/1960s and beryllium components could have been located on carts that were moved through or staged in this area. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Ethyl alcohol, 1,1,1-trichloroethane and oil were used in this area up to the time that operations were suspended (reference archived WSRIC 777-15).
Lead and other heavy metals	Yes	The paint on the floor could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent lights can contain mercury. The gloves on the glovebox contain lead. There is no leaded glass or lead shielding on the glovebox based on the walkdown documentation.

Constituent	Present?	Comments
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. There are no detectable levels of PCBs in the lubricating oil used in the room, based on historical analysis of the oil and the MSDS. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not determined	Gloveboxes will be scanned for SNM holdup during FY99 and FY00. SNM holdup is not expected in this set since the criticality limits were "No Fissile Material"
Radioisotope Sources	No	There are no sources associated with this set
Radiological	Yes	The gloveboxes are expected to be contaminated $>10^6$ dpm Pu on the inner surfaces. There is fixed contamination throughout the facility beneath the paint on the floor and original walls from the 1969 fire and major leaks from the gloveboxes. Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The metal walls of the room are assumed to have little if any contamination since they were installed after the 1969 fire. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates up to 10^6 cpm.

Process Number: 776_777-002-00

Title: SET 2 - Rooms 126, 132, 133, 137B

Physical Description: All of the rooms in this set are interior rooms in the building. Rooms 132, 133, and 137B are rooms constructed with cinderblock walls. Room 126 has no north or south walls. There are double metal doors on north and south side of Room 126. Columns-11 - 14 and D - E, roughly bound the set.

Process Description: Room 126 and 137B were not part of the original building construction. Room 126 and 137B are walkways from Room 134E to Room 131. Room 126 was originally designated as Room 124. Cinderblock walls with two sets of double doors were added in a hallway to create Room 137B sometime after the 1969 fire. There is no indication any "process" existed in this area.

Rooms 132 and 133 were part of the original construction of the building but have been slightly modified over the history of the building. Room 132 is currently used to store maintenance tools and supplies.

Room 133 is currently includes a RCRA satellite collection area for used light bulbs. Room 133 was originally used as a paint shop. A paint trap was constructed in the floor, on a process waste line, as part of the original building floor construction. The walls for Room 151, which was originally west of Room 133, were removed prior to 1968. The wall removal added extra space to Room 133.

Constituent	Present?	Comments
Asbestos	No	There are no floor tiles, insulation or fire blankets associated with this set

Constituent	Present?	Comments
Beryllium	No	Based on building records, beryllium metal was not processed in this area. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	No	These rooms did not contain chemical processes. Containers chemicals such as solvents, paint, duct sealer have been stored in this area in the past.
Lead and other heavy metals	Yes	The paint on the floor could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively. The solder and printed circuit boards contain regulated quantities of lead.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. The transformers in the room are dry-type transformers. Dry-type transformers do not use dielectric fluid and therefore do not contain PCBs. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	No	There are no areas for SNM holdup in this set.
Radioisotope Source	No	There are no sources associated with this set.
Radiological	Yes	There is fixed contamination throughout the facility beneath the paint on the floor and original walls from the 1969 fire and major leaks from the gloveboxes. Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates up to 10^6 cpm.

Process Number: 776_777-003-00

Title: SET 3 - Hydraulic oil system, 2nd floor in Room 233A

Physical Description: The Rexroth hydraulic system and ancillary equipment in Room 233A

Process Description: The hydraulic system in Room 233A supported the Hydroform press (Glovebox 606, Set 4) in Room 131. The hydraulic system provides the force necessary to cold form parts in the press. The hydraulic system was installed with the new Hydroform in the 1980s (reference utilities tape narrated by retired utilities manager).

Constituent	Present?	Comments
Asbestos	No	There are no floor tile, insulation or fire blankets associated with this set.
Beryllium	No	Based on building records, beryllium metal was not processed in this area. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	The unit contains a significant quantity of hydraulic fluid (oil).

57

Constituent	Present?	Comments
Lead and other heavy metals	Yes	The paint on the floor could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent lights can contain mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Texaco Regal oil does not contain PCB, based on historical analysis of the oil and the MSDS. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	The hydraulic system did not contain SNM.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	There is fixed contamination throughout the facility beneath the paint on the floor and the original walls from the 1969 fire. Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a range of 10^3 to 10^4 cpm.

Process Number: 776_777-004-00

Title: SET 4 - Portion of Room 131 east/west D-Line and Gloveboxes 601, 602, 604, 605, 606, 608, and 612

Physical Description:
This set is the westernmost portion of the Development Line extending from the "sheep dip" to the west wall of Room 131. This portion of the Development Line contains a gravity roller conveyor enclosed within a glovebox with several attached gloveboxes. This portion of the Development Line included metal working and machining processes.

Process Description:
The Development Line was originally known as the Cafeteria or Cafeteen Line, since it was constructed in a room that was originally used as an eating area. In 1964, the portion of the line included in Set 4 was installed. The installation print for the line indicates the "sheep dip" but it is not on the 1956 print. The conveyor installation required the removal of a north-south wall along Column line 11 that appears in on a 1956 print but be removed in the 1964 print (reference 1-7971-76 and RF-AG/76-L3). Based on a 1964 drawing of the line, the original gloveboxes in this area were for machining (including lapping), ultrasonic cleaning, and a centrifugal machine (reference RF-AG/76-L3). It is assumed trichloroethylene was used in the ultrasonic cleaner. By 1968, a storage glovebox was added to the line (reference E-14376-12). None of these gloveboxes remain today.

The metal working gloveboxes and equipment, that remain today, were installed in 1969 to replace the Pu metal working equipment that was lost in the 1969 fire (reference Status of RF fire recovery). The metal working equipment within the gloveboxes includes a rolling mill (Glovebox 601), blanking ram/scrap cutter (Glovebox 602), annealing furnaces (Gloveboxes 604 and 608), and a hydroform press (Glovebox 606). The rolling mill was used to cold-roll Pu ingots to the thickness needed for forming blanks. Lubricating oil, hydraulic oil, and carbon tetrachloride were used in the rolling operation (reference OSA 777.065). Blanks were cut from the rolled Pu metal sheet. The cutting was accomplished by placing the rolled ingot on a

58

circular steel rule die on the bottom platen, lowering the upper head against the rolled ingot, and pressing the ingot against the die to cut a circular blank (reference OSA 777.066). The hydroform press was used to "punch" a part from the circular blank. The annealing furnaces were used to stress relieve blanks (pre-form annealing) and formed parts (post-form annealing). Material was moved in stainless steel carriers by sliding on floor or the roller conveyors.

The rolling mill was last operated in the mid 1980s for a few months. Other than this usage, the metal working equipment has not been operated for production purposes since the processes were transferred to Building 707 in the 1970s. This rolling mill may have been used in Building 883 prior to its installation in Building 883 (reference mill drawing 18772). A Hydroform press and glovebox was installed in Room 131 in the late 1980s but never went "hot". The new press replaced an existing press that had not been in use. An Operational Safety Analysis for pressing aluminum blanks to qualify the equipment was developed (reference OSA 777.061). It is not clear if the press was used to press aluminum blanks.

Glovebox 605 contains a Monarch lathe that was used to disassemble weapons assemblies or remove metal samples from parts. Materials were introduced or removed through an airlock on the west side of the glovebox or through the connecting section to the Development Line. In addition to plutonium contamination, minor beryllium or vanadium contamination is possible within the glovebox. Since this is a wet machining process, it is assumed that halogenated solvents (CCl_4 or Freon TF) were used in the glovebox. Liquids in this box were filtered prior to removal in a bottle.

Glovebox 612 was used to store contaminated tooling for processes in this area. There is a bank of Ful-Flo (cartridge) filters in this glovebox. Waste oil collected in slab tank oil carts by maintenance was pumped out of the carts through these filters. Minor oil and solvent (CCl_4 or Freon TF) contamination is possible in this box.

Constituent	Present	Comments
Asbestos	No	There are no insulation or fire blankets within the gloveboxes
Beryllium	Yes	The criticality limits for Glovebox 605 allowed the machining of beryllium + plutonium. There are no records of beryllium metal being processed in the remaining gloveboxes in this set.
Chemicals	Yes	Carbon tetrachloride and Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) were used as solvents in several of these gloveboxes. Texaco Regal #643 lubricating oil was used as a coolant to cut Pu parts. Oil was used on the rolling mills when ingots were rolled. There is a hydraulic reservoir above Glovebox 602. All liquids will be drained prior to beginning decommissioning activities. It is anticipated that the interior surfaces of the gloveboxes that contained solvents can not be cleaned to meet a clean debris surface.
Lead and other heavy metals	Yes	There is lead shielding and leaded gloves on the gloveboxes. The paint on the gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted gloveboxes. Leaded glass contains regulated quantities of barium and lead.
PCBs	No	There are no detectable levels of PCBs in the lubricating oil based on historical analysis of the oil and the MSDS. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Yes	Several of the gloveboxes currently contain significant Pu holdup, which will be remediated prior to decommissioning. No measurable U holdup has been detected to date.

59

Constituent	Present	Comments
Radioisotope Sources	No	There no sources associated with this set.
Radiological	Yes	The gloveboxes are expected to be contaminated >10^6 dpm Pu on the inner surfaces. Several of the gloveboxes have lesser fixed contamination on the exterior, which are individually marked

Process Number: 776_777-005-00

Title: SET 5 - Portion of Room 131 east/west D-Line and Gloveboxes 614 - 617 and 619 - 622

Physical Description:
The portion of the Development Line included in Set 5 extends east from the "sheep dip" to the western edge of the north-south chainveyor section in Room 131. This portion of the Development Line includes a chain conveyor (chainveyor) enclosed within a glovebox with several attached gloveboxes. This portion of the Development Line supported machining and inspection processes. There are four lathes, a jig borer, and three inspection/storage gloveboxes in Set 5.

Process Description:
The Development Line was originally known as the Cafeteria or Cafeteen Line, since it was constructed in a room that was originally used as an eating area. The only gloveboxes in this area that predate the 1969 fire are Gloveboxes 614 and 616. These gloveboxes were originally numbered as 206-328 and 206-329. Gloveboxes that have been removed in the past from this portion of the line include a three-spindle machine and a centrifugal machine (reference E-14376-12). There are no available records to indicate when these gloveboxes were installed or removed.

Gloveboxes 614, 616, and 620 all contain lathes. The lathes were used to wet machine Pu parts. Machining oil and the associated cleaning solvents (carbon tetrachloride and Freon TF) were used in the machining processes within the building. Oil was recirculated within the glovebox until it was no longer usable. The used oil/solvent mixture was filtered through a Ful-Flo (cartridge) filter prior to being pumped to a pencil tanks in Room 131. Carbon tetrachloride was piped into Gloveboxes 614 and 616. The Pu chips generated by these lathes were placed in chip cans (cans with metal screen bottoms) and moved on the chainveyor to the briquetting press. Parts to be machined and machined parts were moved to and from the lathes on the chainveyor in bowl-shaped part carriers.

The jig borer in Glovebox 615 and Monarch EE lathe in Glovebox 617 were in the process of being installed when production terminated in 1989. These gloveboxes are open to the room atmosphere and have therefore not been used for Pu processing.

Gloveboxes 619, 621, and 622 could be used for storage of part carriers or the inspection of parts. Parts could be removed from the part carriers joined with another part to form a subassembly prior to inspection. The parts could be hand washed (but not submerged in liquid) prior to inspection on a surface plate (reference criticality limits).

Constituent	Present	Comments
Asbestos	No	There are no insulation or fire blankets within the gloveboxes
Beryllium	No	There are no records of beryllium metal being machined in this area.

60

Constituent	Present	Comments
Chemicals	Yes	Carbon tetrachloride and Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) were used as solvents in these gloveboxes. Texaco Regal #643 lubricating oil was used as a coolant to cut Pu parts. All liquids will be drained prior to beginning decommissioning activities. It is anticipated that the interior surfaces of the gloveboxes that contained solvents can not be cleaned to meet a clean debris surface.
Lead and other heavy metals	Yes	There is lead shielding and leaded gloves on the gloveboxes. The paint on the gloveboxes could contain lead or other RCRA heavy metals. ~~Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted gloveboxes~~. Leaded glass contains regulated quantities of barium and lead.
PCBs	No	There are no detectable levels of PCBs in the lubricating oil based on historical analysis of the oil and the MSDS. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Yes	Several of the gloveboxes currently contain significant Pu holdup, which will be removed prior to decommissioning. No measurable U holdup has been detected to date.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The gloveboxes are expected to be contaminated >10^6 dpm Pu on the inner surfaces. Several of the gloveboxes have lesser fixed contamination on the exterior, which are individually marked.

Process Number: 776_777-006-00

Title: SET 6 - Portion of Room 131 north/south D-Line and Gloveboxes 626 - 628, 630, 632, 636, and 642

Physical Description:
The portion of the Development Line included in Set 6 extends north from the Building 707 crossover chainveyor in Room 120 , through Room 131, and to the "sheep dip" on the south side of Room 134E. This portion of the Development Line contains two chain conveyors (chainveyor) enclosed within a glovebox with several attached gloveboxes and one detached glovebox (Glovebox 642). In addition, the Dimensional Metrology Laboratory (DML) glovebox from Set 1 is attached to this portion of the Development Line. This portion of the Development Line supported machining and inspection processes. There are a jig borer, a lathe, a 5-axis mill, and an optical comparator, a Pu chip briquetting press, a Sheffield gauge and three inspection/storage gloveboxes in Set 6.

Process Description: The Development Line was originally known as the Cafeteria or Cafeteen Line, since it was constructed in a room that was originally used as an eating area. The conveyor line, except for the 707 crossover connection, was installed prior to 1968. Prior to 1968, there were no gloveboxes attached to the conveyor (reference E-14376-12).

The jig borer in Glovebox 626 was used to drill holes in Pu parts. The parts and chips were handled on the chainveyor in a similar fashion to the lathe or mill.

Gloveboxes 627 and 636 contain a lathe and 5-axis mill, respectively. Machining oil and the associated cleaning solvents (carbon tetrachloride and Freon TF) were used in the machining processes within the building. Oil was recirculated within the glovebox until it was no longer usable. The used oil/solvent

mixture was filtered through a Ful-Flo (cartridge) filter prior to being pumped to a pencil tank in Room 131. The Pu chips generated by the lathe or mill were placed in chip cans (cans with metal screen bottoms) and moved on the chainveyor to the briquetting press. Parts to be machined and machined parts were moved to and from the lathes on the chainveyor in bowl-shaped part carriers.

Gloveboxes 628 and 632 could be used for storage of part carriers or the inspection of parts. Glovebox 628 featured an optical comparator while Glovebox 632 contains a Sheffield gauge. The parts could be hand washed (but not submerged in liquid) prior to inspection (reference criticality limits). A 1978 criticality limit allowed U-235 to be in an optical comparator in Room 131 (reference page 151 NS78-300). Since this is the only comparator in the room, there is a possibility of U-235 contamination in this equipment.

Glovebox 630 contains a briquetting press. Pu chips were brought into the glovebox in chip cans from the chainveyor. The chip can was degreased in a series of four pots filled with carbon tetrachloride that were located in the floor of the glovebox. After the chips were degreased, the chips were dumped out of the can into the feed hopper of the press. The chips were compressed by a hydraulic ram into a puck that was then sent to the foundry for recasting. Chips that contained both Pu and Be were not processed in this glovebox (reference criticality limits).

Glovebox 642 contained a bank of six Ful-Flo filter canisters and a filter cartridge drying rack. This glovebox and associated tanks were installed in 1972 (reference D24717 drawing series). This glovebox is tied to the carbon tetrachloride tanks in Set 7. Organic waste in these tanks was pumped through the filter bank in Glovebox 642 as required by the used machining coolant handling procedures.

Constituent	Present	Comments
Asbestos	No	There are no insulation or fire blankets within the gloveboxes
Beryllium	Yes	There are no records of beryllium metal being machined in this area. However, oil from Building 707 was potentially contaminated with beryllium. This possible beryllium contamination is not a safety concern due to (1) the suspension in oil and (2) and the controls necessary for the radiological contamination.
Chemicals	Yes	Carbon tetrachloride and Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) were used as solvents in these gloveboxes. Texaco Regal #643 lubricating oil was used as a coolant to cut Pu parts. All liquids will be drained prior to beginning decommissioning activities. It is anticipated that the interior surfaces of the gloveboxes that contained solvents can not be cleaned to meet a clean debris surface.
Lead and other heavy metals	Yes	There is lead shielding and leaded gloves on the gloveboxes. The paint on the gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted gloveboxes. Leaded glass contains regulated quantities of barium and lead.
PCBs	No	There are no detectable levels of PCBs in the lubricating oil based on historical analysis of the oil and the MSDS. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Yes	Several of the gloveboxes currently contain significant Pu holdup, which will be removed prior to decommissioning. No measurable U holdup has been detected to date.
Radioisotope Sources	No	There are no sources associated with this set.

Constituent	Present	Comments
Radiological	Yes	The gloveboxes are expected to be contaminated >10^6 dpm Pu on the inner surfaces. Several of the gloveboxes have lesser fixed contamination on the exterior, which are individually marked. The optical comparator may be contaminated with U-235.

Process Number: 776_777-007-00

Title: SET 7 - Tanks 1103, 1104, and 1106 (Compliance Areas 95.006 - 95.008) and associated ancillary equipment in Room 131

Physical Description: Three Raschig ring filled tanks in Room 131. Tanks 1103 and 1104 are 3"6" in diameter by 5' in height. Tank 1106 is 3'6" in diameter by 4' in height (reference 1993 closure plan).

Process Description:
Tanks 1103, 1104, and 1106 were installed in 1972 (reference prints). The tanks were used to store and ship contaminated organic waste from Building 777 to Building 774 for treatment. The waste was primarily used machining coolant (oil) with spent carbon tetrachloride solvent. Smaller amounts of Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane), vacuum pump oil, and sight gage oil were handled in the tanks (reference WSRIC history). The lubricating oil was used to predominately machine Pu parts, however, the oil was used to machine Pu + U (Room 134E, Building 777) and Pu + Be (A-Module, Building 707) Based on a 1972 assessment; the liquids in the organic waste system were predominately 643 light hydraulic oil and carbon tetrachloride. Other liquids included perchloroethylene, 645 heavy grade hydraulic oil, 10W -30 & 10W-40 motor oil, spray mist machine oil, vacuum pump exhaust condensate, and 689 criticality drain fluid (reference Buildings 776, 777, and 707 glovebox Drain System). The liquids from the lathes, density balances, etc. was filtered and pumped into several pencil tanks within the building. The liquid was then pumped from the pencil tanks though the filters in Glovebox 642 (Set 6) and into Tank 1104. After sampling and additional filtration (as necessary) the waste liquid was pumped into Tank 1103 for confirmatory sampling in preparation for pipeline transfer to Building 774. Tank 1106 is an overflow tank that is connected to Tanks 1103 and 1104. For a period of time (ending in the mid 1980s), similar liquid wastes from Building 707 C-Pit were shipped to the Building 777 tanks. Removal of the raschig rings began in August 1998.

Sludge from Raschig rings in Tank 1103 was analyzed for Pu and other metals as well as particle size in 1977. Barium and chromium content is reported as 1000 µg/g, with the lead level at 3000 µg/g. Results for the remaining RCRA metals (As, Cd, Hg, Se, Ag) were not reported (reference CRD-000077-007, Evaluation of solvents for removing sludge from lathe coolant tanks).

Constituent	Present	Comments
Asbestos	No	There is no insulation or fire blankets associated with the tanks.
Beryllium	Yes	There are no process records that indicate liquids within the tank generated in Building 776/777 contacted beryllium metal. However, some of the liquids from Building 707 could be beryllium contaminated. This possible beryllium contamination is not a safety concern due to (1) the suspension in oil and (2) and the controls necessary for the radiological contamination.

Constituent	Present	Comments
Chemicals	Yes	Carbon tetrachloride and Freon TF (1,1,2-trichoro-1,2,2-trifluoroethane) were used as solvents in the gloveboxes that generated the liquids. Lubricating oil was used as a coolant to cut Pu parts. In the 1970s, perchloroethylene was used in place of carbon tetrachloride in certain operations. It is anticipated that the interior surfaces of the tanks can not be cleaned to meet a clean debris surface based on the experience gained from removal of the pencil tanks.
Lead and other heavy metals	Yes	The paint on the tanks could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted tank. Based on historical analysis of the sludge within the tanks, there are detectable levels of barium (1000 ppm), chromium (1000 ppm) and lead (3000 ppm) in the sludge. Additional sampling for metals such as As, Cd, Hg, Se, and Ag will be performed when the rings are removed.
PCBs	No	There are no detectable levels of PCBs in the lubricating oil based on historical analysis of the oil and the MSDS. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Yes	The tanks have significant Pu holdup. The U holdup has been estimated at less than one gram, based on holdup measurements. High hold-up levels will be reduced below safeguards termination limits during deactivation activities (ring and sludge removal).
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The tanks are assumed to be externally contaminated with Pu since they are in contamination control houses. The houses or tents were constructed to control the radiological contamination from pinhole leaks in the bottom of two of the tanks.

Process Number: 776_777-008-00

Title: SET 8 - Rooms 120, 130B, 131 (including Compliance Area 90.49), 131A, and Dock 1

Physical Description:
This set includes the remaining items in Room 131 that are not covered by Sets 4 - 7. Room 120 is an airlock between Building 777 and Building 778. A portion of the crossover chainveyor from Building 707, within Room 120, is included in Set 6. There is no further process equipment in Room 120.

Process Description:

Room 120 was added to the building after the 1969 fire.

The last usage of Room 130B during the production era was an office area for the Fabrication foremen The available records do not indicate any historical production-related processes that were housed in this room. This area was originally a portion of Room 122, which no longer exists (Reference Drawing 1-7971-76). Between 1956 and 1968, Room 130 was constructed. At the time of the 1969 fire, Room 130 was used as a tool crib (Reference Drawing E-14376-12). Rooms 130A (Set 66) and 130B were added at a later date by subdividing the area of the original Room 130.

64

The current room 131 area was designated as Rooms 114, 122, 127, 131, and 150 in on a 1956 drawing of the building. The walls for Rooms 122 and 127 were removed in 1964. Room 122 was a locker room (Reference RF-AG/76-A-1). The Room 131 area was originally used as a cafeteen, clothing issue and locker room (reference drawing 1-5103-77M). The wall separating Room 131 and 150 was removed after 1968. After the walls were removed the other rooms were redesignated as Room 131. Two small rooms were added, near Door 31D, after the original building construction (Reference drawing E-14376-12). The walls for these rooms were removed prior to the addition of Room 120. There were multiple floor drains and sink connections in the original construction. Since the floor drains and sinks are no longer in the rooms it is assumed the inlets were sealed and the piping in or below the flooring is abandoned in place (reference 1-7971-76). The "sheep dip" under the development line was added in 1964 (reference RF-AG/76-A1).

Room 131 is the location of the Development Line (Sets 4 through 6), three Raschig ring filled tanks (Set 7), and a drum storage area. Several pencil tanks were removed from Room 131 under RCRA closure plan in 1996.

Room 131A was constructed between 1956 and 1964 (Reference 1-7971-76 and E-14376-12). The room is designated as the tape room on a 1964 print. There is a transformer located outside the west wall on the same print. The available documentation for the facility indicates the only transformer that contained PCBs is transformer 776-4, which is outside the building. It is assumed that the room was used to store the tapes for the numerical control machines. Room 131A was last used for the storage of Dimensional Metrology Lab supplies. Eight supply cabinets are located in Room 131A.

Constituent	Present?	Comments
Asbestos	No	There are no floor tile, insulation or fire blankets associated with this set. The insulated pipe in the overhead is part of Set 82.
Beryllium	No	Based on building records, beryllium metal was not processed in this area. Beryllium components could have been located on carts that were moved through or staged in this area. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Carbon tetrachloride and Freon TF (1,1,2-trichoro-1,2,2-trifluoroethane) were used as solvents in the gloveboxes located in Room 134E. Lubricating oil was used as a coolant to cut Pu parts. This mixture leaked from the gloveboxes and tanks onto the floor in the past, but was cleaned up in accordance with decontamination practices or procedures in effect at the time of the spill.
Lead and other heavy metals	Yes	The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. Printed circuit boards in the control equipment will be removed and handled as RCRA waste, due to lead in the solder. The incandescent and fluorescent lights can contain lead and mercury, respectively.

Constituent	Present?	Comments
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. There are no detectable levels of PCBs in the lubricating oil used in the room, based on historical analysis of the oil and the MSDS. The transformers in the room are dry-type transformers. Dry-type transformers do not use dielectric fluid and therefore do not contain PCBs. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	There are no areas for SNM holdup in this set.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	There is fixed contamination throughout the facility beneath the paint on the floor and original walls from the 1969 fire and major leaks from the gloveboxes. Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates up to 10^6 cpm.

Process Number: 776_777-009-00

Title: SET 9 - Room 134E

Physical Description: This set includes all of the items within Room 134E except the gloveboxes, which are included in Sets 10 and 11. The set is roughly bounded by columns 11 – 14 and D – G.

Process Description: Room 134E was not a room in the original construction of the building. The area occupied by Room 134E was part of Room 134. Historically, the glovebox operations in this area of the building were Pu and Pu + enriched uranium machining. The north, south, and west walls of the room were added after the 1969 fire cleanup (reference E-14376-12). A 6" process waste line runs in or beneath the floor between column lines 11 and 12. Several safe or pencil tanks were removed from a rack on the west wall of the room in the mid-1990's. These tanks were used to store a carbon tetrachloride and oil mixture from machining operations.

Constituent	Present?	Comments
Asbestos	No	There is no insulation or fire blankets associated with this set. The insulated pipe in the overhead is part of Set 82.
Beryllium	No	Based on building records, beryllium metal was not processed in this area. Beryllium components could have been located on carts that were moved through or staged in this area. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Carbon tetrachloride and Freon TF (1,1,2-trichoro-1,2,2-trifluoroethane) were used as solvents in the gloveboxes located in Room 134E. Lubricating oil was used as a coolant to cut Pu parts. This mixture leaked from the gloveboxes and tanks onto the floor in the past, but was cleaned up in accordance with decontamination practices or procedures in effect at the time of the spill.

Constituent	Present?	Comments
Lead and other heavy metals	Yes	The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item The leaded gloveport covers and leaded aprons in the cabinet contain lead. Printed circuit boards in the control equipment will be removed and handled as RCRA waste, due to lead in the solder. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. There are no detectable levels of PCBs in the lubricating oil used in the room, based on historical analysis of the oil and the MSDS. The transformers in the room are dry-type transformers. Dry-type transformers do not use dielectric fluid and therefore do not contain PCBs. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	There are no SNM holdup areas within this set.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	There is fixed contamination throughout the facility beneath the paint on the floor and original walls from the 1969 fire and major leaks from the gloveboxes. Several High Contamination Areas (HCAs) exist under the gloveboxes in Room 134E. The contamination is mainly in the form of Pu-contaminated oil. Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates up to > 10^6 cpm/cm^2

Process Number: 776_777-010-00

Title: SET 10 - Room 134E – Gloveboxes 505, 509, 751, 752, 624 and associated M-Line & north/south D-Line

Physical Description: This set is bounded by the bellows (chainveyor expansion joint) north of Glovebox 509 , the wall between Rooms 134E and 430 to the east (cut at bellows), the bellows on column line E to the south and the bellows east of Glovebox 749, on the west. There are five gloveboxes and two chainveyor sections included in this set. The equipment within the gloveboxes includes jig borer, a grit blaster/ultrasonic cleaner combination, and miscellaneous testing & maintenance tools. The north-south chainveyor section is known as the D-Line, R-Line, or North-South Line. The east-west chainveyor section is known as the M-Line or South Fabrication Line.

Process Description: The South Fabrication Line and North-South Line are configured the same today, in the Set 10 area, as shown in a 1968 drawing of the area (reference E-14376-12). However, there were three more gloveboxes attached to the chainveyor in 1968. Gloveboxes 509, 751, and 752 appear to be the same gloveboxes that exist today. Gloveboxes 505 and 624 could be the same gloveboxes that are present today but this can not be determined with the available records. Based on a 1973 revision to the glovebox layout for Building 777, Glovebox 624 was located in its present spot (reference E-19310-2).

67

There is not information available to indicated why this glovebox is numbered out of sequence with the other gloveboxes in this area.

Glovebox 505 houses equipment used for the non-destructive testing of non-fissile material (reference criticality limits). The glovebox is blanked-off from the chainveyor line.

Glovebox 509 contains a grit blaster and a ultrasonic cleaner/vapor degreaser combination. Plutonium parts were "serialized" in this box. A stencil was placed on the part with the appropriate identification numbers. The grit blaster was used to engrave the identification numbers into the part. After serialization, the part was cleaned in the ultrasonic cleaner. Based on past criticality limits, the ultrasonic cleaner used carbon tetrachloride in the 1970s (reference CD70-3059). Later, the cleaner was switched to 1,1,1-trichloroethane as the solvent. Parts were moved to and from the box on the chainveyor.

There are various power and hand tools within Glovebox 624. The power tools include a drill press and bench grinder. There are several part carriers and chainveyor pendants ("birdcages") within the glovebo It is assumed this box was used for repair of part carriers and pendants.

Glovebox 751 has a carbon tetrachloride connection. The glovebox drawing describes the glovebox as a "bubble for weighing material" (reference D15824). There is no internal equipment for this glovebox.

The jig borer in Glovebox 752 was used to drill holes in Pu parts. The parts to be processed were moved to and from the jig borer on the chainveyor. Chips generated by the process were placed in cans and moved from the glovebox on the chainveyor. There is a carbon tetrachloride and machine coolant (oil) connection to this box. Oil was used to cool the part being drilled while carbon tetrachloride was used to degrease the part. Carbon tetrachloride was used to clean the glovebox surfaces also.

Special considerations: Most of the areas beneath the chainveyors are posted as a High Contamination Area.

There is a one inch opening on the glovebox floor within the bellows section. This area is filled with particles and absorbed liquids from the chainveyor.

Constituent	Present	Comments
Asbestos	No	There are no insulation or fire blankets within the gloveboxes
Beryllium	No	There are no records of beryllium metal being handled in this area.
Chemicals	Yes	Carbon tetrachloride, 1,1,1-trichloroethane and Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) were used as solvents in these gloveboxes. Texaco Regal #643 lubricating oil was used as a coolant to cut Pu parts. All liquids will be drained prior to beginning decommissioning activities. It is anticipated that the interior surfaces of the gloveboxes that contained solvents can not be cleaned to meet a clean debris surface.
Lead and other heavy metals	Yes	There is lead shielding and leaded gloves on the gloveboxes. The paint on the gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted gloveboxes. Leaded glass contains regulated quantities of barium and lead.
PCBs	No	There are no detectable levels of PCBs in the lubricating oil based on historical analysis of the oil and the MSDS. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.

Constituent	Present	Comments
SNM Holdup	Yes	Glovebox 752 contains significant Pu holdup, which will be removed prior to decommissioning. No measurable U holdup in any of the gloveboxes has been detected to date.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The gloveboxes are expected to be contaminated >10^6 dpm Pu on the inner surfaces. Several of the gloveboxes have lesser fixed contamination on the exterior, which are individually marked.

Process Number: 776_777-011-00

Title: SET 11 Room 134E – Gloveboxes 746, 747, 748, 749 and associated M-Line

Physical Description: This set is includes the westernmost portion of the M-Line (or South Fabrication Line) bounded by the bellows east of the Glovebox 749 connection to the M-Line, on the east. There are four gloveboxes and approximately 25 feet of chainveyor included in this set. The equipment within the gloveboxes includes 4 numerical controlled lathes. The remaining parts of the M-Line are included in Sets 10 and 24.

Process Description: Prior to the 1969 fire, the east-west chainveyor system ran west into the area now occupied by the Supercompactor and Advanced Size Reduction. As part of the 1969 fire cleanup and movement of the Pu foundry to Building 707, the line west of Set 11 was removed. Gloveboxes 746 and 748 predate the 1969 fire while the other two gloveboxes (Gloveboxes 747 and 749) were installed after the fire (reference E-14376-12). Gloveboxes 747 and 749 was installed in the 1980s (reference criticality limits). Two additional gloveboxes were attached to chainveyor in 1968; one between the Glovebox 747 and 749 the second was attached where Glovebox 747 is now. There were additional chainveyor sections and gloveboxes west of the current end of the chainveyor line (reference E-14376-12).

The four lathes included in this set were used to wet machine Pu or Pu + enriched uranium parts. Chips generated by the process were placed in cans and moved from the glovebox on the chainveyor. The Pu chips were sent to the briquetting press on the Development Line and the Pu + U chips were processed in another building. Oil was used as the cutting fluid. Carbon tetrachloride was the major solvent used to remove oil from the parts or glovebox surfaces. Gloveboxes 747 and 749 had small tanks for Freon TF(1,1,2-trichloro-1,2,2-trifluoroethane), that was assumed to be used as solvent for cleaning parts.

Special considerations: Most of the areas beneath the chainveyor and around Gloveboxes 746/748 are posted as a High Contamination Area.

The lathes all have large, heavy bases. The bases on Gloveboxes 746 and 748 are wholly within the gloveboxes. The bases for 747 and 749 extend up from the floor approximately two feet before bolting to the glovebox .

There is a one inch opening on the glovebox floor within the bellows section. This area is filled with particles and absorbed liquids from the chainveyor.

Constituent	Present	Comments
Asbestos	No	There are no insulation or fire blankets within the gloveboxes
Beryllium	No	There are no records of beryllium metal being machined in this area.

Constituent	Present	Comments
Chemicals	Yes	Carbon tetrachloride and Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) were used as solvents in these gloveboxes. Texaco Regal #643 lubricating oil was used as a coolant to cut Pu parts. All liquids will be drained prior to beginning decommissioning activities. It is anticipated that the interior surfaces of the gloveboxes that contained solvents can not be cleaned to meet a clean debris surface.
Lead and other heavy metals	Yes	There is lead shielding and leaded gloves on the gloveboxes. The paint on the gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted gloveboxes. Leaded glass contains regulated quantities of barium and lead.
PCBs	No	There are no detectable levels of PCBs in the lubricating oil based on historical analysis of the oil and the MSDS. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Yes	Glovebox 746 contains significant Pu holdup, which will be removed prior to decommissioning. Several of the remaining gloveboxes in the set contain measurable Pu holdup, but do not require holdup removal prior to decommissioning. Gloveboxes 746, 748, and 749 contain less than 15 grams U holdup each.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The gloveboxes are expected to be contaminated $>10^6$ dpm Pu on the inner surfaces. Several of the gloveboxes have lesser fixed contamination on the exterior, which are individually marked.

Process Number: 776_777-012-00

Title: SET 12 - Rooms 401, 402, 402A, 403, 404, 405, 406, 407, 409, 410, 411

Physical Description: This set includes all of the items within these rooms. The set is bounded by columns 20 - 25 and A1 - C1.

Process Description: The rooms in this set were added as a building addition in 1966 except Rooms 402 and 402A (reference Building 776 Data File). This addition is referred to as Building 777B. The configuration of the rooms has not changed since the original construction except for a wall was installed to create Room 408 in the east end of the original Room 404 footprint (reference E-13940-3). Rooms 402 and 402A were part of the original building construction.

Room 401, 403, 405, 409, 410, and 411 do not contain processes. Room 401 is a hallway. Rooms 403 and 409 are landings and stairways leading to the second floor office (Set 70). A janitor's closet is housed in Room 405. Room 410 is a storage area under the stairs. This room currently is used to store weight lifting equipment. Room 411 is an airlock that provided access to the MAA. This MAA entrance has been locked for routine entry since the late 1980s. Based on available documentation, the use of these rooms has not changed over the facility history.

Room 402 is an office to support the secure telecommunications equipment in Room 402A. Room 402A is a vault-type room. These rooms were originally used as an inspection & records office and records vault (reference drawing 1-5103).

70

Room 404 and 406 contain a locker room, rest rooms, and shower facilities. These rooms have housed these facilities since the addition was completed.

Room 408 currently houses a workout facility. A portion of the lockers in Room 404 were removed to create Room 408. Room 408 has been used for Non-Destructive Testing R&D (NDT) in the 1970s (reference Riddle markup of prints) and Machining and Gauging R&D (reference 3/95 Building 776/777 floor layout). NDT of beryllium parts and storage is listed on the Location of Known Beryllium Areas used for Building 776/777 indoctrinations.

Constituent	Present?	Comments
Asbestos	Yes	Rooms 405 and 410 have tile floor. It is assumed that floor tile exists under the carpet in Room 408. Representative samples of the floor tile and pipe insulation will be analyzed throughout the facility prior to initiating decommissioning activities.
Beryllium	Yes	Based on the type of work performed historically in Room 408, beryllium was present. However, specific information on the metals handled by the R&D groups in Room 408 is not available Beryllium contamination has been detected in Room 401. Additional surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Several excess chemicals (household cleaners and maintenance fluids). There is no indication of other chemical use in this area.
Lead and other heavy metals	Yes	The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	There are no SNM holdup areas within this set.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	There is fixed contamination in Rooms 402, 402A, and 411 beneath the paint on the floor and original walls from the 1969 fire. Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates up to 10^5 cpm

Process Number: 776_777-013-00

Title: SET 13 - Rooms 416, 416B, 417, 418, 419, 420, 429, 431, 431A, 431B

Physical Description: This set includes all of the items within these rooms. The set is roughly bounded by columns 18 - 21 and A - D.

Process Description: This area of the building is part of the original construction. However, only Room 417 appears in a 1956 floor plan. By 1966, all of the rooms except Room 416B appeared on the building floor plan. Room 416B and the south wall of Room 416 were added as part of the building renovation for the Pu metallurgy lab installation in the 1980s. Room 417 is part of the original construction of the building. However, in a 1956 floor plan, no room number is assigned to it.

Room 416 and 416B were last used for metallurgical sample evaluation. These rooms contain various pieces of equipment used to cut, mount, polish, photograph, and examine metallurgical samples. The metals processed include plutonium (only in the Set 14 gloveboxes), beryllium, stainless steel, vanadium, monel, and aluminum (reference archived WSRIC 777-18). This equipment was installed in the mid 1980s. In the early 1980s, the room was used as a training area for supplied breathing air entries. Welding and brazing development equipment was located in this area in the 1960s (reference retiree markup of prints and walkdown with retired assembly manager). The area was originally a "cold" locker room and shower area (reference drawing 1-5103-77M).

Room 417 is a storage area.

Room 418 houses a hood and Nd/Yag laser welder, in addition to combo monitor storage. The laser was coupled to a 3-axis mill and a numerical controller in order to cut or weld most metals (reference OSA 777.60) The gases used during welding included argon, helium, nitrogen, and oxygen (reference archived WSRIC 777-5). The laser was approved to weld assemblies containing depleted uranium. The following metal vapors could be generated from the process: iron, titanium, aluminum, tantalum, vanadium, chromium, manganese, cobalt, nickel, copper, zinc, zirconium, niobium, molybdenum, tin, tungsten, rhenium, platinum, gold, lead, magnesium, carbon, sulfur, or silicon. Beryllium and cadmium were explicitly excluded (reference OSA). In the 1960s, Room 418 contained a grit blaster (in a hood) and ultrasonic cleaner/vapor degreaser combination to clean the grit blasted beryllium parts. The recommended solvent for the ultrasonic cleaner/vapor degreaser was trichloroethylene (reference drawing and trichloroethylene report for Be). The earliest available floor plan of the area shows an exterior air lock and building superintendent's office in the area of Room 418 (reference drawing 1-5103-77M).

Room 419 and 420 are hallways that connect Room 415 to Room 430. There are no processes within these rooms. There is electrical equipment, excess equipment, shipping containers, and storage cabinets within these rooms. A 'stores' area and workarea for engineers was originally located in this locale (reference drawing 1-5103-77M).

Room 429 is currently used for leak checking shipping containers and pits. Helium gas is pumped into the item to be checked and a vacuum is drawn around the item. A mass spectrometer is used to detect any helium leakage from the item.

Room 431, 431A, and 431B currently houses the mass spectrometry (gas analysis) laboratory. Prior to exclusively performing gas analysis, this laboratory counted samples for tritium contamination. Solid samples were dissolved in nitric acid. The liquid and solid samples were prepared with scintillation cocktail and placed in a scintillation counter. The scintillation cocktail was originally a xylene/2-ethoxyethanol mixture until Opti-Fluor (a non-RCRA substitute) was introduced near the end of the 1980s (reference 1989 WASTREN LLM plan and Version 1.0 WSRIC). The tritium lab was installed in response to the tritium leak from the plant site in 1973 (reference interview with retiree). Prior to the tritium lab, these rooms were used for pressure testing (reference walkdown with retiree).

72

Constituent	Present?	Comments
Asbestos	Yes	There are floor tiles in Room 419. The tiles will be manages as asbestos waste unless sample results indicate the waste is not asbestos contaminated. There is no insulation or fire blankets associated with this set.
Beryllium	Yes	A grit blaster for beryllium parts was operated in Room 418 in the 1960s. R&D welding was performed in Room 416 in the same time period. Beryllium may have been welded or brazed in the equipment located in this room. Beryllium contamination has been detected in Room 416. Additional surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Trichloroethylene was used to clean beryllium parts in Room 418 in the 1960s. The laser optics of the welder in Room 418 was cleaned with ethyl alcohol, acetone, and isopropyl alcohol. There are chemical containers in a hood in Room 418 that will be removed during deactivation. Various scintillation cocktails and nitric acid have been used in the tritium surveillance laboratory.
Lead and other heavy metals	Yes	The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively. The cutting area within the laser needs to be evaluated for condensed metal vapors.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Two PCB (Pydraul) capacitors are mounted on the wall in Room 419. The capacitors will be removed prior to decommissioning of the set. Two containers of oil in Room 416 have "PCBs" handwritten on them. These containers will be sampled for PCBs prior to packaging as waste. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	There are no SNM holdup areas in this set.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The sources from the combo monitors in Room 418 and counting equipment in Room 419 will be removed during deactivation. There is fixed contamination beneath the paint on the floor and original walls from the 1969 fire. Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a range of 10^4 to 10^5 cpm. Tritium contaminated samples were analyzed in Rooms 431, 431A, and 431B. According to lab supervision, there were no tritium releases in this area nor are there any tritium contaminated materials in these rooms

73

Process Number: 776_777-014-00

Title: SET 14 - Rooms 415 and associated Gloveboxes 201 through 205, 207 through 214, 216 through 222

Physical Description: This set includes all of the items within Room 415 including the gloveboxes.

Process Description: This area of the building is part of the original construction. Room 415 does not appear on a floor plan until 1970 (reference 30776-204). However, the room is smaller on the 1970 drawing than it is today. The room size was expanded between 1972 and the installation of the plutonium metallography laboratory by shrinking the size of Room 416.

Room 415 was converted to a plutonium metallography laboratory in the 1980s. Plutonium specimens were prepared in Glovebox 221 then taken to Glovebox 205, which contains a diamond saw. The specimens were sectioned with the diamond saw they were too large. The specimens were encased in epoxy in Gloveboxes 209 and 210. The encased specimens were ground in Gloveboxes 203, 204, and 208. Trichloroethane was used as a wetting agent for the grit. The ground specimens were polished in Gloveboxes 212, and 217 through 220. The vibratory polishers used a diamond paste/kerosene mixture. Trichloroethane and ethanol were used to clean the specimens and equipment. The specimens were etched in Gloveboxes 213, 214, 216, and 221. The specimens were etched on either the electroetcher in Glovebox 216 or the electropolisher in Glovebox 221. These pieces of equipment used distilled water, 855 electrolytic solution, oxalic acid, and sodium hydroxide (reference archived WSRIC).

Prior to the plutonium metallography laboratory, Room 415 was used for welding and brazing R&D in the 1960s (reference retiree markup of prints and walkdown with retired assembly manager). Originally there was a cafeteen in this area (reference drawing 1-5103-77M).

Constituent	Present?	Comments
Asbestos	No	There is no floor tile, insulation, or fire blankets associated with this set.
Beryllium	Yes	R&D welding was performed within Room 416 in the 1960s. Beryllium may have been welded or brazed in the equipment located in this room. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	1,1,1-Trichloroethane was used to clean specimens and wet the grit for polishing within the gloveboxes. Ethanol was also used to clean specimens. A kerosene/diamond paste mixture was used in the polishers. Inorganic chemicals used in the gloveboxes include electrolytic solution, oxalic acid, and sodium hydroxide.
Lead and other heavy metals	Yes	The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not Determined	The gloveboxes will be scanned for holdup in FY99 and FY00.

74

Constituent	Present?	Comments
Radioisotope Sources	Yes	The sources from the alphamet monitors in Room 415 will be removed during deactivation.
Radiological	Yes	The gloveboxes are expected to be contaminated >10^6 dpm Pu on the inner surfaces. There is fixed contamination beneath the paint on the floor and original walls from the 1969 fire. Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a range of 10^4 to 10^5 cpm.

Process Number: 776_777-015-00

Title: SET 15 Room 416A (Vault)

Physical Description : Room 416A is a cinderblock-walled room with an inner metal "gorilla cage" for security purposes. There is a 4' to 6' Benelex wall around most of the room to lower exposure to adjoining rooms.

Process Description: Room 416A is currently utilized for the storage of SNM (Pu and enriched uranium) on carts or in shipping containers.

The area occupied by Room 416A was originally part of Rooms 111 - 113, 115 and 116 in 1956 drawings of the building (reference 1-7971-76). These rooms originally comprised a locker room and shower area. Based on this drawing, a portion the north and west wall of Room 416A may be from the original construction. A 1960s vintage drawing of the area indicates a room closer to today's size with a sink, table, and other workstations. The south wall of the room was along column line C, instead of the current location between column line B and C. Since at least the mid 1980s, the room has been used as a storage and staging area for SNM. Some of the materials stored in the room were tritium contaminated. There are no records of a tritium release in this area. The "gorilla cage" was added to the room in the early 1990s.

Constituent	Present?	Comments
Asbestos	No	There is no floor tile, insulation, or fire blankets associated with this set.
Beryllium	Yes	Beryllium parts were stored on carts in this room . R&D welding was performed in this area in the 1960s. Beryllium may have been welded or brazed in the equipment located in this room. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	No	No chemicals were identified by the process history or walkdown
Lead and other heavy metals	Yes	The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.

15

Constituent	Present?	Comments
SNM Holdup	No	There are no areas for SNM holdup in this set
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	There is fixed contamination beneath the paint on the floor and original walls from the 1969 fire. Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a range of 10^4 to 10^5 cpm. Tritium contaminated material was stored in this area. There are no records of a tritium release.

Process Number: 776_777-016-00

Title: SET 16 - Rooms 426, 427, 427A, 428

Physical Description: This set includes all of the items within these rooms.

Process Description: All of the rooms in this set are shown on the original 1956 floor plan with the exception of Room 427A. In 1956, the rooms were designated as 126, 127, and 128 instead of 426, 427, and 428, respectively. Room 427A was part of the area occupied by Room 127. A 1966 equipment layout shows Room 427A.

Room 426 is a decontamination room. The room contains a sink and shower used to remove contamination from personnel after a contamination incident. The method for removing the contamination was washing or brushing the skin with water, soap, detergent, or bleach.

Room 427 contains a laundry facility that was installed in the late 1980s. This facility was referred to as the hot laundry. The respirators and coveralls between 250 and 20,000 counts/minute contamination were washed in top-loading washing machines within the room (reference archived WSRIC process 777-19). Prior to the laundry facility, this room was used to develop waste treatment equipment such as the Inert Carrier Precipitation Process and Direct Cementation Process equipment used in Building 374. The inert carrier for the former process was freon liquid. The development of these processes started in 1980 and extended through 1984 (reference waste systems R&D manager interview). The original use of this room was a pumpdown area for pits (reference drawing 1-5103-77M and walkdown with retired assembly manager)

Room 427A houses the electrical panel for the laundry. The original use of this room was pressure testing of pits (reference drawing 1-5103-77M and walkdown with retired assembly manager).

Room 428 is a janitor's/utility closet with a process waste sink. This sink appears on the 1956 floor plan, therefore, this room has been used for the same purpose over the facility's life.

Constituent	Present?	Comments
Asbestos	No	There is no floor tile, insulation, or fire blankets associated with this set.

Constituent	Present?	Comments
Beryllium	Yes	Beryllium has been detected in the hood above the washing machine. There are no records to indicate the source of the beryllium contamination. Additional surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Soaps, detergent, and bleach were used within Rooms 426, 427, and 428.
Lead and other heavy metals	Yes	The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	There are no SNM holdup areas in this set.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	There is fixed contamination beneath the paint on the floor and original walls from the 1969 fire. Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a range of 10^5 to 10^6 cpm. The drains from the process sinks are assumed to be contaminated based on their usage.

Process Number: 776_777-017-00

Title: SET 17 - Room 430 Glovebox 481

Physical Description: Glovebox 481 is located in the northeast corner of Room 430 near Tanks T-1 and T-2. Glovebox 481 is connected to the A-line but a blank prevents contamination from the A-line from entering the glovebox.

Process Description: Glovebox 481 was designed to remove plutonium metal coatings from stainless steel, tantalum, and uranium substrates by converting the plutonium metal to plutonium hydride. The plutonium hydride was then oxidized to plutonium oxide. The process was patterned after a similar process in Building 779. The glovebox was never completed and the equipment inside was never used.

Constituent	Present	Comments
Asbestos	No	There are no insulation or fire blankets within the gloveboxes
Beryllium	No	There are no records of beryllium associated with the glovebox equipment.
Chemicals	Yes	A catalyst column is filled with palladium metal that is mounted to the Superdry Facility wall.

77

Constituent	Present	Comments
Lead and other heavy metals	Yes	There is lead shielding on the gloveboxes. The paint on the gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted glovebox. Leaded glass contains regulated quantities of barium and lead.
PCBs	No	There are no ballasts or oils associated with this glovebox. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	SNM was never processed in this glovebox.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	Since the glovebox was never used, there is no contamination inside the glovebox. However, since the outside of the glovebox is painted, the glovebox may not be free released.

Process Number: 776_777-018-00

Title: SET 18 Room 430 Gloveboxes 360, 361, 362, 363, 364, 367, 368, 369, 370, 371, 372, 373, 465 (a.k.a. 365, 366) and associated G2-Line

Physical Description: This set includes the entire G2 or Inspection Line II and the associated gloveboxes. The recommended cuts are at the central flanged area (Glovebox 364)coming from the G1-Line (Set 23) and isolating Gloveboxes 465 and 368 (Set 22) from the A-Line.

Process Description: The gloveboxes in Set 18 have primarily supported inspection and non destructive testing of parts in Building 777. Glovebox 362 was used for Pu part preparation for molten salt extraction. The portable glovebox for pipe and pencil tank size reduction was added in 1996. In 1968, the G2 line extended further south (to column line F) than it exists today. The southern end of the G2 line intersected an east-west line, which no longer exists. In 1968, there were seventeen gloveboxes attached to the line.

The G2-Line contains a belt conveyor that is used to move part carriers between the boxes attached to the line. Carbon tetrachloride is piped into the line. The carbon tetrachloride was used to clean parts prior to inspection.

Gloveboxes 363 and 364 connect this set to the G1 line. A pneumatic lift in Glovebox 363 was used to lift the material up to the G2 line.

Gloveboxes 360, 361, 371, 372, and 373 were inspection gloveboxes. There are no records available on the type of inspection done in these boxes. These boxes have not been used for inspection purposes since the 1960s or 1970s. There are surface plates in Glovebox 371. A barrel drop has been removed from the floor of Glovebox 372 (reference 1-8815). Glovebox 373 has oil on the floor.

Glovebox 362 was used to prepare plutonium parts for the molten salt extraction process in Room 154A. Production Control personnel would transfer plutonium parts from the disassembled site-return pits to pyrochemical operations personnel. A tool referred to as the "nibbler" was used to size reduce the parts as needed. In the mid-1980s a site return compactor was added to the glovebox for to compact the parts.

Glovebox 368 and 465 on the building maps is assigned #367 - 369 and #365 – 366 on the criticality limits. These gloveboxes (365 - 369) are part of the two transfer areas between the A-Line and G2-Line. Part carriers filled with Pu parts from site returns were transferred from the production control organization

to the molten salt personnel. The boxes that adjoin gloveboxes 366 and 369 are part of Set #22. An ultrasonic cleaner/vapor degreaser in located in Glovebox 465. Plutonium or Pu + U-235 parts or plutonium targets were allowed in this equipment. Prior to ≈1973, trichloroethylene was used as a solvent in the ultrasonic cleaner/vapor degreaser. Due to new regulations , 1,1,1-trichloroethane replaced trichloroethylene after that date. The 1,1,1-trichloroethane had inhibitors added to it to prevent the formation of hydrochloric acid during use.

Glovebox 370 was used for density determinations on plutonium parts. The parts were weighed in air and then in a tank filled with Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane). A liquid drop (funnel) on the top of the box was used to introduce Freon into the box.

The portable glovebox was used to size reduce the pencil tanks and associated piping from the oil/carbon tetrachloride collection system in Rooms 131, 134E, and 430. The tanks or piping was fed into the glovebox through a bagport, cut to length, and packaged in a 55-gallon drum attached to the bottom of the glovebox. The tanks in Room 131 and 430 were removed in 1996 while the tanks in Room 134E were removed in 1997.

Constituent	Present	Comments
Asbestos	No	There are no insulation or fire blankets within the gloveboxes
Beryllium	No	There are no records of beryllium metal being machined in this area.
Chemicals	Yes	Carbon tetrachloride and Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) were used as solvents in these gloveboxes. All liquids will be drained prior to beginning decommissioning activities. It is anticipated that the interior surfaces of the gloveboxes that contained solvents can be cleaned to meet a clean debris surface since the oil and solvent usage was minimal compared to lathes and jig borers.
Lead and other heavy metals	Yes	There is lead shielding and leaded gloves on the gloveboxes. The paint on the gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted gloveboxes. Leaded glass contains regulated quantities of barium and lead.
PCBs	No	There is no detectable levels of PCBs in the lubricating oil based on historical analysis of the oil and the MSDS. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	Yes	Glovebox 362 currently contain significant Pu holdup, which will be removed prior to decommissioning. No measurable U holdup has been detected to date. There are other gloveboxes within the set that need to be scanned.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The gloveboxes are expected to be contaminated >10^6 dpm Pu on the inner surfaces. Several of the gloveboxes have lesser fixed contamination on the exterior, which are individually marked

Process Number: 776_777-019-00

Title: SET 19 Room 154A

Physical Description: Room 154A is in the southwest corner of Building 776. The gloveboxes in Room 154A are included in Set 51. The east wall of this room was once the west exterior wall of the building. A portion of this wall is covered with corrugated cemented asbestos (Transite).

Process Description: Room 154A is part of a building addition designed in 1964 and occupied in 1967 (reference Building 776 Data File). This room supported various pyrochemistry processes within gloveboxes primarily Molten Salt Extraction and Salt Scrub. Anode Alloy, Direct Oxide Reduction and Electrorefining were performed on a smaller scale. These processes are described in Set 51. The processes were performed entirely within the gloveboxes. The room houses the gloveboxes and support equipment such as control panels and utility lines. Several pieces of equipment (including a salt casting hood, argon purification reactors, and a vacuum oven) were removed in the past (reference RF-AG/76 - L4).

Constituent	Present?	Comments
Asbestos	No	The freon refrigerant lines are insulated. The insulation is foam type, not high temperature fiber insulation. There is no other insulation, floor tile or fire blankets associated with this set.
Beryllium	No	There is no indication of beryllium contamination in this area. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	No	There is no indication of chemical usage within the room.
Lead and other heavy metals	Yes	The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	There are no SNM holdup areas in this set.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	There is fixed contamination beneath the paint on the floor and original walls from the 1969 fire. Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a range of 10^5 to 10^6 cpm.

Process Number: 776_777-020-00

Title: SET 20 Room 430 Gloveboxes 401, 402, Hood area and Room 424

Physical Description: This set covers the southeast corner of Room 430 (bounded by columns 20-21 and E-G. There are two lathes within B-Boxes (401 and 402), a hood, pump down tables, and other small equipment in that area. Room 424 contains two hoods, storage cabinets, and shelves. Room 424 is located between columns 17-18 and D-E.

Process Description: Room 424 is part of the original construction of Building 777. This room is designated as Room 124 on a 1956 floor plan. Room 430 was designated Room 130 on the same floor plan. Column line 21 was the original east exterior wall of Building 777 prior to several additions.

The last process to operate in Room 424 was R&D on a beryllium electrorefining process. The purpose of the process was the removal of contamination (chiefly plutonium) from waste beryllium. Experiments were performed with high temperature beryllium salts. The process moved to Building 865 in the 1980s. Room 424 was used for undetermined R&D projects prior to the beryllium electrorefining process. The original use of this room was decontamination (reference drawing 1-5103-77M).

Gloveboxes 401 and 402 were used to disassemble pits. The pit was placed in the lathe chuck and the waist or equator weld was removed. Tape was placed around the waist to limit the spread of any radioactive contamination. The pits were then placed in Glovebox 451 to separate the pit into its component parts. Some of the pits have beryllium parts (reference archived WSRIC process 777-02). Pits and containment vessels were evacuated or "pumped down" and leak checked on the pump down tables located in this set. Tubes were cut to vent pits in the hood north of the lathes (reference OSA 777.012). The Crimp and Seal process, which is still operational in 1998, uses this area to crimp and seal (with a spot weld) the stainless steel tubing on pits prior to offsite shipment.

Constituent	Present?	Comments
Asbestos	No	There is no floor tile, insulation, or fire blankets associated with this set.
Beryllium	Yes	Beryllium was machined in Gloveboxes 401 and 402. Beryllium salts were handled in the hoods in Room 424. Beryllium surveys confirm the presence of beryllium contamination in these areas. Additional surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	1,1,1-trichloroethane was used on wipes within the gloveboxes. Oil from the vacuum pumps will be removed during deactivation.
Lead and other heavy metals	Yes	The paint on the floor, walls, and gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not Determined	The two lathe B-boxes need to be scanned for SNM holdup. The probability of holdup is low since the lathes were used to machine out the weld in the nonnuclear parts of a pit.
Radioisotope	Yes	There are two registered sources in Room 424. These sources will

81

Constituent	Present?	Comments
Sources		be removed during deactivation.
Radiological	Yes	Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates > 10^5 cpm.

Process Number: 776_777-021-00

Title: SET 21 Room 430 Gloveboxes 403, 404, 405, 408, 409, 413, 426, 427, 450, and associated A-Line

Physical Description: This set includes the east-west section of the A-Line and the associated gloveboxes. The recommended cuts are at the 15-inch flanged section connection to the north-south section of the A-Line (Set 22) and at the flange between Glovebox 427 and 451.

Process Description: The gloveboxes in Set 21 have primarily supported assembly and disassembly operations in Building 777. In 1968, the east-west A line was the same length it is today. A north-south branch that connected the A-line to the south end of the Superdry room has been removed. In addition to the north-south branch to Superdry room, there were eleven gloveboxes attached to the line in 1968.

The A-Line contains a belt conveyor that is used to move part carriers between the boxes attached to the line. Based on the processing of parts from site return pits, the A-line and associated gloveboxes may be contaminated with Pu as well as U-235 (Oralloy). Glovebox 427 can be expected to be internally contaminated with Be since it was the bag-out point for U-235 and Be parts (reference OSA 777.012).

Glovebox 403 was a pass through section from the A-Line to Glovebox 404 until Glovebox 404 was moved to another location on the A-line.

Glovebox 404 contains a lathe. The intended use of the lathe was for the removal of the equator or waist weld from a pit, to begin disassembly. The box was moved from its original location on the west end of the A-Line (connected to Glovebox 403) to the east end (the glovebox 410 blank) in the 1980s for installation of the lathe. The lathe was not used for disassembly due to the limited room to pass pits to the lathe from the A-line.

The gears for the belt conveyor servicing the A-line's north south section are located in Glovebox 405.

Gloveboxes 408 and 427 were last used for storage of part carriers.

There is a leak detection chamber within Glovebox 409.

Glovebox 413 appears to be an area for visual inspection of tooling.

Glovebox 426 contains an ultrasonic cleaner/vapor degreaser combination. Prior to ≈1973, trichloroethylene was used as a solvent in the ultrasonic cleaner/vapor degreaser. Due to new regulations , 1,1,1-trichloroethane replaced trichloroethylene after that date. The 1,1,1-trichloroethane had inhibitors added to it to prevent the formation of hydrochloric acid during use.

Glovebox 450 is a passthrough from Glovebox 451 (Set 22) to Glovebox 427.

Constituent	Present?	Comments
Asbestos	No	There are no fire blankets or pipe insulation associated with these gloveboxes.
Beryllium	Yes	Beryllium was handled in Gloveboxes 427.
Chemicals	Yes	1,1,1-trichloroethane was used on wipes and inside the ultrasonic cleaner/vapor degreaser within the gloveboxes. Oil from the vacuum pumps will be removed during deactivation.
Lead and other heavy metals	Yes	The paint on the gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted glovebox. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	Not determined	The gloveboxes need to be scanned for SNM holdup.
Radioisotope Sources	No	There are no sources associated with this set
Radiological	Yes	The sources from the alphamet monitors will be removed during deactivation. The gloveboxes are expected to be contaminated >10^6 dpm Pu on the inner surfaces. Some of the gloveboxes may be internally contaminated with enriched uranium.

Process Number: 776_777-022-00

Title: SET 22 Room 430 Gloveboxes 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 451, 452, 454, 456, 457, 458, 459, 462, 464 and associated A-Line

Physical Description: This set includes the east-west section of the A-Line and the associated gloveboxes. The recommended cuts are at the 15-inch flanged section connection to the east - west section of the A-Line (Set 21), cut at the flange of Glovebox 481 (Set 17), cut at Gloveboxes 465 and 368 (Set 21) from the G2-Line, and at the wall going into Room 432B (Glovebox 461, Set 27)

Process Description: The gloveboxes in Set 22 have primarily supported assembly and disassembly operations in Building 777. After1968, two east-west branches that connected the A-line to Room 440 of the Superdry area were removed. These branches connected to the A-Line where Glovebox 481 is today and at the blank immediately south of Glovebox 481. In addition to the east-west branches to Room 440, there are three other gloveboxes that have been removed from this area since 1968. These two gloveboxes were replaced by Gloveboxes 452 and 454 of the Gettering System and Glovebox 462, the EB welder.

The A-Line contains a belt conveyor that is used to move part carriers between the boxes attached to the line. Based on the processing of parts from site return pits, the A-line and associated gloveboxes may be contaminated with Pu as well as U-235 (Oralloy). Gloveboxes 448, 451, 452, and 454 can be expected to be internally contaminated with Be (reference interview with former production control/disassembly employee).

Gloveboxes 439, 440, and 441 are part of the two transfer areas between the A-Line and G2-Line. Part carriers filled with Pu parts from site returns were transferred from the production control organization to the molten salt personnel. The boxes that adjoin Gloveboxes 439 and 440 are part of Set #18.

Gloveboxes 442, 443, 444, 445, 447, 456 and 464 were last used for storage of part carriers. The part carriers in Glovebox 442 were empty. In Gloveboxes 443, 445, 447, 456 and 464, the part carriers were loaded with Pu parts from site return parts awaiting size reduction prior to the molten salt extraction process. Oy (U-235) parts may have been stored in Gloveboxes 445, 447, and 456 awaiting bagout (reference interview with former production control/disassembly employee). In the past, Glovebox 443 contained a furnace, according to the historical criticality limits. The purpose of the furnace has not been established. A six position storage rack for cans in Glovebox 444 was removed in the 1980s (reference history of NS78-300). Glovebox 464 is connected to the overhead chainveyor that runs to Room 437. The overhead chainveyor is part of Set 29.

Glovebox 446 contains an ultrasonic cleaner/vapor degreaser combination. Prior to ≈1973, trichloroethylene was used as a solvent in the ultrasonic cleaner/vapor degreaser. Due to new regulations , 1,1,1-trichloroethane replaced trichloroethylene after that date. The 1,1,1-trichloroethane had inhibitors added to it to prevent the formation of hydrochloric acid during use.

After the waist weld was cut in T-401 or T-402 (Set #20), the pits were bagged into Glovebox 451 for disassembly.

Material with possible tritium contamination was bagged into the gettering system in Gloveboxes 452 and 454. The exhaust from these gloveboxes was treated to remove any tritium released within the glovebox. These gloveboxes may be internally contaminated with beryllium. The atmosphere in the gloveboxes was argon when the gettering system was operating (reference walkdown with retired assembly manager).

After the pits were disassembled, the non-SNM components were moved to Glovebox 448. The beryllium (IDC 489) and depleted uranium (IDC 485) components were separated from the other components (IDC 484 - i.e. aluminum, stainless steel). The components were bagged out or placed in fibrepaks and bagged out (reference OSA 777.012).

Gloveboxes 457 and 458 are gloveboxes where parts were moved from the A-Line to the downdraft area in the Superdry area. This area is potentially U-235 contaminated (reference interview with former production control/disassembly employee). Glovebox 459 was used for storage of tooling and assembly birdcages. The barrel drop originally installed in this glovebox has been removed (reference 1-8815).

The electron beam (EB) welder in Glovebox 462 was used to weld plutonium components together. The components were assembled within welding chucks then placed in the welder for joining.

Constituent	Present?	Comments
Asbestos	No	There are no fire blankets or pipe insulation associated with the gloveboxes.
Beryllium	Yes	Beryllium was handled in Gloveboxes 448, 451, 452, and 454.
Chemicals	Yes	1,1,1-trichloroethane was used on wipes and inside the ultrasonic cleaner/vapor degreaser within the gloveboxes. Oil from the vacuum pumps will be removed during deactivation.
Lead and other heavy metals	Yes	The paint on the gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted glovebox. The incandescent and fluorescent lights can contain lead and

84

Constituent	Present?	Comments
		mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not determined	The gloveboxes need to be scanned for SNM holdup.
Radioisotope Sources	Yes	The sources from the alphamet monitors will be removed during deactivation.
Radiological	Yes	The gloveboxes are expected to be contaminated >10^6 dpm Pu on the inner surfaces. Some of the gloveboxes may be internally contaminated with depleted and enriched uranium.

Process Number: 776_777-023-00

Title: SET 23 Room 430 Glovebox 515, associated R-Line and Gloveboxes 318, 320, 321, 323, 324, 327, 328, 329, 330 and 331

Physical Description: This set includes the entire G1 or Inspection Line I and the associated gloveboxes. In addition, most of the R-Line or North-South Line within Room 430 is included in this set. The recommended cuts are [east] at the central flanged area (Glovebox 364)coming from the G2-Line (Set 18), [southwest]at the bellows (expansion joint) north of Box 509 (Set 10), [north] where the R-line enters the radiography vault wall, and [southeast]the bottom of the overhead line coming from M-Line (set 24), where it flanges into G1-Line .

Process Description: The gloveboxes in Set 23 have primarily supported inspection, testing, and storage of parts in Building 777. In 1968, the G1 conveyor line was the same length it is today. However, there were two connections to other lines that have been removed (to R-Line between Gloveboxes 321 and 323; on the south to a conveyor line that no longer exists) and one that has been added (to M-line, Set 24). In 1968, there were ten gloveboxes attached to the line (seven on the east side and three to the west). The R-line segment within Set 23 had an additional seven gloveboxes attached to it in 1968, that do not exist today. The North Foundry line intersected the R-Line along column line L in 1968 (reference drawing 14376)

The G1-Line contains a belt conveyor that is used to move part carriers between the boxes attached to the line. A chainveyor in the R-Line was used to move part carriers from the southern portion of the building into radiography or to the Glovebox 328 for movement eastward to the G2-Line.

Carbon tetrachloride and 1,1,1-trichloroethane were piped into several of the gloveboxes in this set. Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) was bagged in or introduced through a funnel drop in Glovebox 318. These solvents were used to clean parts prior to inspection (reference inspection procedures and historical WSRIC).

Glovebox 318 contains a Sheffield Rotocon sweep gage used to measure the dimensions of parts. The gage contains two lead counter weights (reference inspection procedure PA-1002).

85

Glovebox 320 is identical to Glovebox 762 in Set 24 (reference 13227-2). These boxes house Bertha Indiron gages. These gages are for contour measurements, similar to the Sheffield Rotocon gage in Glovebox 318.

Gloveboxes 321, 323, 324, 329, 330, and 331 were inspection gloveboxes. There are no records available on the type of inspection done in these boxes. These boxes have not been used for inspection purposes since the 1960s or 1970s. There are surface plates in Gloveboxes 329 and 330.

Gloveboxes 328 and 327 connect this set to the G2 line. A pneumatic lift in Glovebox 328 was used to lift the material up to the G2 line.

A Tenny Jr. Machine is attached to Glovebox 515. This machine contains refrigerant gas (freon) used to evaluate Pu parts at various temperatures.

Constituent	Present?	Comments
Asbestos	No	The only insulation associated with this set is on the refrigerant lines on Glovebox 515. However, this is not high temperature insulation. Representative samples of pipe insulation will be analyzed throughout the facility prior to initiating decommissioning activities.
Beryllium	No	There is no indication that beryllium was handled within these gloveboxes. These gloveboxes were not used for machining or pit disassembly.
Chemicals	Yes	Carbon tetrachloride, 1,1,1-trichloroethane, and Freon TF were used on wipes within the gloveboxes.
Lead and other heavy metals	Yes	There is lead shielding and leaded gloves on the gloveboxes. There are lead counterweights on the equipment in Glovebox 318. The paint on the gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted glovebox. The fluorescent lights can contain mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not Determined	The gloveboxes need to be scanned for SNM holdup.
Radioisotope Sources	Yes	The sources from the alphamet monitors will be removed during deactivation.
Radiological	Yes	The gloveboxes are expected to be contaminated >10^6 dpm Pu on the inner surfaces.

Process Number: 776_777-024-00

Title: SET 24 Room 430 Gloveboxes 756, 758, 759, 760, 761, 762, 763, 764 and associated M-Line

Physical Description: This set includes the portion of the M-Line within Room 430. The recommended cut is at the bellows (expansion joint) where the M-line enters the west block wall between Rooms 134E and 430. The remainder of the M-line, within Room 134E, is part of Sets 10 and 11.

86

Process Description: The M-line portion within Set 24 is the same length today as it shown on 1966 and 1968 equipment layouts (reference E-13940 and E-14376-12). There are two tape machines, two lathes and three other gloveboxes attached to the M-line on the two drawings. Gloveboxes 758 predates the 1969 fire while the other gloveboxes were installed after the fire (reference E-14376-12). Gloveboxes 756, 761, 763, and 764 was installed in the 1980s (reference criticality limits). There were two short chainveyor sections north of the M-line in the 1960s that are no longer in the building (reference E-13940-2 and E-14376-12).

A Zeiss Coordinate Measuring machine is located in Box 756. This machine performs data acquisitions using a calibrated spherical probe tip to contact parts and provide XYZ coordinate data. Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane), carbon tetrachloride, oils, RTV-21, and Nuocure 28 Catalyst are listed as the chemicals used in conjunction with the Zeiss process (reference inspection procedure PA-1006). RTV-21 and Nuocure 28 are used to make impressions of small parts or hard to access features of parts. The impression is then dimensionally inspected rather than the part itself (reference archived WSRIC process 777-11). There is a liquid drop for solvents in the ceiling of this box.

Glovebox 758 contains a Sheffield Rotocon sweep gage used to measure the dimensions of parts. The gage contains two lead counter weights (reference inspection procedure PA-1002). Carbon tetrachloride was piped to this box for part cleaning.

Boxes 759, 761, and Box 762 has been used for inspection processes. In the past, there was a Sheffield gage in Box 762 (reference criticality limits). Granite surface plates were placed in the boxes to facilitate inspection of parts. There is a liquid drop for solvents in the ceiling of Box 759. Carbon tetrachloride piped to this Box 762.

Box 760 contains a Century Detroit sweep gage used to measure the dimensions of parts. The gage is similar to other sweep gages except that it uses a 5 milliwatt He/Ne laser (reference inspection procedure PA-1003). Carbon tetrachloride was piped to this box for part cleaning.

Box 763 contains a density balance. Parts were weighed within a tank of Freon TF located in the floor of the glovebox. This measurement was used to determine the density of the metal part (reference archived WSRIC process 777-8).

A Cincinnati Machine is attached to Glovebox 764. This machine contains refrigerant gas (freon) used to evaluate Pu parts at various temperatures. This glovebox is blanked from Glovebox 763 and never was operational.

Constituent	Present?	Comments
Asbestos	No	The only insulation associated with this set is on the refrigerant lines on Glovebox 764. However, this is not high temperature insulation.
Beryllium	No	There is no indication that beryllium was handled within these gloveboxes. These gloveboxes were not used for machining or pit disassembly.
Chemicals	Yes	Carbon tetrachloride and Freon TF were used on wipes within the gloveboxes.
Lead and other heavy metals	Yes	There is lead shielding and leaded gloves on the gloveboxes. There are lead counterweights on the equipment in Glovebox 758. The paint on the gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted glovebox. The fluorescent lights can contain mercury.

87

PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not determined	The gloveboxes need to be scanned for SNM holdup.
Radiological Sources	Yes	The sources from the alphamet monitors will be removed during deactivation.
Radiological	Yes	The gloveboxes (except glovebox 764) are expected to be contaminated >10^6 dpm Pu on the inner surfaces. The outer surfaces of the gloveboxes are contaminated up to 250,000 dpm. Glovebox 764 was never used and therefore has little or no radioactive contamination.

Process Number: 776_777-025-00

Title: SET 25 Room 430, Compliance areas 90.67, 95.017, 95.018 and 90.45

Physical Description: Room 430 is the largest room in Building 777. This set includes the entire room except for the south east corner (east of column line 20) which is part of Set #20. Set 25 is bounded by column lines 13 - 20 and D - L. The gloveboxes within the room are included in Sets 17, 18, 21, 22, 23, and 24. The trichloroethane tanks are included in Set 26.

Process Description: Room 430 is part of the original 1956 floor plan of Building 777. However, the room was designated as Room 130. The west wall of the room was originally along column line 14 instead of the current wall along column line 13 (reference I-7971-76).

The process equipment in Room 430 was installed to support glovebox operations. The material includes oxygen analyzers, electrical panels, control panels, transformers, and computers.

A skid of equipment for the gettering system is located south of the SuperDry Facility. The gettering system was used to remove any tritium gas from the exhaust of Gloveboxes 452 and 454, Set 22. If tritium was released within the glovebox, the exhaust was routed to Tank RT-1. The water was used as a trap for the tritium. The tritium was piped to a converter (to convert the tritated water to a vapor) then to a series of dryers. The tritium was driven off the dryers using heat. The tritium was drawn into a cryogenic (liquid nitrogen) trap for removal from the gettering system. Argon gas was used to purge the piping within the system (reference walkdown with retired assembly manager)

With the exception of the gettering system, there are no processes within Set 25.

Below grade features: There are two process waste clean outs and one process waste drain that have been filled in (reference I-7971-76). There may be a conveyor drive motor encased in concrete north of Glovebox 328. A retired assembly foreman said the motor was encased in place as part of the 1969 fire cleanup.

Constituent	Present?	Comments
Asbestos	Yes	There is insulation on small tank(s) and tritium dryers in this set. This insulation will be managed as asbestos waste unless sample results indicate the insulation is nonasbestos.

Constituent	Present?	Comments
Beryllium	Yes	Beryllium was machined in Gloveboxes 401 and 402 in Set 20. Beryllium salts were handled in the hoods in Room 424 which on the southern border of this set. Beryllium surveys confirm the presence of beryllium contamination. Additional surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Water in Tank RT-1 and oil in the vacuum pumps will be drained during deactivation.
Lead and other heavy metals	Yes	There is lead metal on the drum shields and leaded gloves stored in the room. The paint on the gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted glovebox. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	There are no SNM holdup areas in this set.
Radioisotope Sources	Yes	Sources on the combo monitors will be removed during deactivation.
Radiological	Yes	Gettering system tank RT-1 is marked as plutonium and tritium contaminated. Gettering system components will need tritium surveys/sampling. Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates > 10^5 cpm.

Process Number: 776_777-026-00

Title: SET 26 Tanks T2, T1, and FL1 – Room 430, Compliance area 56.06 and 56.08

Physical Description: This set includes two Raschig ring-filled tanks (T-1 and T-2) and a pump/filter glovebox (FL-1). The tanks are enclosed in a contamination control house. Tank T-1 is 26" x 33" x 80". Tank T-2 is 26" x 42" x 80" (reference 1993 closure plan). The dimensions of Glovebox FL-1 are 51" x 27" x 38" (reference Drawing D19889-7).

Process Description: The equipment in this set was installed between 1971 and 1973 (reference prints). The tanks were used to store and ship contaminated organic liquid waste from Building 777 and 707 ultrasonic cleaners/vapor degreasers to Building 774 for treatment. The ultrasonic cleaners/vapor degreasers are located in other sets. Prior to ≈1973, the ultrasonic cleaners/vapor degreasers used trichloroethylene as a solvent. Due to new regulations , 1,1,1-trichloroethane replaced trichloroethylene after that date. The 1,1,1-trichloroethane had inhibitors added to it to prevent the formation of hydrochloric acid during use. The waste solvent was pumped from ultrasonic cleaners/vapor degreasers in Building 777 and collection tank V-100 (referred to as V-1 in older drawings) into Tank T-1. From Tank T-1, the liquid was pumped though the Ful-Flo filters in Glovebox FL-1 and into Tank T-2. After sampling and additional filtration (as necessary) the waste liquid was transferred to Building 774.

Constituent	Present	Comments
Asbestos	No	There are no insulation or fire blankets associated with the tanks.
Beryllium	Yes	Beryllium metal was not routinely cleaned in ultrasonic cleaners after the late 1960s - early 1970s. Prior to this period, an ultrasonic cleaner for grit blasted beryllium parts operated in Room 418. It is not clear if the Set 26 tanks were installed before or after the beryllium ultrasonic cleaner was removed from Room 418
Chemicals	Yes	1,1,1-trichloroethane was stored in the tanks. Prior to 1974, trichloroethylene was used in place of 1,1,1-trichloroethane. It is anticipated that the interior surfaces of the tanks can not be cleaned to meet a clean debris surface based on the experience gained from removal of the pencil tanks.
Lead and other heavy metals	Yes	The paint on the tanks and filter glovebox could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item
PCBs	No	There is no indication of PCBs based on the process. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	Yes	The tanks were scanned in 1990 and 1994 for holdup. The holdup is less than 50 grams per tank. Hold-up levels will be reduced during deactivation activities (ring and sludge removal).
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The tanks are assumed to be externally contaminated with Pu since they are in contamination control houses. The houses or tents were constructed to control the radiological contamination from pinhole leaks in the bottom of two of the tanks

Process Number: 776_777-027-00

Title: SET 27 Rooms 432, 432A, 432B, 432C, 432D, 440 and Glovebox 461
Compliance area Part B Unit 17

Physical Description: This area is known as the Superdry Facility due to increased dehumidification of the supply air to this area. The area is bounded by column lines 18-20 and G - L.

Process Description: The area occupied by this set was designated as Rooms 132, 135, 139, and 140 on a 1956 floor plan (reference drawing I-7971-76). Rooms 139 and 140 are now Room 440 (with the original interior wall removed). Room 140 had a process waste sink that has been removed. Room 135 does not exist today. Room 132 is the area identified as Room 432 - 432D today.

Rooms 132 and 135 were originally used as a storage vault. In 1962, the rooms were converted into the Superdry Facility (reference Building 776 data file). The submarine doors and airlocks were added as part of the renovation. The additional dehumidification of the atmosphere was designed to improve the quality of the plutonium metal parts. The dehumidification equipment was installed on the second floor of Building 776. Rooms 432A through 432D were created as part of the modifications.

Room 432 was used as a chemical collection area in 1997 and 1998. In the past, the room has been used for welding, machining, and inspection processes. There is an electron beam (EB) welder located in

the southwest corner of the room. This welder was used to weld depleted uranium and stainless steel (reference OSA 777.18). The lathe along the east wall of the room has been used for various materials including lithium metal in the 1960s. The lithium chips and scrap were removed from the building for disposal by Building 883 (reference walkdown with retired assembly manager).

Room 432A is the airlock entry, through double submarine doors, into Room 432. Room 432B is a downdraft room used to assemble pits. The downdraft table is referred to as Glovebox 461. Both enriched uranium and plutonium were handled in this room (reference walkdown with retired assembly manager). Ethanol and 1,1,1-trichloroethane on wipes were used to clean parts (reference archived WSRIC 777-6). Room 432C was last used as a RCRA storage area for drums. The material stored in the room includes tritium contaminated scintillation cocktail (reference FFCA document). Enriched uranium (U-235) chips were burned to oxide in the hood located in Room 432C in the 1960s (reference walkdown with retired assembly manager). Enriched uranium parts were machined and inspected in Room 432D.

Room 440 is currently used for storage of excess pressure cookers, tooling, and tritium dryers. There are two ultrasonic cleaners in the room. These cleaners were used to clean parts (including enriched uranium, stainless steel, vanadium, beryllium) and hardware (reference walkdown with retired assembly manager).

Constituent	Present?	Comments
Asbestos	Yes	A small oven in this set is insulated with Transite. There is no floor tile or fireblankets within the set.
Beryllium	Yes	Beryllium parts were stored, cleaned, and assembled in the Superdry Facility. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	1,1,1-trichloroethane was used in the ultrasonic cleaners in Room 440. Prior to 1974, trichloroethylene was used in place of 1,1,1-trichloroethane. The oil in the machinery will be removed during deactivation. A palladium metal filled catalyst column for Set 17 is attached to the north exterior wall of the Set
Lead and other heavy metals	Yes	There is lead metal stored in the room. The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not determined	The lathes in Room 432D and the downdraft table in Room 432B need to be scanned for SNM holdup.
Radioisotope Sources	No	There are no sources associated with this set.

91

Constituent	Present?	Comments
Radiological	Yes	The used tritium dryers will need surveys for disposal. Depleted and enriched uranium contamination is possible in this set. Room 432B and the lathe in Room 432D are posted as high contamination areas. The posted contamination within room 432B is 500,000 cpm. Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. Based on the contamination map from the 1969 fire, there was no contamination from the fire spread into the facility.

Process Number: 776_777-028-00

Title: SET 28 Room 433

Physical Description: Room 433 is immediately east of the Superdry in Building 777. The area is bounded by column lines 20 -22 and G - L.

Process Description: The area occupied by this set is part of the original building and part of the 777A addition. The area between columns 20 and 21 was designated as Rooms 136 on a 1956 floor plan (reference drawing I-7971-76). The doors and a section of interior wall along columns G and K from the original floor plan have been removed. This area was shown as Rooms 441 and 433 on a 1966 floor plan (reference drawing 13940-3). In addition, the mezzanine is shown extending the length of the Superdry Facility, instead of half the length it is today. A 1972 floor plan shows the area as Room 443 (reference 30776-209). Sometime after 1972, the east wall of the room was relocated approximately 15 feet east into the 777A addition The 777A addition was completed in 1962 (reference Building 776 data file).

Room 433 is currently used for equipment storage and gas generation testing of transuranic waste. Drums of transuranic waste are placed inside covers that heat the drum and collect gas for analysis. Macroencapulation equipment and supplies were stored in this area but were never installed for use. This equipment was removed in 1998. A large electron beam welder was removed from the room in the early 1990s for shipment to Los Alamos. The welder was installed in the late 1980s but not used on radioactive materials (reference interview with a former welding foreman). At the time of the 1969 fire, the room contained pumpdown tables (reference walkdown with retired assembly manager and 1968 floor plan). The tables were used to evacuate and backfill pits.

Constituent	Present?	Comments
Asbestos	No	There is no insulation, floor tile, or fireblankets within the set.
Beryllium	Yes	Beryllium parts were handled in this area in the 1960s and may have been transported through the room after the 1960s. Beryllium contamination has been found near Set 28 in Set 20. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	The flammable cabinets contain two drums of epoxy and catalyst. These drums will be removed during deactivation.
Lead and other heavy metals	Yes	There is a leaded glove and a box of leaded glass stored in the room. The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.

PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	There are no SNM holdup areas in this set
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	A transformer within the set is marked as having 50,000 dpm fixed contamination. Fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates > 10^5 cpm

Process Number: 776_777-029-00

Title: SET 29 Room 437 Glovebox A1, A2, and A3 and associated conveyor lines

Physical Description: This set covers Room 437 (bounded by columns 17-19 and L-M). There are three gloveboxes, a conveyor connection between the gloveboxes, Room 430, and 463; and storage cabinets. The major equipment in the gloveboxes consists of a grit blaster and ultrasonic cleaner.

Process Description: Room 437 is part of a Building 777 addition completed in 1964 (Reference Building 776 data file). The area west of column 18 is part of the original Building 777 floor plan. However, this area was extensively modified to create Room 437 by enclosing a dock. Rooms 437 and 463 supported metal coating operations. The most common coating metal was plutonium.

The material to be coated was cleaned in Glovebox A-1. The cleaning consisted of sulfamic acid etching and wire brushing. Substrates were grit blasted with glass beads in Glovebox A-2 to remove unwanted metal or carbon deposits. An ultrasonic cleaner/vapor degreaser filled with 1,1,1-trichloroethane in Glovebox A-3 was used to remove residual oil from parts. Freon and ethanol were used on wipes to do spot cleaning (reference archived WSRIC 777-16).

Constituent	Present	Comments
Asbestos	No	There is no floor tile, insulation, or fire blankets associated with this set.
Beryllium	Yes	Leak detector parts stored in the room have manufacturer warnings regarding beryllium in the ceramic rings.
Chemicals	Yes	1,1,1-trichloroethane and Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) were used as solvents in these gloveboxes. All liquids will be drained prior to beginning decommissioning activities. Containerized chemicals will be removed during deactivation. It is anticipated that the interior surfaces of the gloveboxes with the ultrasonic cleaner can be cleaned to meet a clean debris surface since the oil usage was minimal compared to lathes and jig borers.

93

Constituent	Present	Comments
Lead and other heavy metals	Yes	There is lead shielding and leaded gloves on the gloveboxes. Leaded glovebox covers, gloves, and an apron are stored in the cabinets. The paint on the floor, walls, and gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. Leaded glass contains regulated quantities of barium and lead.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Yes	Gloveboxes A-1 and A-2 have been scanned for Pu holdup. While these two gloveboxes contain gram quantities of Pu, the holdup in these two gloveboxes does not require remediation prior to decommissioning. No measurable U holdup has been detected to date.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The gloveboxes are expected to be contaminated $>10^6$ dpm Pu on the inner surfaces. The maximum fixed contamination on the exterior of the gloveboxes is 100,000 dpm. An electrical cabinet in the room is marked as containing fixed contamination. Fixed contamination beneath the paint on gloveboxes or in the room can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 10^5 - 10^6 cpm.

Process Number: 776_777-030-00

Title: SET 30 Room 442

Physical Description: Room 442 is a radiography vault. It is also known as the Betatron vault. Room 442 is bounded by columns 13-15 and N-P.

Process Description: Room 442 was added to Building 777 in September 1969 (reference construction schedule in Dow Engineering Proposal dated July 1969)). Room 442 is the only addition to Building 776/777 that was installed after the 1969 fire.

Room 442 contains two major pieces of equipment: linear accelerator and BetaTron x-ray device that was used to radiograph pits. The pits was positioned between the radiation source and the film to show the feature to be inspected. The film packages were developed in Room 474D. Lead filters, shielding, and identification numbers were used with the x-ray devices. The linear accelerator used freon refrigerant and deionized water for cooling (reference archived WSRIC 777-10).

Constituent	Present?	Comments
Asbestos	No	There is no insulation, floor tile, or fireblankets within the set.
Beryllium	Yes	Beryllium parts were x-rayed and stored in this area. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	The freon gas will be removed during deactivation.

94

Constituent	Present?	Comments
Lead and other heavy metals	Yes	There is a lead metal located in the room. The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	The SNM within the vault is stored with containment (i.e. metal can, plastics bags, within a pit) at all times. Therefore, holdup is not an issue.
Radioisotope Sources	No	There are no sources associated with this set
Radiological	Yes	There is no indication of radiological contamination in this room. However, fixed contamination beneath the paint can not be measured due to the paint shielding the alpha particles. Material removed from the room will be considered low-level waste unless it can be 100% surveyed.

Process Number: 776_777-031-00

Title: SET 31 Room 443 and NDT Line

Physical Description: Room 443 is a radiography vault. It contains a glovebox known as the carousel. The carousel rotates around the radiation source. There is another section of glovebox in the room that connects the carousel to the R-line in Room 430 (Set #23) through an opening in the south wall of Room 443. Room 443 is bounded by columns 13-15 and L-M.

Process Description: Room 443 is part of the original construction of Building 777.

Room 443 contains a one million electron volts (MeV) x-ray device that was used to radiograph parts within a glovebox. The carousel rotates within the glovebox around the x-ray source. Parts were positioned within the carousel and the film was placed in a holder outside the glovebox. The carousel was only rotated when receiving new parts or shipping completed parts back to through the R-Line. The film packages were developed in Room 474D. The filters contained lead foils, 0.005 - 0.020 inch thick (reference comments from former NDT employee). Lead filters, shielding, and identification numbers were used with the x-ray device (reference archived WSRIC 777-10). Sulfur hexafluoride is used as an insulating gas for the machine.

A dye penetrant operation was performed n a transfer cart occasionally in the 1960s. The chemicals used were aerosol cans of Zyglo (Magnaflux) penetrant, cleaner, and developer, which were provided in a kit. The cleaner was expended quickly. If more cleaner was needed, trichloroethylene was used (reference comments from former NDT employee).

The other gloveboxes in the room were used to prepare the parts to be x-rayed. In the 1950s and 60s, a tray filled with carbon tetrachloride was used to remove oil from parts prior to x-ray (reference interview with former NDT employee).

95

Constituent	Present?	Comments
Asbestos	No	There is no insulation, floor tile, or fireblankets within the set.
Beryllium	Yes	Beryllium parts may have been stored on carts in Room 443. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	A small cylinder of sulfur hexafluoride will be removed during deactivation. Any liquids (i.e. oil or water) in the x-ray unit or glovebox peripherals will be drained. Carbon tetrachloride has been used within the gloveboxes in the past.
Lead and other heavy metals	Yes	There are pieces of lead metal stored in the room. In addition there is lead shielding within the x-ray unit. There is a thermometer on the x-ray unit that contains mercury. The paint on the floor, walls and glovebox could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not determined	The gloveboxes in this room need to be scanned, prior to packaging in waste containers, as required by the current criticality controls.
Radioisotope Sources	No	There are no sources associated with this set. There are radiation producing items (x-ray tubes) within this set but no sources.
Radiological	Yes	The gloveboxes are expected to be contaminated $>10^6$ dpm Pu on the inner surfaces. Fixed contamination beneath the paint on gloveboxes or in the room can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates $> 10^5$ cpm.

Process Number: 776_777-032-00

Title: SET 32 Room 436, 444, 446, 447, 448, 449, 450, Compliance area 90.86

Physical Description: Rooms 448 and 449 are vaults with thick concrete walls. Rooms 444 and 450 are office type rooms. Rooms 436 and 447 are hallways. Room 446 is passage from Room 447 to Room 430 (Set 25). This set is bounded by columns 15-18 and L-N.

Process Description: The area occupied by this set is part of the original Building 777 floor plan except Rooms 436 and 446. The construction of Rooms 448 and 449 has not changed except for the addition of security enhancements. A small film reading room in the southwest corner of Room 447 was removed prior to 1966. Rooms 444 and 450 appear on a 1966 floor plan (reference drawing 13940-2). The north wall and door for Room 446 was installed after 1972 (reference 1972 equipment location drawing 30776-2090

Rooms 448 and 449 are the only rooms in the set that have or had a process associated with them. These rooms were originally used for radiography of parts/pits using a cobalt-60 source. The process is

96

similar to the x-ray machines in Rooms 442 and 443 except the gamma radiation from the cobalt source is used to expose the film. The radiation source was stored in a lead shield called a pig. The radiography equipment in Room 448 was removed in the 1980s in order to install racks for can storage. The can storage vault is two levels high. The top level is accessed by climbing a ladder. The shielding on the racks is a combination of water walls (neutron shielding) and lead (gamma shielding). There are a total of 667 can storage positions on the racks (reference criticality evaluation EPE-4). The cans stored in the vault contain a variety of plutonium residues. After the cessation of production activities in 1989, Room 449 was used for the storage of plutonium and enriched uranium in shipping containers. The radiography equipment and Co-60 source are still in this room.

Constituent	Present?	Comments
Asbestos	Yes	There is insulation on the cold water pipes in Room 436/447. Rooms 444 and 450 have suspended ceilings with ceiling tiles. The type of ceiling tile will be compared to other tiles than have been sampled for asbestos to make a final asbestos determination.
Beryllium	Yes	Beryllium parts may have been radiographed or stored on carts in Rooms 448 or 449. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Any liquids (i.e. oil or water) in the x-ray unit, including hydraulics, will be drained. The water in the water walled storage positions and the batteries in Room 448 will be drained after the SNM is removed from the vault during deactivation.
Lead and other heavy metals	Yes	There are pieces of lead metal stored in the Rooms 447, 448, and 449. In addition there is lead shielding within the cobalt sources in Room 449 and the can storage positions in Room 448. The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	The SNM within the vault is stored with containment (i.e. metal can, plastics bags, within a pit) at all times. Therefore, holdup is not an issue.
Radioisotope Sources	Yes	The cobalt-60 and alpha met sources will be removed during deactivation.
Radiological	Yes	Fixed contamination beneath the paint in the room can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a range of 10^5 to > 10^6 cpm.

97

Process Number: 776_777-033-00

Title: SET 33 Room 445 and Gloveboxes 494, 495, 499, 500, 501, 502

Physical Description: This set includes most of the floor area and all five gloveboxes in Room 445. Portions of the north and south ends of Room 445 are included in Sets 43 and 37, respectively. The set is irregularly shaped and is not easily defined by column numbers. The bulk of the set is between columns 21-24 and column E-G.

Process Description: Room 445 is part of an addition to Building 777, referred to as 777A, that was completed in 1962. Room 445 was originally designated as part of Room 152 on a 1959 floor plan (reference I-5803-77A).

The operations in Room 445 were referred to as the Environmental Testing and Development Laboratory or ETDL. The area was referred to as Component Integrity Testing in a 1989 document. In the 1990s, the area was renamed Nuclear Assembly Technology , after the organization responsible for the area. In addition, storage cabinets from other areas of the building were relocated into Room 445 in the 1990s. The operations in this area included welding and testing of nuclear and non-nuclear materials.

Gloveboxes 494 and 495 were used to pressure test parts including pit subassemblies and reservoirs. The pressure was applied hydrostatically or with compressed helium and argon gas. Actuators with small amounts of explosives were removed from these gloveboxes in 1998.

Gloveboxes 499, 500, and 501 were used to tensile test plutonium parts (reference archived WSRIC process 777-13).

Instrumentation was applied to parts in Glovebox 502. Instrumentation such as strain gages and thermocouples were attached to the part with epoxy or a spot weld (reference archived WSRIC process 77-13).

Testing operations outside of the gloveboxes include tensile testing of stock material and welds in two Tinius-Olsen tensile strength machines; and temperature and humidity effects on parts in the Ransco environmental chamber (reference archived WSRIC process 777-13). Beryllium was welded in the PIGMA welder located in the north end of the room. There is a significant quantity of beryllium stored in a cabinet near the welder.

Before Rooms 459A and 459 (set #39) were added on to Building 777, the pressure testing equipment in these rooms was located in Room 445 (reference drawing 1-5803-77A).

Constituent	Present?	Comments
Asbestos	Yes	The heating mantle will be managed as asbestos waste unless sampling or manufacturer information indicates the material is nonasbestos. There is no floor tiles or fire blankets associated with this set.
Beryllium	Yes	Beryllium was welded in the PIGMA welder. Beryllium metal is stored in the cabinet north of the PIGMA welder and in a desk near Room 458. Beryllium parts may have been handled within the environmental test chamber and gloveboxes. Beryllium surveys confirm the presence of beryllium contamination in these areas. Additional surface surveys will be performed prior to initiating decommissioning activities.

98

Constituent	Present?	Comments
Chemicals	Yes	Oil from the vacuum pumps and hydraulic units will be removed during deactivation. The refrigerant from the environmental test chamber will be removed prior to D&D. The can of magnesium oxide below Gloveboxes 494 and 495 will be removed during deactivation.
Lead and other heavy metals	Yes	There is lead shielding, leaded glass, and leaded gloves on the gloveboxes. There is lead tape, leaded aprons, and leaded gloves stored in the cabinets. The paint on the floor, walls, and gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not determined	Gloveboxes 494 and 495 have been scanned for holdup. The holdup in these two gloveboxes does not require remediation prior to glovebox removal. The other four gloveboxes in this set need to be scanned
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The inside surfaces of the gloveboxes are contaminated with > 10^6 dpm. There is up to 10,000 dpm of fixed contamination on the exterior of the gloveboxes. There is fixed contamination on a section of bagged ductwork, a downdraft vacuum, and room exhaust ducts. The contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 10^5 -> 10^5 cpm.

Process Number: 776_777-034-00

Title: SET 34 Room 452 and 475 Gloveboxes 022, 027, 029, 034, 035, 522, 548 and associated H-Line

Physical Description: This set includes the gloveboxes and H-line conveyor on the north end of the special assembly shop. The recommended cut in the H-line conveyor, to separate this set from Set 35, is between GB's 522 & 523. The items within these rooms, other than the radioactively contaminated gloveboxes, are included in Set 36. Gloveboxes 034, 522, and 548 are connected directly to the H-Line conveyor. The remaining gloveboxes connect to one another through a series of pass throughs including a pass through to the H-line.

Process Description: Gloveboxes 022, 027, 029, and 035 are a cluster of gloveboxes connected to the H-Line conveyor by a airlock pass-through. When nuclear operations were active in these gloveboxes, the atmosphere was inerted with 94% argon and 6% hydrogen. Equipment in these gloveboxes includes a microscope and a bench lathe. The operations within these gloveboxes were dedicated to the disassembly of pits and subsequent inspection of the components (reference interview with retired Special Assembly manager).

99

There is a welder and camera system in Glovebox 034.

Glovebox 522 contains a lathe.

Glovebox 548 was used to store material in part carriers. The box has 4" of neutron shielding. This box contained an EB welder at one time (reference interview with retired Special Assembly manager).

The gloveboxes in this set were installed after the 1969 fire.

Constituent	Present?	Comments
Asbestos	No	There is no insulation, fire blankets, or floor tile associated with the set.
Beryllium	Yes	Pits with beryllium parts were disassembled within the inert system. Machining necessary to disassemble the pits would contaminate the inside of the glovebox with beryllium
Chemicals	Yes	Oil from the vacuum pumps and hydraulic units will be removed during deactivation. The can of magnesium oxide in Glovebox 034 will be removed during deactivation.
Lead and other heavy metals	Yes	There is lead shielding, leaded glass, and leaded gloves on the gloveboxes. The paint on the gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted gloveboxes. The fluorescent lights can contain mercury. The mercoid switch contains mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not determined	The gloveboxes will be scanned for SNM holdup during deactivation.
Radioisotope Sources	None	There are no sources associated with this set.
Radiological	Yes	The inside surfaces of the gloveboxes are contaminated with > 10^6 dpm. There is up to 40,000 dpm of fixed contamination on the vacuum pumps and associated motors below the gloveboxes. The contamination beneath the paint on gloveboxes can not be measured due to the paint shielding the alpha particles.

180

Process Number: 776_777-035-00

Title: SET 35 Room 452 Gloveboxes 026, 523, 524, 525, 526, 527, 528, 530, 532, 537, 538, 541, and associated H-Line

Physical Description: This set includes gloveboxes and the H-line conveyor on the south end of the Special Assembly shop. The recommended cut to separate this set from Set 34 is between GB's 522 & 523. The items within this room, other than the radioactively contaminated gloveboxes, are included in Set 36.

Process Description:

Glovebox 026 contains a mill.

There is a drill press and muffle furnace in Glovebox 523. Plutonium, depleted uranium or mixed plutonium and beryllium chips were oxidized in the furnace. There are two containers of depleted uranium oxide in this glovebox

Glovebox 524 contains a ultrasonic cleaner, bandsaw and a geometry tank. The ultrasonic cleaner once contained 1,1,1-trichloroethane for cleaning parts. The purpose of the geometry tank was to measure the neutron spectra emitted from parts or pits (reference phone conversation with retired Special Assembly manager). The item to be measured was lowered in to the geometry tank, which extends several feet into the floor. The tank is lined with 1/64" thick cadmium sheet to absorb neutrons (reference geometry tank drawing package)

Glovebox 525 contains an optical comparator.

Glovebox 526 is referred to as Gloveboxes 031, 032, and 033 in a 1983 criticality safety posting. There is a Bridgeport mill in this glovebox. Pu and Pu contaminated materials were processed on the mill.

Glovebox 527 contains a desiccator and is attached to a leak detector.

Glovebox 528 has a heating and refrigeration chamber below the glovebox. Parts were lowered into the chambers for environmental testing. The pneumatic cylinders for raising or lowering the parts is located in a raschig ring filled pit in the floor below the glovebox.

Gloveboxes 530 and 532 are not gloveboxes but are walk-in downdraft rooms. These rooms were used to unpack containment vessels or to assemble pits. The downdraft tables in these rooms minimize the spread of contamination by drawing air down through the surface grate on the table. Several cans of depleted uranium oxide are stored in Glovebox 530.

Glovebox 537 and 538 are connected end to end. These gloveboxes were used to fit parts together as subassemblies or assemblies. Liquid nitrogen was used to in small quantities to make small metal parts contract so they could be inserted in place.

Glovebox 541 was used to weigh items.

101

Constituent	Present?	Comments
Asbestos	Yes	There may be asbestos insulation associated with the muffle furnace in Glovebox 523 and heating chamber in Glovebox 528. The insulation will be managed as asbestos waste unless manufacturer information or analytical results indicate it is non asbestos.
Beryllium	Yes	Mixed beryllium/plutonium chips were oxidized within the muffle furnace in Glovebox 523. Beryllium parts may have been handled within the environmental test chamber and gloveboxes
Chemicals	Yes	Oil from the vacuum pumps and hydraulic units will be removed during deactivation. The refrigerant from the environmental test chamber will be removed prior to D&D. The containerized chemicals will be removed during deactivation.
Lead and other heavy metals	Yes	There is lead shielding, leaded glass, and leaded gloves on the gloveboxes. There is a lead hammer in Glovebox 537. The geometry tank in Glovebox 524 is lined with cadmium. The parts processed within the gloveboxes were made of or coated with a variety of unspecified metals. Any metal fragments or chips discovered in the gloveboxes will be sampled and analyzed for characterization. The paint on the gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted gloveboxes. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not determined	The gloveboxes will be scanned for SNM holdup during deactivation
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The inside surfaces of the gloveboxes are contaminated with > 10^6 dpm. The downdraft rooms have been surveyed as 1,000,000 dpm fixed + removable inside. There is up to 20,000 dpm of fixed contamination on the exterior of the gloveboxes. The contamination beneath the glovebox paint can not be measured due to the paint shielding the alpha particles. The cylinders extending into the raschig ring filled pit beneath Glovebox 528 are Pu contaminated. Depleted and enriched uranium contamination is possible in these gloveboxes. Tritium releases occurred in Glovebox 532 in the 1960s and 1970s. Parts exposed to radiation blasts at NTS were disassembled within the gloveboxes. Residual activation or fission product contamination will need to be addressed.

102

Process Number: 776_777-036-00

Title: SET 36 Rooms 452 and 475 with Gloveboxes 536, 544 and 543 and machining equipment

Physical Description: These two rooms are known as Special Assembly. The gloveboxes included in this set are blanked from other gloveboxes and the conveyor. The other gloveboxes in these rooms are included in Sets 34 and 35. The set is located between columns 23-25 and column H-O.

Process Description: Room 452 is part of an addition to Building 777, referred to as 777A, that was completed in 1962. Room 475 is part of an addition to Building 777, referred to as the Cleaning and Plating Facility, that was completed in 1964 (reference Building 776 Data File). A portion of the wall between Rooms 452 and 475 was removed to allow the addition of more gloveboxes in the early 1970s. Installation of Glovebox 536 began in the late 1980s and was never completed. Gloveboxes 543 and 544 are actually hoods, not gloveboxes. Gloveboxes 543 and 544 were installed in 1962 (reference hood drawings)

The end plate and part of one side of Glovebox 536 was never completed. As such, there is no process associated with this glovebox. There is a mill and lathe in Gloveboxes 543 and 544. These pieces of equipment are marked as beryllium and plutonium contaminated. Based on process history, beryllium was machined in Glovebox 543 only, but the contamination spread to the nearby equipment (reference interview with retired Special Assembly manager).

There is a mezzanine above the north end of Room 452. The major equipment on the mezzanine supported the inert disassembly and surveillance gloveboxes in Room 475. The atmosphere for the gloveboxes was 94% argon and 6 % hydrogen. The atmosphere circulated out of the gloveboxes through an oxygen gettering column and a dessicant column before being reintroduced into the gloveboxes (reference interview with retired Special Assembly manager).

The remaining processes in the room were machining, welding, and pit pumpdown/backfill. The machining in this area included mills, lathes, and drill presses. Several of these machines are marked as beryllium contaminated. Various welders have been located in this area over the years. The only remaining welder is a laser welder in the north end of Room 475. There are numerous storage cabinets in these rooms filled with supplies and tooling to support the processes.

Constituent	Present?	Comments
Asbestos	Yes	The high temperature gloves and heating mantles will be managed as asbestos waste unless sampling or manufacturer information indicates these are nonasbestos.
Beryllium	Yes	Beryllium was machined in Glovebox 543. Beryllium surveys confirm the presence of beryllium contamination near this glovebox. The argon system in the mezzanine is potentially contaminated internally with beryllium. Additional surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Oil from the vacuum pumps and hydraulic units will be removed during deactivation. The can of magnesium oxide will be removed during deactivation. The oxygen getter is identified as Dow Q1. This material needs to be sampled and analyzed to be characterized. The desiccant is a zeolite.

103

Constituent	Present?	Comments
Lead and other heavy metals	Yes	There is lead vise covers, lead bricks, and lead hammers in the rooms. There is lead tape and leaded glove covers stored in the cabinets. The paint on the floor, walls, and gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not Determined	The columns for the gettering material and desiccant need to be scanned for SNM holdup.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	There is up to 10,000 dpm of fixed contamination on the hoods, table, and room exhaust duct. The contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 10^5 –10^6 cpm. In the early 1960s, a contamination incident from a coating machine dispersed plutonium and gold contamination throughout Room 452. Based on the contamination levels on the 1969 fire map, the contamination from the coating incident is bounded.

Process Number: 776_777-037-00

Title: SET 37 Rooms 453, 454, 460 and part of Room 445 (south end)

Physical Description: The horizontal and vertical accelerators are the major equipment in this set. The set is located between columns 21-25 and column C-E.

Process Description: Rooms 445, 453, 454, and 460 are part of an addition to Building 777, referred to as 777A, that was completed in 1962. Room 445 was originally designated as part of Room 152 on a 1959 floor plan. Rooms 453, 454, and 160 were originally designated as Rooms 153, 154, and 160, respectively (reference I-5803-77A, i-7710-77B). Room 460 was added on in 1965 with Rooms 459 and 459A (reference Building 776 Data File).

The operations in this area are an extension of the Environmental Testing and Development Laboratory operations included in Set 33. The testing equipment in Set 37 was used to evaluate the performance of parts during acceleration, vibration or shaking.

The vertical and horizontal machines, a.k.a. the HYGE machines, used compressed nitrogen to rapidly accelerate objects. The Operational Safety Analysis for the horizontal accelerator indicates that forces of 700,000 foot-pounds were possible. The object to be tested was placed in the test cylinder. The thrust foot was released and struck the test object. The test object was caught further down the tube by a deceleration sled (reference OSA 777.17) The accelerator tube is enclosed by a double walled metal

104

cover, 3" sand annulus, and sandbags (reference drawing RF-Z/77-A-1). These pieces of equipment have not be used for at least twenty years (reference OSA 777.17, interview with employee).

Rooms 453 and 460 contained vibration, shaking, and random noise generation equipment. The vibration equipment, power supplies, and switchgear remain in these rooms. In addition, an environmental test chamber removed from Room 445 and excess electronic equipment are stored in Room 453.

Constituent	Present?	Comments
Asbestos	No	There is no floor tile, insulation, or fire blankets associated with this set.
Beryllium	Yes	Beryllium metal samples were found in Room 453. Beryllium parts may have been handled within the testing equipment. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Oil from the compressors and hydraulic units will be removed during deactivation. The refrigerant from the environmental test chamber will be removed prior to D&D.
Lead and other heavy metals	Yes	The paint on the floor, walls, and accelerators could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively. The room thermostats can contain mercury. Some of the internal parts of the horizontal accelerator are cadmium plated.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. The switchgear will be inspected for PCB capacitors when it is removed. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	The only SNM handled in this set was pits. There are no holdup issues with pit handling since the material is contained.
Radioisotope Sources	No	There are no sources associated with this set
Radiological	Yes	There is up to fixed contamination on the exterior of the horizontal accelerator including the sandbags. The contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 10^5 -> 10^6 cpm.

105

Process Number: 776_777-038-00

Title: SET 38 Rooms 301, 302, 455, 456, 457, 458, 461

Physical Description: The rooms in this set are along the eastern edge of Building 777. The set is L-shaped and is not easily defined by column numbers. The set is between columns 23-25 and column F-H.

Process Description: These rooms are part of an addition to Building 777, referred to as 777A, that was completed in 1962. The room numbers were originally designated beginning with a "1" instead of a "4" on a 1959 floor plan (reference I-5803-77A).

Rooms 301 and 302 were last used by the Non Destructive Testing R&D group for acoustic emission research for part inspection. The rooms were originally used as office areas (reference drawing 13644.

Rooms 455 and 457 are used for drum storage at this time. Prior to the production curtailment in 1989, these rooms were used by the Special Assembly organization. Operations in these rooms included leak checking, pit evacuation and backfill, weighing and electronic etching. 1,1,1-trichloroethane and ethanol were used to clean parts in Room 455 (reference archived WSRIC process 777-2). Rooms 455 and 457 were originally designed as a vacuum lab and radiation laboratory, respectively (reference drawings 1-5803-77A and RF77-20-350-7). The asbestos covered shelves in Room 457 shown on drawing RF77-20-350-7 no longer exist in the room.

Room 456 is an access corridor to the office mezzanine (Rooms 301-302) and the tunnel between Buildings 777 and 779. Before the tunnel was constructed, the room served as an airlock entrance to Building 777.

Room 458 was last used as an office area for the Special Assembly foreman and manager. Room 458 was originally a calibration laboratory (reference drawings 1-5803-77A and RF77-20-350-7).

Room 461 contains a beryllium contaminated tool cutter and a process waste sink. Room 461 was originally a darkroom(reference drawings 1-5803-77A and RF77-20-350-7).

Constituent	Present?	Comments
Asbestos	Yes	The floor tile from Rooms 301 and 302 and pipe insulation will be managed as asbestos waste unless the waste is sampled and shown to be non asbestos.
Beryllium	Yes	The tool cutter in Room 461 is marked as beryllium contaminated. Beryllium metal parts were handled in Rooms 455 and 457. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Oil from the equipment will be removed during deactivation. The containerized chemicals (salt, calcium sulfate) in Room 458 will be removed during deactivation.

106

Constituent	Present?	Comments
Lead and other heavy metals	Yes	There is leaded glass in Room 457. There are printed circuit boards and a leaded apron in Room 458. Lead scrap, lead security seals, and a lead shielded cart are located in this set. The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively. The room thermostats can contain mercury. There are mercury filled thermometers in Rooms 302 and 455.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. The switchgear will be inspected for PCB capacitors when it is removed. A obsolete power supply in Room 302 will be inspected for PCB fluid when it is removed. The power supply is marked as radioactively contaminated and is assumed to pre-date the 1969 fire. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	There are no areas for SNM holdup in this set.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	There is up to fixed contamination in/on the equipment in Rooms 302 (power supply, surface plate), 455 (pumpdown table, hood). In addition, there is fixed contamination on bagged tools within cabinets in several of the rooms. The contamination beneath the paint in the rooms can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 10^5 -10^5 cpm.

Process Number: 776_777-039-00

Title: SET 39 Rooms 459 and 459A

Physical Description: The rooms in this set are along the eastern edge of Building 777. The set is between columns 24-25 and column D-F

Process Description: Rooms 459 and 459A is part of an addition to Building 777, referred to as the High Pressure Gas Test Facility, that was completed in 1965 (reference Building 776 Data File). At the time of the addition, Room 459A was designated as Room 451. The room number was changed to Room 459A sometime after 1973 (reference drawing 24661-1).

Rooms 459 and 459A were used for pressure testing of parts from construction until the production shutdown. Room 459 contains the instrumentation panels, induction furnace, and supply cabinets for the pressure testing equipment in Room 459A. There are two pieces of pressure testing equipment in Room 459A. The first is a unit that uses water/Plasthall DOS(dioctyl sebecate) or water/antifreeze mixture to apply hydrostatic pressure to a part (reference archived WSRIC 777-13 and retiree information supplied by Kaiser-Hill). The second piece of equipment uses high pressure helium and argon from the compressor pit, Building 781, to test parts (reference archived WSRIC 7777-13). Radioactive waste drums are now stored in Room 459A.

107

Constituent	Present?	Comments
Asbestos	Yes	The pipe insulation will be managed as asbestos waste unless the waste is sampled and shown to be non asbestos. There is no floor tile or fire blankets associated with this set.
Beryllium	Yes	Beryllium metal parts could have been pressure tested in Room 459A. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Oil or any other liquids from the equipment will be removed during deactivation. The container of water in Room 459 will be removed during deactivation.
Lead and other heavy metals	Yes	There is lead metal and circuit boards in Room 459. The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively. There is a mercury switch in this set.
PCBs	Yes	The InductoTherm furnace contains capacitors filled with Pydraul dielectric fluid. The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
Radiological	Yes	There is 2400 dpm fixed contamination on a room exhaust duct. Depleted uranium contamination is possible in the pressure test units, especially the hydrostatic unit. The contamination beneath the paint in the rooms can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 10^5 –10^6 cpm.

Process Number: 776_777-040-00

Title: SET 40 Room 462 – A Vault

Physical Description: Room 462 is a cinderblock-walled room with an inner metal "gorilla cage" for security purposes. There is a 4' Benelex wall shaped like a horseshoe within the room to lower exposure to process specialists packing or unpacking shipping containers. There are a series of metal racks within the vault for the storage of SNM. Room 462 is bounded by columns 19-21 and N-P.

Process Description: Room 462 currently serves two purposes. The first is a SNM storage area for Pu and enriched uranium. The second is an area to pack and unpack SNM containers.

Room 462 was not part of the original building 776/777 construction. Room 462 was added as part of an addition in 1962 (reference Building 776 Data File). A 1965 floor plan shows that Room 462 was used as a vault (reference drawing 13644).

108

Constituent	Present?	Comments
Asbestos	No	There is no insulation, fire blankets or floor tile in Room 462
Beryllium	Yes	Beryllium metal parts have been stored on carts or in shipping containers in Rooms 462. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Tubes of vacuum grease, sealant, and containers of cleaning supplies will be removed during deactivation.
Lead and other heavy metals	Yes	There are pieces of lead metal, leaded glass, and leaded aprons are stored in the Rooms 462. In addition there is lead shielding on the benelex wall. The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The room thermostat and fluorescent lights can contain mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	No	The SNM within the vault is stored with containment (i.e. metal can, plastics bags, within a pit) at all times. Therefore, holdup is not an issue.
Radioisotope samples	No	There are no sources associated with this set.
Radiological	Yes	Fixed contamination beneath the paint in the room can not be measured due to the paint shielding the alpha particles. The map of floor contamination levels after the 1969 fire indicates that there was no contamination spread inside the vault. Sampling will be require to determine if there is any contamination beneath the paint.

Process Number: 776_777-041-00

Title: SET 41 Room 463 and Gloveboxes A4, A5, A6, A7, A8, A9, A11

Physical Description: This set covers Room 463 (bounded by columns 17-21.5 and L-N). There are seven gloveboxes, a conveyor connection between the gloveboxes and Room 437; and storage cabinets. The major equipment in the gloveboxes consists of a four (4) metal deposition or "sputtering" systems and a vacuum bakeout furnace. Room 463 is larger today than when it was originally built. Room 464, which is immediately north of Room 463, was approximately twice the size of its current area, occupying a portion of the current room 463. At that time, Room 464 was vacuum bakeout area for beryllium parts (reference drawing 14376-13 and walkdown with retired assembly manager).

Process Description: Room 463 is part a Building 777 addition completed in 1964 (Reference Building 776 data file). Rooms 437 (Set 29) and 463 supported metal coating operations. The most common metal coating was plutonium.

Cleaned substrates from the gloveboxes in Room 437 were moved to Glovebox A-5 to be weighed. After weighing, the substrate was coated in glovebox A-4, -6, -8 or -11. After coating the part was returned to Glovebox A-5 for weighing. Freon and ethanol were used on wipes to do spot cleaning (reference archived WSRIC 777-16). Glovebox A-7 has a vacuum bakeout furnace and a vacuum diffusion pump

109

attached to it. This pump may have used mercury instead of oil as a seal (reference input by retiree) Glovebox A-9 was used for general support of the coating systems. Further research is needed for specific information on this glovebox.

Prior to its use as a coating area, the gloveboxes in Room 463 were used for cathodic cleaning of plutonium parts with sulfamic acid (reference walkdown with retired assembly manager). Based on the description of the cathodic cleaning process, the process is similar to electropolishing.

The area outside of the gloveboxes contains equipment and supplies to support the operations within the gloveboxes.

Constituent	Present?	Comments
Asbestos	No	There are no insulation, floor tile, or fire blankets within the gloveboxes
Beryllium	Yes	Leak detector parts stored in the room have manufacturer warnings regarding beryllium in the ceramic rings. There are beryllium metal discs stored in one of the cabinets. The north end of the room was once part of Room 464. Room 464 contained furnaces used to "bake out" beryllium parts.
Chemicals	Yes	Ethanol and Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) were used as solvents in these gloveboxes. All liquids will be drained prior to beginning decommissioning activities. Containerized chemicals will be removed during deactivation.
Lead and other heavy metals	Yes	There is lead shielding and leaded gloves on the gloveboxes. Leaded glovebox covers, gloves, printed circuit boards, and aprons are stored in the cabinets. The paint on the floor, walls, and gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. Leaded glass contains regulated quantities of barium and lead. The vacuum pump connected to Glovebox A-7 is assumed to contain mercury until the pump liquid can be verified to be mercury or oil.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Yes	Gloveboxes A-4, -5 and -11 have been scanned for Pu holdup. The Pu holdup in these gloveboxes does not require remediation prior to decommissioning. While enriched uranium was handled in these gloveboxes, measurable U holdup has not been detected to date.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The gloveboxes are expected to be contaminated >10^6 dpm Pu on the inner surfaces. The maximum fixed contamination on the exterior of the gloveboxes is 600,000 dpm. An electrical cabinet in the room is marked as containing fixed contamination. Fixed contamination beneath the paint on gloveboxes or in the room can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 10^3 - 10^4 cpm.

110

Process Number: 776_777-042-00

Title: SET 42 Rooms 464, 477, 477A, 463A, 463B

Physical Description: Rooms 463, 463A, 464, 477, and 477A are located in the north part of Building 777 between A and B vaults.

Process Description: The area encompassed by this set was part of a building addition completed in 1962. Room 464 was last used as a control room for the coatings process. In a 1968 drawing of the area, Room 464 was approximately twice the size of its current area, occupying a portion of the current room 463. At that time, Room 464 was vacuum bakeout area for beryllium parts (reference drawing 14376-13 and walkdown with retired assembly manager).

Room 463A is filled with radiation instrumentation parts and repair equipment. Room 463B contains coatings supplies, a cooling water tank, and other miscellaneous items. Rooms 463A and 463B were built after 1968. The area occupied by these rooms was originally part of Room 465.

Room 477 appears to always have been utilized as an office area until after the production shutdown. It was last used as a packaging and staging area for excess chemicals and batteries. Room 477A was added within the original Room 477 footprint after 1968.

Constituent	Present?	Comments
Asbestos	Yes	The pipe insulation on the water pipes in Room 463B is visually identified as fiberglass insulation but must be confirmed to be nonasbestos. The tile floor in Rooms 477 and 477A will be managed as asbestos waste.
Beryllium	Yes	Beryllium parts were baked to remove moisture in Room 464 during the 1960s. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Water from the process water tank in Room 463B will be drained during deactivation. The refrigerant and oil from the air conditioner in Room 464 will be removed during deactivation.
Lead and other heavy metals	Yes	The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent lights and room thermostats can contain mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	No	There are no areas for SNM holdup within this set
Radioisotope sources	Yes	The alphamet sources in Room 463A will be removed during deactivation.
Radiological	Yes	Fixed contamination beneath the paint on the in the room can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 10^3 - 10^4 cpm.

Process Number: 776_777-043-00

Title: SET 43 Rooms 465, 465A, and the north end of Room 445

Physical Description: The north end of Room 445 and 465 primarily are access corridors to other rooms. Room 465A is constructed of 8 foot high block walls and steel mesh ceiling for storage of various materials. The set is irregularly shaped and is not easily defined by column numbers. The bulk of the set is between columns 22-23 and column L-P.

Process Description: Room 445 is part of an addition to Building 777, referred to as 777A, that was completed in 1962. The Parts Storage addition, which includes Rooms 465 and 465A, was also completed in 1962. Room 445 was originally designated as part of Room 152 on a 1959 floor plan (reference I-5803-77A). The walls for Room 465A were built between 1966 and 1968, reducing the size of Room 465 (reference 14376-13 and 13940-3).

The north end of Room 465 is currently contains two hoods and two storage cabinets. The hoods were used for compatibility and cleaning testing for hazardous solvent replacements, such as Oakite, based on the equipment and chemicals found in and near the hoods, The 1960s the area housed various welders. The materials that were welded included stainless steel and beryllium (reference interview with retired assembly manager).

Rooms 465 and 465A have belonged to the packaging and shipping organization (Production Control, then Nuclear Material Packaging and Handling). The areas are still used for the staging and storage of shipping containers and associated supplies.

Constituent	Present?	Comments
Asbestos	No	There are several square shaped refractory blankets used in the top of shipping containers. Manufacturer information is available to confirm the insulation is non asbestos. There is no floor tile or fireblankets within the set.
Beryllium	Yes	Beryllium parts were stored in packages in Room 465. At least one pressure cooker in Room 465 is marked as internally contaminated with beryllium. There is beryllium contaminated equipment in Room 445 in Set 33, which is south of Set 43. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Containerized chemicals (Bonami, 1,1,1-trichloroethane, oil, Oakite, water) in and near the two hoods in Room 445 will be removed during deactivation.
Lead and other heavy metals	Yes	There are printed circuit boards, lead-taped vials, lead bricks, and leaded aprons stored within this set. The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent lights and room thermostats can contain mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	There are no areas for holdup of SNM within this set.
Radioisotope Sources	Yes	The combo source will be removed during deactivation.

112

Constituent	Present?	Comments
Radiological	Yes	Fixed contamination exists within the used pressure cookers in Room 465A. Fixed contamination beneath the paint on the in the room can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 10^3 - >10^6 cpm.

Process Number: 776_777-044-00

Title: SET 44 Rooms 466, 467, 468, 469, 470, 471, 472, 474, 474D

Physical Description: The rooms in this set are associated with the radiography vaults in Sets 30, 31, 32 and 45. This set is bounded by columns 17-19 and N-P.

Process Description: These rooms are part of an addition to Building 777 finished in 1964 (reference Building 776 Data File).

Rooms 466 and 468 are referred to as vaults on a 1968 floor plan (reference drawing 14376-13). Room 468 was used for refrigerated storage of film (reference drawing markup by former NDT employee). These rooms are currently used for equipment storage.

Room 467 was originally used as a film reading room (reference drawing markup by former NDT employee). The room is currently used for equipment storage.

Room 469 houses a small plenum and other utility equipment.

Room 470 has been used for document and equipment storage since the addition was completed.

Room 471 was once used as a radiography vault. The x-ray device was referred to as the low keV machine. The operation of this machine was similar to the other x-ray devices in the other vaults. This area is currently used for the storage of accountable sources.

Room 472 contains the only glovebox in this set. The glovebox contains a tank that was used for ultrasonic scanning. The tank was filled with silicone oil, Freon TF, 1,1,1-trichloroethane, trichloroethylene, or monobromobenzene (reference criticality limits). The tank may have contained benzene in the 1960s (reference interview with former NDT employee). The last fluid used in the tank was silicone oil based on the oil drum removed form the room .

Rooms 474 and 474D were used for film developing. Room 474D is a darkroom. Both rooms have process waste connections. A Kodak X-Omat film developing machine in Room 474 extends into Room 474D. The developer and replenisher fixer supply was placed in plastic tanks in Room 474. The used fixer solution was sent to Building 774 for silver recovery (reference archived WSRIC 777-10).

Constituent	Present?	Comments
Asbestos	Yes	There is steam pipe insulation in Room 468. This insulation is assumed to be asbestos.

113

Constituent	Present?	Comments
Beryllium	Yes	Beryllium parts were moved on carts through the hallway and radiographed in Room 471. Beryllium "windows" were used to filter out low energy x-rays on the low keV unit in Room 471. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Any liquids (i.e. oil or water) will be drained from equipment. The containers of oil and freon will be removed during deactivation.
Lead and other heavy metals	Yes	There are pieces of lead metal stored in the Room 471. In addition there is lead shielding on the sources and in the door to this room. There is leaded gloves and lead shielding on the glovebox in Room 472. The radiography film in Room 474D could contain regulated quantities of heavy metals such as cadmium based on information from Kodak. Equipment that contacted the fixer solution will be contaminated with silver. The paint on the floor, walls, and glovebox could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not Determined	The glovebox and tank in Room 472 need to be scanned for holdup.
Radioisotope Sources	Yes	The sources in Room 471 will be removed during deactivation, including the depleted uranium pig used for shielding.
Radiological	Yes	The gloveboxes are expected to be contaminated $>10^6$ dpm Pu on the inner surfaces. Fixed contamination beneath the paint on gloveboxes or in the room can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 10^3 -10^5 cpm.

Process Number: 776_777-045-00

Title: SET 45 Room 473, 476

Physical Description: Room 473 is a radiography vault. Room 476 is a hallway that connects Room 442 and 473 with the remainder of the building. This set is bounded by columns 15-17 and N-P.

Process Description: These rooms are part of an addition to Building 777 finished in 1964 (reference Building 776 Data File).

Room 473 contains a one million electron volts (MeV) x-ray device that was used to radiograph pits. The film packages were developed in Room 474D. Lead filters, shielding, and identification numbers were used with the x-ray device (reference archived WSRIC 777-10). Sulfur hexafluoride is used as an insulating gas for the machine.

114

Room 476 has storage racks along the north wall. The sliding doors are two pieces of wood on either side of lead shielding. These racks were used to store pits awaiting radiography (reference interview with former NDT employee).

Constituent	Present?	Comments
Asbestos	No	There is no insulation, floor tile, or fireblankets within the set.
Beryllium	Yes	Beryllium parts may have been radiographed and stored on carts in Room 473. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Sulfur hexafluoride is an insulating gas within the x-ray device. Any liquids (i.e. oil or water) in the x-ray unit will be drained.
Lead and other heavy metals	Yes	There are leaded gloves and pieces of lead metal stored in the room. The door to Room 473 and the storage rack doors in Room 476 contain lead metal. In addition there is lead shielding within the x-ray unit and on the floor. The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	There are no areas that SNM could accumulate within this set.
Radioisotope Source	Yes	The gamma alarm and radiography sources will be removed during deactivation.
Radiological	Yes	Fixed contamination exists within the x-ray unit. Fixed contamination beneath the paint on the in the room can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 10^3 -10^4 cpm.

Process Number: 776_777-046-00

Title: SET 46 Room 478 – B Vault

Physical Description: Room 478 is a cinderblock-walled room with an outer metal "gorilla cage" for security purposes. There are a series of metal racks within the vault for the storage of Special Nuclear Material (SNM). Room 462 is bounded by columns 23-24 and N-P.

Process Description: Room 478 was last used to store SNM. The SNM was removed in 1998 The criticality limits permitted storage of U-235, depleted uranium, or beryllium in the vault. Some of the enriched uranium was contaminated with plutonium. The depleted uranium and beryllium parts were moved to Room 483A in the early 1980s (reference interview with former production control/disassembly employee).

Room 478 was not part of the original building 776/777 construction. Room 478 was added as part of an addition in 1962 (reference Building 776 Data File). A 1965 floor plan shows that Room 478 was used as a vault (reference drawing 13644).

115

Constituent	Present?	Comments
Asbestos	No	There is no insulation, fire blankets or floor tile in Room 478
Beryllium	Yes	Beryllium metal parts have been stored on carts or shelves in Rooms 478. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	No	No chemicals were noted for this set on the walkdown or in the process history.
Lead and other heavy metals	Yes	The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent lights can contain mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	The stored SNM has been removed from this vault. The SNM within the vault was stored with containment (i.e. metal can, plastics bags, within a pit) at all times. Therefore, holdup is not an issue.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	Fixed contamination beneath the paint in the room can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 10^3 -10^4 cpm. Sampling will be require to determine if there is any contamination beneath the paint.

Process Number: 776_777-047-00

Title: SET 47 Rooms 479, 481, 482, 483, 483A, 483B including compliance area Part B 90.68

Physical Description: The rooms in this set are storage areas and access corridors to other rooms. The set is L-shaped and is not easily defined by column numbers. The set is located between columns 24-26 and column L-P.

Process Description: Room 479 is part of an addition to Building 777, referred to as the Cleaning and Plating Facility, that was completed in 1964 (reference Building 776 Data File). The remaining rooms in this set were added between 1966 and 1968 (reference drawings 13940 and 14376). There have been no major modifications to these rooms.

Shipping containers and associated equipment, such as forklifts, are stored in Rooms 479, 481, and 482. These rooms also connect the northeast dock to the remainder of the building.

Room 483 has been used for drum storage since 1980 (reference criticality limits). The original use of this room was inspection of surveillance pits.

Room 483A has been used as a vault since its construction. Stainless steel, vanadium, beryllium, aluminum and depleted uranium parts have been stored in this vault since the early 1980s (reference

116

interview with former production control/disassembly employee). Drums of classified waste, parts, shipping containers, and classified tooling were also stored in this vault.

Room 483B is a small room that connects Rooms 475 and 483 to an exterior door.

Constituent	Present?	Comments
Asbestos	Yes	There are several square shaped refractory blankets used in the top of shipping containers. Manufacturer information is available to confirm the insulation is non asbestos. The insulation on the heater pipes will be managed as asbestos waste unless it is shown to be nonasbestos by analysis. There are no floor tile or fire blankets within the set.
Beryllium	Yes	Beryllium parts are stored in Room 483A. Beryllium parts may have been stored or moved through the other rooms in this set. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Containerized chemicals near the forklift charging station (water, sodium bicarbonate, and magnesium oxide) will be removed during deactivation.
Lead and other heavy metals	Yes	There is lead shielding from shipping containers and lead bricks stored in Room 482. Leaded aprons are stored in Room 481. The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent lights and room thermostats can contain mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	No	SNM was not processed within this set.
Radioisotope Sources	Yes	The source on the combo monitor in Room 481 will be removed during deactivation.
Radiological	Yes	The depleted uranium parts stored in Room 483A will be removed during deactivation. Fixed contamination beneath the paint on the in the room can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 10^3 - 10^5 cpm.

Process Number: 776_777-048-00

Title: SET 48 Kathabar system (except inside plenums)

Physical Description: There are nine Kathabar systems, numbered K1 through K9, located on the second floor of Building 776 associated with the supply plenums. The pumps for units K-2, -5, -6, and -8 are included with this set. There is a separate Kathabar system for the Glovebox Dry Air (GBDA) System (in Set 72).

Process Description: The Kathabar systems are used to dehumidify air. The first Kathabars installed in 1962 were dedicated to drying the room air (reference Building 776 Data File and interview with retired utilities manager). This Kathabars used Kathene to dehumidify the air. Kathene is a mixture of lithium chloride, sodium chromate, and water. The condensed water from the drying of the air was discharged to the sanitary waste system The Kathabars used for the room air continued to operate unit the late 1980s. The Kathabar units K-3/7, -4, and -8 were upgraded in the mid 1980s All of the externals were upgraded including new regenerators, fans, and sumps. The Kathene solution is corrosive and began to corrode through the equipment and absorb into the concrete on the second floor. Eventually, the Kathene leaked through into Room 430 in Building 777. The Kathene was drained from the Kathabar unit in the 1980s. Brine is now circulated through the Kathabar loops within the supply plenums to cool the incoming air (reference interview with retired utilities manager).

Constituent	Present?	Comments
Asbestos	Yes	The insulation on the Kathabar K-1 is listed in the asbestos inventory. Insulation on the remaining units will be managed as asbestos
Beryllium	No	There is no beryllium associated with the Kathabar units. Beryllium was not stored or processed on the second floor. The only potential site of beryllium contamination on the second floor is in the exhaust plenums. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	The brine in the units will not be drained until the D&D phase because cooling of the air is needed to keep the temperature in the buildings comfortable.
Lead and other heavy metals	Yes	Kathene sludge has been analyzed and shown to contain regulated amounts of cadmium, chromium, and lead
PCBs	No	There are no ballasts , capacitors, or oils associated with the Kathabars. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	No	SNM was not processed in the Kathabars.
Radioisotope Source	No	There are no sources associated with this set.
Radiological	Yes	There is no known radiological contamination of the Kathabar units except for the GBDA Kathabar (Set 72). However, since the equipment is not completely surveyable, the equipment will be disposed of as radiologically contaminated.

Process Number: 776_777-049-00

Title: SET 49 Modulab

Physical Description: The Modulab is an controlled environment metal room within the north end of Room 445. It is located between columns 22 and 23 and is approximately 20' x 40'.

Process Description: The Modulab was installed in the early 1960s in Room 445. Room 445 is part of a building addition referred to as 777A that was completed in 1962

The area occupied by the Modulab was used as a pit assembly area prior to the Modulab installation (reference drawing 20-350-0007). The processes within the Modulab were metal coating, bonding, lapping and inspection processes.

The metal coating process involved sputtering of films onto substrates. The material to be deposited on the substrate was removed from a target by electrical force. The process uses various gases (argon, krypton, and oxygen) and liquid nitrogen. The following materials were the possible choices for targets or substrates (reference OSA 777.054):

aluminum	nickel	yttrium
carbon	scandium	zinc
chromium	tantalum	zirconium
copper	thorium	steels
gold	thulium	stainless steel
iron	tungsten	
molybdenum	uranium-238	
niobium	vanadium	

Alloys of the above base metals were approved for use. Uranium-238 is the primary material used in this process (reference OSA 777.054).

The bonding and lapping processes were related. Metal samples, including depleted uranium and beryllium, were lapped to create a very flat surface for the bond process. The lapping machines have a circular lapping surface that rotates. The lapping process used an abrasive suspended in a liquid such as aluminum oxide in lubricating oil. The sample was placed in contact with the lapping surface until the desired flatness was achieved. After lapping, the samples were cleaned in a ultrasonic cleaner with soap and water (reference OSA 777.024). The samples were then coated by the Hot Hollow Cathode method in another area, presumably Building 444. After coating the samples were returned for bonding. The bonding was perfumed in a hydraulic press. The two samples were pressed together and the bond zone was heated inductively to create a bonded specimen (reference OSA 777.024). The specimen was then machined in another facility. The machined specimen was returned for unspecified destructive testing. Based on the microscopes and other optical equipment remaining in the area, inspection of the samples was done in this area.

19

Constituent	Present?	Comments
Asbestos	Yes	The gloves used for handling thermally hot samples will be managed as asbestos waste.
Beryllium	Yes	The lapping machine in the Modulab is marked as beryllium contaminated. There is a portion of a beryllium ingot and other pieces of beryllium stored in a cabinet . Beryllium has been detected on smears taken from the Modulab. Additional surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	The only containerized chemical discovered during the Modulab walkdown is a column of dierite (calcium sulfate). Ethanol and varsol were used as solvents in the lapping process. Oil from the hydraulic systems and vacuum pumps will be drained during deactivation.
Lead and other heavy metals	Yes	Lead metal is located in the cabinet drawers.
PCBs	Yes	The InductoTherm furnace contains capacitors filled with Pydraul dielectric fluid. The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	No	SNM was not processed in the Modulab.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	There are depleted uranium metal samples in the Modulab. In addition, some of the equipment may be contaminated with depleted uranium. According to the OSAs for the processes, plutonium was not processed in the Modulab. Based on the contamination map from the 1969 fire, the Modulab was not internally contaminated. The walls of the Modulab are part of Set 82.

Process Number: 776_777-050-00

Title: SET 50 Rooms 101, 102, 103, 103A, 104, 104A, 104B, 104C, 104E, 106A, 106D, 107, 107D, 107E, 108, 108A, 108B, 108C, 109, 109A, 109C, 109D, 110, 112, 112A, 112B, 113, 113B, 113C, 114, 116B, 117, 119, 120, 121, 129, 140, 149

Physical Description: This set encompasses the office area on the south side of the building, outside of the Radiation Buffer Area (RBA) and Contamination Area (CA). In addition, a stairwell (Room 140) in the RBA and an entrance into the CA (Room 121) are included. This set is bounded by columns 1-9 and A-D.

Process Description: The area occupied by this set is part of the original building construction. Portions of this area have been extensively modified since the original construction, however. Room numbers and interior walls have evolved over the life of the facility. These modifications are noted below.

Most of the rooms in this set are now used as offices, The exceptions are: Room 101 (janitor supply storage), Room 102 (hallway), Room 110 (radiation instrument repair), Room 129 (RBA entrance/airlock), Room 120 (restroom), Room 121 (CA entrance/airlock), Room 140 (stairwell), and Room 149 (stairwell).

120

Room 101 was the original main entrance to Building 776 (reference drawing 1-3137). The room was changed to a storage area once Building 778 was completed and the current entrance and airlock (Room 129) was installed in 1964 (reference RF-AG/76 A-1).

Room 102 is an access corridor that runs east-west along the south end of the building.

Room 103 and 103A were originally one room (103) that was designed as a conference room (reference drawing 1-3137-76). In the 1960s, the conference room was divided into two rooms. Both rooms have been used as offices since that time.

Room 104, 104A, 104B, 104C, 104D, and 110 have always been associated with the Health Physic organization as offices or instrumentation shops. The room numbers and addition of walls has evolved through the life of the building.

The following rooms have been offices through the life of the facility: Rooms 106A, 106D, 112, 112B, 113B, and 113C

Room 107 was originally a maintenance shop. After the maintenance shop was removed, the respirator fit chamber was installed in this area. Room 107 was converted to offices in the mid 1980s. In 1998, the office partitions were removed and the room was converted into a conference room. Room 107D housed the electronics for the Can Scan II assay device until the equipment was removed after the production shutdown. This room is currently used for office supplies. Room 107E is a copy room

Rooms 108, 108A, 108C, 109, 109B, 109C, and 109D are used as office areas. It is not clear whether this area was part of the maintenance shop or offices in the original floor plan.

The area currently occupied by Rooms 113, 114, 116B, 117, 119, 120, and 121 was originally a men's locker room and shower area, men's and women's restroom, "smoking area", and airlock to the CA (where Room 116B is). The existing rooms have all been added or modified since the original construction.

Rooms 140 and 149 are stairwells to the second floor.

A "hardened" guard post was installed in the entrance to the CA in the early 1990s. To make room for the guard post, a janitors closet (Room 111) and part of the health physics office was removed.

Constituent	Present?	Comments
Asbestos	Yes	The floor tiles will be managed as asbestos waste.
Beryllium	No	There is no beryllium associated with this set. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	There are cleaning supplies in this set that will be removed prior to D&D of this set.
Lead and other heavy metals	No	No lead or other heavy metals were noted on the walkdown.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	SNM was not processed within this set.

121

Constituent	Present?	Comments
Radioisotope Sources	Yes	The radiation sources used by the Radiation Instrument Technicians and Radiation Control Technicians will be removed from this set prior to decommissioning this area.
Radiological	Yes	Fixed contamination beneath the paint and floor tile on the in the room can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 250 -10^6 cpm. The offices were extensively decontaminated after the fire, however, contamination has been discovered when floor tile has been removed. Small amounts of contamination have been discovered in light fixture in Room 129.

Process Number: 776_777-051-00

Title: SET 51 Gloveboxes in Room 154A; 046, 494 (cold box off GB 495), 495, 496, 499, 501, 502, 503, 505, 506, 507 and

Physical Description: This set encompasses all of the gloveboxes and B-boxes in Room 154A. This area is commonly referred to as Molten Salts. This set is bounded by columns 3W-1 and A-D.

Process Description: Room 154A is part of a building addition designed in 1964 and occupied in 1967 (reference Building 776 Data File). This room supported various pyrochemistry processes within gloveboxes primarily Molten Salt Extraction and Salt Scrub. Anode Alloy, Direct Oxide Reduction and Electrorefining were performed on a smaller scale. These processes were terminated in 1989 as part of the production curtailment. The gloveboxes have been used recently for the sampling of residue containers. The room and equipment outside the gloveboxes are included in Set 19.

The Molten Salt Process removed americium impurities from plutonium metal. The plutonium metal, usually from site return parts was prepared as a furnace charge in Glovebox 362, Building 777. The Pu metal charge was combined with dicesium hexachloroplutonate (DCHP) or magnesium chloride and calcium chloride within a tantalum crucible. The loaded crucible was placed in one of twelve stationary furnace cells in Gloveboxes 496 and 503. The plutonium and salt mixture was heated until it was molten and then stirred. A plutonium metal button would form at the bottom of the crucible. The plutonium button would be removed from the salt. The plutonium button was used as feed material in the foundry while the salt was stored awaiting processing in Salt Scrub (reference archived WSRIC 776-1).

The Salt Scrub process was used to remove plutonium and americium from the spend Molten Salt and Electrorefining salts. Metallic aluminum and magnesium or gallium and calcium were added to the spent salt inside a ceramic crucible. This process used the same furnace cells as the Molten Salt process. The product button was shipped to the Savannah River Site (reference archived WSRIC 776-1).

Plutonium oxide was reduced to plutonium metal in an experimental Direct Oxide Reduction process. The process used any of the furnaces in Gloveboxes 495, 496, and 503. The plutonium oxide was heated with calcium metal and calcium chloride. The process produced a plutonium metal button and calcium salt (reference archived WSRIC 776-1).

The Electrorefining process was used to remove metal impurities (such as iron and nickel) from plutonium metal. The process required the plutonium metal (which was the anode) to be mixed with sodium and potassium chloride salts in a magnesium oxide crucible. The material was heated and stirred in a furnace

122

within Glovebox 495. The purified plutonium was drawn to a negatively charged cathode and collected in a ring (reference archived WSRIC 776-1).

The remainder of the Pu anode, referred to as the anode heel, from the Electrorefining process was alloyed with aluminum metal in the Anode Alloy process. The aluminum metal and anode heel were combined within a magnesium oxide crucible to form a furnace charge. The charge was placed in a furnace cell in Glovebox 496 or 503. The combination was heated to melting, held at temperature, and then allowed to cool. The product button was shipped to the Savannah River Site (reference archived WSRIC 776-1).

Glovebox 046 housed a vacuum cleaner to clean the furnace cells. Tubing from the vacuum was piped to Gloveboxes 496 and 503. The vacuum unit air was filtered with two cartridge filters.

Gloveboxes 495, 496, and 503 contain furnaces. The processes within these gloveboxes are described above.

The airlocks on Glovebox 496 and 499 on the building floor plan are not identified by number. These gloveboxes are referred to as Gloveboxes 497 and 498 in the criticality limits

Glovebox 499 was used for the storage of feed material. Cans from residue sampling are now stored in this glovebox.

Multiple operations were conducted in Glovebox 501. Plutonium buttons were sampled with a small drill press. A pneumatic needle gun was used to remove any salt adhering to the button. After sampling, the button was placed in a produce can or specially designed aluminum can and sealed.

The buttons canned in Glovebox 501 were stored in Glovebox 502. The bagout port on this box was used to bagout waste or product from this area.

The furnace charges for the Salt Scrub process were prepared in Glovebox 505. In addition, outgoing material destined for the downdraft room was prepared in this area.

A can assay device called Can Scan II was located in Glovebox 506. The device was used to measure the radionuclide content of spent salt containers.

Glovebox 507 is a actually not a glovebox but a walk in down draft room. The down draft table in this room is still in use for loading and unloading shipping containers and containment vessels

Glovebox 507A B-box enclosure for vacuum pumps for evacuating the cells

There are two chainveyors which connect to the north and south ends of Gloveboxes 496 and 503. These chainveyors were used to move charges to the furnaces and transport the salt/button combinations to the breakout area.

A new glovebox for additional electrorefining capacity was in the midst of installation during the production curtailment in 1989. Glovebox 494 was never completed. It is blanked from Glovebox 495.
1997. (All of the glovebox descriptions were supplied and reviewed by a former pyrochemical operations foreman)

123

Constituent	Present?	Comments
Asbestos	No	The insulation around the furnaces was replaced in the 1980s and is non asbestos. There is no other insulation or fire blankets within the gloveboxes
Beryllium	No	Beryllium was not processed in these gloveboxes.
Chemicals	Yes	Freon refrigerant was used to cool the furnaces. Water from the water wall shielding and oil from the vacuum pumps will be drained during deactivation.
Lead and other heavy metals	Yes	There is lead shielding and leaded gloves on the gloveboxes. The paint on the gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted gloveboxes. Leaded glass contains regulated quantities of barium and lead.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Yes	Gloveboxes 495, 496, 501, and 502 contain significant Pu holdup, which will be remediated to safeguards termination limits prior to decommissioning. No measurable U holdup has been detected to date
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The gloveboxes are expected to be contaminated $>10^6$ dpm Pu on the inner surfaces. The external contamination on the gloveboxes ranges from 10,000 to 1,000,000 dpm. There is elevated americium contamination (gram quantities) in Gloveboxes 046, 499, 501, 502, and 503. Elevated levels means greater than 1000 ppm in the Pu.

Process Number: 776_777-052-00

Title: SET 52 Tanks T360 and T370 plus Gloveboxes 361 and 371 and bermed area Compliance areas 94.007 and 94.008

Physical Description: Two annular stainless steel tanks and two filter gloveboxes in Room 134. The tanks are 60.5" outside diameter by 106 inches in height. The annular thickness is 2 inches

Process Description: Tanks T-360 and T-370 were installed in the mid 1980s to store and ship steam condensate from the Advanced Size Reduction Facility (Set 66). The condensate was initially collected in pencil tanks T-344 and T-345 prior to shipment to the annular tanks. The filter gloveboxes each contained a pump as well as cartridge (Ful-Flo) filters. The filters were installed to remove particulate matter from the liquid. After filtration and sampling, the condensate could be shipped to the process waste tanks in Room 127 (Set 69).

It is questionable whether or not condensate was ever placed in Tanks T360 and T370. One process foreman stated that the steam cleaner on the ASRF was run so infrequently that evaporation kept the pencil tanks from filling, therefore liquid was never pumped to the annular tanks. The maintenance manager has no recollection of the pumps being placed into service

124

Constituent	Present?	Comments
Asbestos	No	There is no insulation, floor tiles, or fire blankets associated with this set.
Beryllium	Yes	Beryllium contaminated metal could have been cleaned in the ASRF. This possible beryllium contamination is not a safety concern due to (1) the suspension in water and (2) and the controls necessary for the radiological contamination.
Chemicals	Yes	Any liquids will be drained during deactivation. The tanks are currently operationally empty.
Lead and other heavy metals	Yes	There is leaded gloves on the filter gloveboxes.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings.
SNM Holdup	Not determined	The tanks and gloveboxes will need to be "gram estimated" prior to removal to comply with the current criticality control requirements for waste boxes.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The tanks and gloveboxes may or may not be contaminated inside. Radiological surveys are needed to determine the presence of contamination within the tanks and gloveboxes.

Process Number: 776_777-053-00

Title: SET 53 Room 152 – Vault, Compliance area 90.85

Physical Description: Room 152 is a cinderblock-walled room with an inner metal "gorilla cage" for security purposes. A special silver paint has been applied to the inner surface of the cinder block walls. This paint keeps the motion detectors from alarming due to activities external to the room. There are water wall storage positions on metal racks within the vault for the storage of SNM. Currently, this room is not approved for the storage of fissile materials.

Process Description: The portion of the building where is located Room 152 was added in 1964 (reference D&D cost estimates). Room 152 is not shown on the 1964 floor layout (reference RF-AG/76-C-2). A 1968 print shows Room 152 with an access door north side rather than the current access on the south side of the room (Reference E-14376).

Room 152 was originally referred to as the 776 button vault. Based on this name, the original use is assumed to be storage of Pu metal buttons for the nearby pyrochemical operations. As time passed, other types of SNM, associated with pyrochemistry, along with 55-gallon drums were stored in the vault. The water-walled positions, which are lead-lined, were installed to lower the radiation dose in the room. The gorilla cage was installed in the early 1990s. Water from the second floor leaked into the room in 1996. The SNM was removed from the vault in 1997.

126

Constituent	Present?	Comments
Asbestos	No	There is no insulation, fire blankets, or floor tiles associated with this set.
Beryllium	No	The criticality limits did not allow the storage of beryllium. Surface surveys will be performed prior to initiating decommissioning activities to confirm there is no beryllium contamination in this area.
Chemicals	Yes	The water in the water walled storage will be drained during deactivation.
Lead and other heavy metals	Yes	There is lead shielding on the can storage positions in Room 448. The paint on the floor and walls could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent lights can contain lead and mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	No	The SNM has been removed from this set.
Radioisotope sources	No	There are no sources associated with this set.
Radiological	Yes	Fixed contamination beneath the paint in the room can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a range of > 10^6 cpm.

Process Number: 776_777-054-00

Title: SET 54 Rooms 153, 154, 154B, 155, 161B, and Compliance areas 94.001, 94.002, and 94.003

Physical Description: The set is irregularly shaped and not easily defined by column numbers. The majority of set is located west of column 1 and between columns D-L.

Process Description: Most of the set is part of an addition to Building 776 that was completed in 1967. Room 153 was added to the building in 1968 (reference Building 776 Data File). A small portion of this set that is east of column 1 near the elevator is part of the original Building 776 structure .

Room 153 was added to the facility as an autoclave facility. The facility was used explore hot and cold wall autoclaving of pits. The autoclaves extended over 20 feet below grade. Pits with beryllium parts were processed in this area. Trichloroethylene was used for cleaning. In the 1970s, the autoclaves were cemented over and a carpenter shop was moved into the room. The carpenter shop is still in use

Room 154 is a large room that has supported several processes and has been used for storage over the life of the facility. Currently, the room is used for waste drum, crate, and equipment storage. The equipment consists of welders, tanks for the coatings process removed from Room 159, and other excess equipment. The western portion of the room originally contained a control panel and gas chromatograph for the autoclaves in Room 153 (reference Dow fire report). When metal storage boxes for the transuranc waste were introduced in the 1980s, the area was converted into a welding area for the boxes run by the

126

maintenance department. The coatings lab operated a grit blaster in the same area. The grit blaster was used to clean metal substrates prior to coating. In the 1970s, there were was a glovebox in the room used for experimental explosive parts forming. This glovebox no longer exists in the building (reference criticality limits and interview with retiree). The southwest corner of the room (south of Room 155) contains the HEPA LOSAC counter. The HEPA LOSAC counter is used to assay plenum HEPA filters. There are four tanks associated with the pilot Fluidized Bed Incinerator (FBI) unit within this set. Two of the tanks are square hydraulic tanks and the other two are pencil tanks for feed material. The largest tank in the set is located in the northeast corner of Room 154. This tank contains steam condensate.

Room 154B was a support area for the pyrochemistry operations in Room 154A. The room was used for reagents (i.e. magnesium metal, calcium metal), consumable supplies (i.e., cans, crucibles) and drum supplies. The ovens located in this room were used to remove moisture from calcium chloride salt.

Room 155 is an airlock for the large door on the west side of the building. Container and equipment shipments are processed through this airlock.

Room 161B is used for equipment storage. The walls for the room were added after 1968. Prior to being used for storage, this room was an extension of the coatings performed in Room 159 (set 57).

Constituent	Present?	Comments
Asbestos	Yes	The insulation on the ovens is a refractory ceramic not asbestos. The insulation on the condensate tank will be managed as asbestos waste unless sample results indicate that the insulation is non asbestos. There are no floor tiles or fire blankets associated with this set.
Beryllium	Yes	Pits with beryllium parts were processed in the autoclaves in Room 153 during the 1960s. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	There are lead acid batteries and tubes of adhesive that will be removed from this area during deactivation. The tanks and vacuum pumps will be drained during deactivation.
Lead and other heavy metals	Yes	The printed circuit boards contain lead. The paint on the floor, walls, and gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively. The room thermostat can contain mercury
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	No	The SNM processed in the autoclaves was self contained therefore holdup is not possible in the autoclave pit.
Radioisotope sources	No	There are no sources associated with this set.
Radiological	Yes	The contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates 10^3 -> 10^4 cpm in Room 153 and > 10^6 cpm in the other rooms in this set.

127

Process Number: 776_777-055-00

Title: SET 55 Tanks SRV3, SRV4, SRV5, GB0001 Compliance area 94.001, 94.002, 94.003

Physical Description: Three Raschig ring filled tanks and a filter glovebox in Room 134. The dimensional information in the following table is taken from Modification 8 to the RFP RCRA Permit for residues.

Tank #	Outer Diameter (inches)	Height (inches)
SR-3	**53.5**	**39.5**
SR-4	**41**	**40.5**
SR-5	**42**	**40.5**

Process Description: Five tanks were brought into the building for cleanup operations as a result of the 1969 fire (reference 1975 criticality infraction report). Based on the property inventory numbers, these tanks came from Building 881. Two of the tanks were used to supply decontamination water and three were used to collect the water from paint removal and other deconning (reference interview with fire cleanup personnel).

The three collection tanks were later used for the wash water generated in the Size Reduction Vault (SRV). The wash water in size reduction was generated from washing equipment or leaded gloves (in a ball mill) to recover as much Pu as possible prior to packaging the waste. In addition any residual acid on the leaded gloves was diluted by the washing. Waste water from the SRV was pumped through two sets of three cartridge (Ful-Flo) filters in parallel within the vault. The filtered waste water was collected in the three tanks. The waste water was circulated and sampled prior to shipment to unfavorable (criticality) geometry tanks in Building 777 or 774. In 1977, four process waste tanks (Set 69) were installed in Room 127. After installation of these tanks, the waste water from SR-3, -4, and -5 was piped to Tanks T-1-A and T-1-B in Room 127. Prior to 1977, the waste water was drummed for shipment to Building 774 (reference 1975 criticality infraction report).

These tanks have been out of service since 1989.

Constituent	Present?	Comments
Asbestos	No	There is no insulation, floor tiles, or fire blankets associated with this set.
Beryllium	Yes	Beryllium contaminated metal could have been cleaned in the SRV. This possible beryllium contamination is not a safety concern due to (1) the suspension in water and (2) and the controls necessary for the radiological contamination.
Chemicals	Yes	Any liquids will be drained during deactivation. The tanks are currently operationally empty.
Lead and other heavy metals	Yes	There is leaded gloves on the filter glovebox. Lead from the leaded glove washing (ball mill) is assumed to be present in the water within the tanks. The paint on the tanks and filter gloveboxes could contain lead or other RCRA heavy metals. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item.
PCBs	No	There are no capacitors or ballasts associated with this set. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.

128

Constituent	Present?	Comments
SNM Holdup	Yes	The tanks were scanned for Pu holdup in the early 1990s. The maximum holdup in any of the tanks is ~200 grams. The tanks will be rescanned for holdup prior to and after the raschig rings are removed.
Radioisotope source	No	There are no sources associated with this set.
Radiological	Yes	The highest fixed contamination level marked on the equipment exterior is 100,000 dpm. It is assumed the inside surface of the tanks is contaminated with > 10^6 dpm. The tanks were brought into the building for the 1969 fire cleanup, therefore, the tanks were not contaminated by the fire.

Process Number: 776_777-056-00

Title: SET 56 Room 161and 161A

Physical Description: Room 161 contains an isostatic press sometimes referred to as the Harwood Press. There are two levels within the room. The top level is at floor level with the other floor access down a ladder through a hatch. The lower level is a confined space and a High Contamination Area. Room 161A contains storage cabinets and the control console for the isostatic press. The set is located west of column 3W and between columns K-L.

Process Description: Room 161 is referred to as Room 005 on some engineering drawings. Room 161 was part of a building addition that was completed in 1968. Room 161A was originally part of Room 154. The interior walls for Room 161A were after 1968.

The isostatic press used heated, high pressure liquid to compress plutonium. The maximum possible temperature and pressure were 250°C and 100,000 psi. The liquids used in the press are Univis P12 with 20% freon or Texaco Regal oil. The plutonium to be compressed was placed in a bag within a basket. The basket was placed inside the press vessel. The pump and intensifier on the lower level of room 161 increased the fluid pressure to the required level. There is hood with Ful-Flo filter cartridges along the south wall of the room. The room has been contaminated numerous times by leaks of contaminated oil.

There is a trench for instrumentation wiring in the floor of Room 161A. The control console for the press is the major piece of equipment in Room 161A. After the 1989 production curtailment, a storage cabinet was added to the room for chemical storage.

Constituent	Present?	Comments
Asbestos	No	There are no floor tiles, insulation or fire blankets associated with this set.
Beryllium		Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	There is a container of Molykote and vacuum grease in Room 161. These chemicals and any liquid in the press will be drained during deactivation.

129

Constituent	Present?	Comments
Lead and other heavy metals	Yes	Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent and fluorescent lights can contain lead and mercury, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. PCBs were found in the Building 707 isostatic press in the 1980s. The oil removed from the press will be analyzed for PCBs. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not Determined	The press will be scanned for holdup prior to dismantlement to comply with the criticality control requirements for the waste boxes.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates > 10^6 cpm. There is contamination above the paint in Room 161. The HCA is not routinely surveyed. There is 10,000 dpm contamination on the console in Room 161A. The electrical boxes are marked with internal contamination warnings.

Process Number: 776_777-057-00

Title: SET 57 Rooms 156, 159, 159A, 159B, 159C and 160 (the enclosed portion of Dock 5)

Physical Description: Most of the process equipment from these rooms has been removed. There is one hood in Room 159 and two furnaces in Room 159C. The entire set is a radiological buffer area. The set is located west of column 1 and between columns L-N.

Process Description: The rooms in this set were part of an addition to Building 776 completed in 1967.

Room 156 is an airlock that connects Room 159 to Room 154.

Rooms 159 through 159C originally used as the soils decontamination lab. Research on removing actinides from soil was conducted in this area. In the 1980s, the area was changed into a coatings R&D lab. A variety of coatings were applied to substrates. The most common items coated in this area were stainless steel molds for the Building 707 foundry. The process steps were (1) abrade the substrate with glass beads or aluminum oxide grit, (2) etch with acid, as necessary (3) rinse with water or hexane (4) apply the coating material (5) cure the coated substrate in a furnace and (6) rinse the substrate in ethanol or hexane (reference archived WSRIC process 776-5).

Room 160 is the enclosed portion of Dock 5.

130

Constituent	Present?	Comments
Asbestos	Yes	The insulation in the furnaces will be managed as asbestos unless sample results or manufacturer information indicated the insulation is non asbestos. There are no floor tiles or fire blankets associated with this set.
Beryllium	No	There is no record of beryllium storage or processing in this area. Surface surveys will be performed prior to initiating decommissioning activities to confirm there is no beryllium contamination in this area.
Chemicals	Yes	Acids, metals, and organics were used in the processes that were in this area. The hood exhaust and furnaces may be contaminated with residual metals from the coating material.
Lead and other heavy metals	Yes	There is a lead brick in Room 156. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent lights and thermostats can contain mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	SNM was not processed in the equipment within this set.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a contamination range of $10^3 - 10^5$ cpm.

Process Number: 776_777-058-00

Title: SET 58 Rooms 157 and 158

Physical Description: This set includes a shop area and two associated offices. This area is divided into Contamination Area and Radiation Buffer Area sections. This set is L-shaped, located between columns 3W – 3 and N – P, 1-3 and L - N.

Process Description: : The rooms in this set were part of an addition to Building 776 completed in 1967.

Room 157 served as maintenance supervision offices.

Room 158 was designed as a maintenance area. It was used as a combination machine, pipe, and sheet metal shop until 1989. Since that time excess equipment and waste containers have been stored there. The shop provided the same maintenance services as the machine, pipe, and sheet metal shop in Building 778.

Constituent	Present?	Comments

131

Asbestos	Yes	The tile floor in Room 157 will be managed as asbestos waste. There is no insulation or fire blankets associated with this set.
Beryllium	No	There is no record of beryllium storage or processing in this area. Surface surveys will be performed prior to initiating decommissioning activities to confirm there is no beryllium contamination in this area.
Chemicals	Yes	The paint in the flammable cabinet, refrigerant in the air conditioner, Varsol, and oil will be removed prior to decommissioning
Lead and other heavy metals	Yes	There is a lead sheets, bricks, and tape in the set. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent and incandescent lights can contain mercury and lead, respectively. The thermostat can contain mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	SNM was not processed within this set.
Radioisotope sources	No	There are no sources associated with this set
Radiological	Yes	The contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a contamination range of 10^4 – $>10^6$ cpm. A nitrogen cylinder in Room 158 is marked as having fixed contamination (amount of contamination not marked).

Process Number: 776_777-059-00

Title: SET 59 Rooms 002, 138, 139, 144, 147, room south of 144, and tunnel to Building 771

Physical Description: The equipment included in these rooms are a freight elevator, low-level waste baler, portable process waste tank, and other small pieces of equipment. The set is irregularly shaped and not easily defined by column numbers. The perimeter of the sets is located between columns 1 – 3 and H -L.

Process Description: The area within this set is part of the original building construction.

Room 002 is on the basement level. The only permanent equipment in the room is the hydraulic reservoir for the elevator.

Room 138 is an airlock south of Room 158, which connects Room 134 and 154

Room 139 is a stairwell that extends from the Room 002 in the basement to Room 227 on the 2nd floor.

Room 144 contains the low-level waste baler. The baler was used to compact combustible waste. The baler was not used after 1987 or 1988 due to repeated contamination of Room 144 (reference interview with building foreman). Room 144 was originally used as a men's room until the 1969 fire cleanup (reference 1955 floor plan). The sanitary drains associated with the restroom have been filled. The room south of room 144 is currently used for equipment storage, including a large portable tank. The last process to operate in the room was headspace sampling of 55-gallon drums for WIPP. This sampling is now done in Room 433, Building 777.

132

Room 147 is a freight elevator that services the basement, 1st floor, and 2nd floor. The shaft is immediately south of the Building 776 entrance to the Building 771 tunnel. The hydraulic reservoir for the elevator is next to the shaft in Room 002. Ground water seeps into the elevator shaft and is pumped out as necessary. The elevator shaft was contaminated by fire water from the 1969 fire. A oil-water mixture recently pumped out of the shaft was radioactively contaminated.

Constituent	Present?	Comments
Asbestos	Yes	The insulation in Room 144 will be managed as asbestos waste unless sample results indicate that the insulation is nonasbestos. There is no floor tile or fire blankets associated with this set.
Beryllium	No	There is no record of beryllium storage or processing in this area. Surface surveys will be performed prior to initiating decommissioning activities to confirm there is no beryllium contamination in this area.
Chemicals	Yes	The oil in the vacuum pump will be drained during deactivation. The hydraulic oil for the elevator will not be drained until the elevator is removed from service. If the portable tank contains any liquid, the liquid will be removed during deactivation.
Lead and other heavy metals	Yes	There is are lead aprons in the set. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent and incandescent lights can contain mercury and lead, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	The baler processed only LLW. No SNM was processed within the equipment in this set.
Radioisotope Sources	No	There are no sources associated with this set
Radiological	Yes	The contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a contamination range of 10^5 - >10^6 cpm. The portable tank is marked as having 15,000 dpm fixed contamination The baler and elevator shaft is internally contaminated with plutonium.

133

Process Number: 776_777-060-00

Title: SET 60 Rooms 146, 146A, 146B, and 146C

Physical Description: This set is known as the Size Reduction Vault (SRV). Room 146 and 146C are High Contamination Areas (HCAs). The set is irregularly shaped and not easily defined by column numbers.

Process Description: Room 146 is part of the original building construction. Rooms 146A – 146C were added during the cleanup of the 1969 fire. The area occupied by Rooms 146A – C was originally part of Room 134.

Room 146 was originally designed and used as a vault for plutonium buttons. A chainveyor entered Room 146 on the east wall. Buttons from the vault were placed into the glovebox line for casting. After the 1969 fire, the glovebox and vault positions were removed. Room 146 was converted into an area for cleaning and size reduction of equipment removed during the fire cleanup. Once the fire cleanup was completed, the SRV was used to repack containers, wash leaded gloves and metal waste in a ball mill, crush empty drums and HEPA filters in a drum crusher and consolidate drummed waste into crates. Liquid from a wash table and the ball mill was pumped through a bank of cartridge (Ful-Flo) filters and then into the SRV tanks in Room 134 (Set 55). The operations within the vault were performed by personnel working in supplied breathing air.

The two airlocks on the south side of the SRV were used for personnel (Room 146A) and container staging (Room 146B) when the SRV was in use. Room 146A is currently used for container headspace sampling while Room 146B is used for container repackaging. The airlock on the east side of Room 146 is Room 146C. Room 146C was used to stage large pieces of equipment or sections of piping for size reduction (reference interview with former size reduction manager).

Constituent	Present?	Comments
Asbestos	Not determined	There is no insulation, floor tile, or fire blankets visible on the 1989 photographs of the vault interior. An updated visual characterization is needed to see if any insulation waste has been placed in the vault since the photographs were taken.
Beryllium	Yes	Beryllium contaminated metal could have been size reduced in the SRV.
Chemicals	Yes	The oil in equipment and any residual liquid in the ball mill collection ring or piping will be drained prior to D&D. A supplied air entry of the SRV is needed to determine if any containerized chemicals exist.
Lead and other heavy metals	Yes	There are lead shielding on the east side of the vault. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The incandescent lights can contain lead.
PCBs	Not determined	No PCB items are visible on the 1989 photographs of the area. A closer visual inspection is needed to determine if any PCB ballasts are stored in the vault. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not determined	The wash table and ball mill need to be scanned for SNM holdup. The scans will be performed in FY99 and FY00.

134

Constituent	Present?	Comments
Radioisotope source	No	Records indicate there are no registered sources in the SRV
Radiological	Yes	The internal surfaces of the SRV are expected to be contaminated $>10^6$ dpm Pu on the inner surfaces. The contamination beneath the paint in the rooms can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a contamination level of $>10^6$ cpm.

Process Number: 776_777-061-00

Title: SET 61 Room 135 (Pilot FBI) Compliance area Part A 49.02

Physical Description: The pilot fluidized bed incinerator (FBI) is located in Room 135. The majority of set is located between columns 2 –3 and E-G.

Process Description: Room 135 is part of the original building construction. Room 135 was originally designed and used as a vault for plutonium buttons. A chainveyor entered Room 135 on the east wall. Buttons from the vault were placed into the glovebox line for casting. After the 1969 fire, the glovebox and vault positions were removed. In the early 1970s, the pilot FBI was installed in Room 135.

The pilot FBI was a scaled up version of a 2 kg/hr laboratory scale incinerator. The liquid and/or solid waste was incinerated by adding the waste to a heated mixture of sodium carbonate and aluminum oxide/chromium trioxide catalyst. The FBI operated from 1971 to 1978. The first test runs used PVC, polyethylene, and paper as test materials. After 1974, paint thinner from the Building 333 paint shop, tributyl phosphate, kerosene, and hydrazine hydrate was burned. Polychlorinated biphenyls, mixed 1 part PCB to 4-5 parts diesel or kerosene were burned in 1978 (reference backlog waste reassessment).

Constituent	Present?	Comments
Asbestos	Yes	The insulation on the equipment will be managed as asbestos waste unless sample results indicate that the insulation is nonasbestos. There is no floor tile or fire blankets associated with this set.
Beryllium	No	There is no record of beryllium storage or processing in this area. Surface surveys will be performed prior to initiating decommissioning activities to confirm there is no beryllium contamination in this area.
Chemicals	Yes	The ALARA paint and other containerized chemicals will be removed during deactivation.
Lead and other heavy metals	Yes	There is are leaded gloves on the canyon wall. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent and incandescent lights can contain mercury and lead, respectively.

135

Constituent	Present?	Comments
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings. Though PCBs were incinerated in the FBI, the ash is not Toxic Substance Control Act (TSCA) regulated. The incinerator burned at a high destruction efficiency and PCBs over the TSCA regulatory limit of 50 parts per million (ppm) are not anticipated in the ash (reference backlog waste reassessment).
SNM holdup	No	The FBI processed only LLW. The ash from the FBI is LLW. SNM holdup it not an issue.
Radioisotope sources	No	There are no sources associated with this set.
Radiological	Yes	The contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a contamination range of 10^5 - $>10^6$ cpm. The FBI is internally contaminated with plutonium.

Process Number: 776_777-062-00

Title: SET 62 Tanks FBI 1 and FBI 2 and associated room Compliance areas Part A 44.01 and 44.02

Physical Description: This set includes two raschig ring filled tanks, FBI-1 and FBI-2, as well as the room around these tanks. The tanks are rated with a 375 gallon capacity each. The north and west walls of the room are made of drywall. The other two walls are shared walls with Room 118 and 134, made of cinderblock.

Process Description: These tanks were used for storage of liquid wastes intended to be processed within the Fluidized Bed Incinerator in Room 118. The liquids were drained from the tanks in 1992 as a pre-closure activity. The constituents within the liquid were identified as water, methanol, pyridine, methylene chloride, diesel fuel, paint thinners, iodine, sulfur dioxide, and 1,1,1-trichloroethane during a recharacterization event in 1993 (reference Backlog Event #6). Based on this event, the drums of liquid were assigned EPA Codes F001, F002, F003, F005, D001, D018, D035, and D038. In the Backlog Waste Reassessment document, the EPA Codes were reduced to D001, F001, F002, F003, and F005 (reference BWR Subpopulation 3L). The radiological sampling of these liquids indicates $<10^{-3}$ g/l Pu contamination. The residual liquids in the pumps and the raschig rings were removed in 1998. Head gas sampling of this liquid detected "high" levels of 1,1,1-trichloroethane, 1,1-dichloroethane, acetone, ethyl ether, methylene chloride, toluene, and trichlorotrifluoroethane (reference industrial hygiene assessment)

Constituent	Present?	Comments
Asbestos	No	There is no insulation, floor tile, or fireblankets associated with this set.
Beryllium	Not determined	No process data for beryllium. In process survey/sampling needed.
Chemicals	Yes	Organic liquids were stored in these tanks, The liquids were drained in 1998.

136

Constituent	Present?	Comments
Lead and other heavy metals	Yes	There is no lead shielding or any paint on the tanks. Based on the 1992 analysis of liquid from the tank (which leaked on the floor) on the floor, cadmium and chromium are present in the oil.
PCBs	Not determined	No process data for PCBs. In process sampling needed.
SNM holdup	No	The tanks are contaminated with Pu but at LLW amounts.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The rings in one of the tanks were found to be contaminated (~10,000 cpm) when they were removed in 1998.

Process Number: 776_777-063-00

Title: SET 63 Rooms 118, 118A, 118B, 118C, 118D, 118E, 118F, 118G, 118H
Compliance area Part A 49.01

Physical Description: The production fluidized bed incinerator (FBI) is located in Room 118. The majority of set is located between columns 5 –7 and between columns G-L.

Process Description: The area occupied by these rooms was part of the original building construction. However, the rooms were not constructed until 1975 when the FBI was installed. The area was originally supported the North Foundry line, which was removed as part of the 1969 fire cleanup. The set consists of a control room (118C), operations area (118), bed material and methanol storage (118G), ash removal airlock (118E), spare parts storage room (118F), hydraulic drive unit room (118B) and canyon-type process equipment enclosure (118). The drum hoist is located in Room 118A. Rooms 118D and 118H are entry rooms (reference RFP-3249).

The FBI operated from 1978 to 1981 and again from 1985 to 1988. The first runs (1978-1981) used newspaper, Building 776 LLW, combustible waste, kerosene, garage oil, and grease as test materials. The tests from 1985 to 1988 were conducted with methanol, diesel products, and nonradioactive surrogate combustibles (shredded coveralls, leather gloves, rolls of PVC plastic, wood, and paper (reference backlog waste reassessment). The liquid and/or solid waste is incinerated by adding the waste to a heated mixture of sodium carbonate and aluminum oxide/chromium trioxide catalyst.

Below grade features: The pit for the 4-high mill was located in the southern end of this set (reference drawing 76-17217). The pit was filled with concrete during the fire cleanup. Based on input from personnel that worked on the cleanup, several rolling mill rolls and the saw base used in an attempt to cut them up were placed in the pit. Ground penetrating radar investigation of the area was not conclusive on the number or size of metallic items in the pit. The anchoring bolts for the mill (3 inch diameter by 7 feet into the footing) most likely remain in the footings (reference drawing 76-17217)

Constituent	Present?	Comments
Asbestos	Yes	The insulation on the equipment will be managed as asbestos waste unless sample results indicate that the insulation is nonasbestos. There is no floor tile or fire blankets associated with this set.
Beryllium	No	There is no record of beryllium storage or processing in this area. Surface surveys will be performed prior to initiating decommissioning activities to confirm there is no beryllium contamination in this area.

137

Constituent	Present?	Comments
Chemicals	Yes	The hydraulic oil will be drained during deactivation. The hydraulic oil for the elevator will not be drained until the elevator is removed from service. If the portable tank contains any liquid, the liquid will be removed during deactivation.
Lead and other heavy metals	Yes	There is are leaded gloves on the canyon wall. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent and incandescent lights can contain mercury and lead, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	The FBI processed only LLW. The ash from the FBI is LLW. SNM holdup it not an issue.
Radioisotope Sources	No	There are no sources associated with this set.
Radiological	Yes	The contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a contamination of $>10^6$ cpm. The FBI is internally contaminated with low levels of plutonium.

Process Number: 776_777-064-00

Title: SET 64 SARF (Gloveboxes 512, 513, 515, 517, 518, 521-1, 521-2) and Compliance area Part A 74

Physical Description: The Supercompactor And Repackaging Facility (SARF) is located in Room 134 in Building 776, immediately west of the Advanced Size Reduction Facility. The largest pieces of equipment are a 2000 ton (force) supercompactor, 30 ton pre-compactor, and associated hydraulic systems. Much of the SARF equipment is located inside of gloveboxes.

Process Description: The SARF was installed beginning in the late 1980s and first used in 1993. The SARF was used for only a short period of time. Less than 50 drums of TRU/TRM waste was processed in the SARF.

The SARF was used to compact 35-gallon drums of waste into pucks, which are packaged in 55-gallon drums. The SARF could compact soft (combustibles) or hard (metal, glass) wastes. Soft wastes in drums were placed in Gloveboxes 515 and 533. The drum liner with the waste was removed from the drum on a downdraft table. The liner was then manually moved through the airlock chambers to the sorting glovebox (Glovebox 516). The soft waste was inspected for free liquids and other rejectable items in Glovebox 516. The inspected waste was moved to Glovebox 517 for precompaction. The soft waste was precompacted into a 35-gallon drum. Filled drums are transferred to Glovebox 513 for piercing. Drums filled with hard waste or empty drums for the pre-compactor are entered into the SARF at Glovebox 512. Hard waste did not require precompaction and therefore, was transferred to the piercing station in Glovebox 513. The drums were pierced to allow air to escape from the 35-gallon drum during compaction. After piercing, the drums were moved to Glovebox 518 for supercompaction. There was a collection tank beneath the supercompactor to catch any liquid forced out of the waste during compaction. The pucks

138

(supercompacted 35-gallon drums) were stored in Glovebox 521. 55-gallon drums beneath Glovebox 521 were loaded with the pucks stored with this glovebox (reference WSRIC book).

Constituent	Present?	Comments
Asbestos	No	There is no high-temperature insulation, fire blankets, or floor tile associated with this set.
Beryllium	No	There is no record of beryllium storage or processing in this area. Surface surveys will be performed prior to initiating decommissioning activities to confirm there is no beryllium contamination in this area.
Chemicals	Yes	The hydraulic oil will be drained during deactivation. If the collection ring contains any liquid, the liquid will be removed during deactivation. No liquid from drums was ever noted as entering the collection ring.
Lead and other heavy metals	Yes	There are leaded gloves on SARF gloveboxes. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent lights can contain mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not Determined	The potential for holdup in these gloveboxes is extremely low since the gloveboxes were used for a short period of time on material that was well contained. However, these gloveboxes will need to be scanned for SNM holdup prior to removal based on the current criticality limit requirements.
Radioisotope Sources	Yes	The Pu sources for the alpha mets need to be removed.
Radiological	Yes	The internal surfaces of the SARF are plutonium contaminated. The level of contamination is not known at this time and will need to be determined by in-process surveys. Since the SARF was used for only a short time on TRU waste, the contamination may be lower than in other gloveboxes within the building. Based on discussions with two of the operators, the heaviest contamination should be on the precompactor ram and supercompactor piston.

Process Number: 776_777-065-00

Title: SET 65 Rooms 127J, 136, 141, 148, 150, 150A

Physical Description: This set is commonly referred to as the compressor house. The major pieces of equipment in the set are five air/gas compressors, one emergency generator, and two chiller systems. Two other chillers, #2 and #3, and Emergency Brine Pumps #2 and #3 within Room 150 are included in Set #77. The majority of set is located north of column L and between columns 3-14.

Process Description: The operations in this set are typical of other utility processes in other buildings.

139

The emergency generator supplies power to vital safety systems, such as the fans on the 2nd floor, in the event of normal power loss. The generator is fueled with diesel from an above ground tank north of the building. A below grade diesel tank has been foamed in place.

There are a series of air compressors for the plant air system. The plant air system provides compressed air to a number of buildings in the 700 complex. A single compressor supplies compressed air for the starting air system. This system originally provided compressed air to the pneumatic starters on natural gas engines. These engines are out of commission. The compressor now supplies air for the cooling tower dry pipe sprinkler system (reference 776/777 BIO SER).

The chillers use brine solution to cool air for personnel comfort and remove heat generated by equipment.

Constituent	Present?	Comments
Asbestos	Yes	The insulation on the equipment will be managed as asbestos waste unless sample results indicate that the insulation is nonasbestos. The insulation on the natural gas chillers (Set 77) has been shown to contain asbestos. There is no floor tile or fire blankets associated with this set.
Beryllium	No	There is no record of beryllium storage or processing in this area. Surface surveys will be performed prior to initiating decommissioning activities to confirm there is no beryllium contamination in this area.
Chemicals	Yes	There are a number of chemicals in use within the set such as antifreeze, oil and freon refrigerant. These chemicals will be in use until the utility equipment is no longer needed. Any containers of chemicals will be removed prior to the D&D of this set. In addition, the liquid reservoirs on the utility equipment will be drained.
Lead and other heavy metals	Yes	Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent and incandescent lights can contain mercury and lead, respectively.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	SNM was not processed in this equipment
Radioisotope Sources	No	There are no sources associated with this set
Radiological	Yes	The contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a contamination range of 10^4 - >10^6 cpm.

Process Number: 776_777-066-00

Title: SET 66 ASRF, including RDA, MDA, Transfer area, J177, J176, J340, J341, J357, J270; Rooms 130, 130A, 209, 228 and filter units

Physical Description: The Advanced Size Reduction Facility (ASRF) is located in Room 134. The ASRF is a large stainless steel containment canyon that extends from ground level on the first floor through the 2nd floor (Room 209). There are five gloveboxes (J-176, -177, -270, -340, -357) attached to the ASRF. Another free standing glovebox (J-341) is located north of the Glovebox J-340. Rooms 130 and 130A are both approximately 15 feet by 20 feet in size, located south of Room 134. Rooms 228 is immediately west of the 2nd floor overhead section (Room 209).

Process Description: ASRF was designed in the 1970s and installed in the 1980s. The original intent of ASRF was to size reduce gloveboxes remotely instead of using strictly manual methods with personnel in supplied breathing air. The ASRF was operated as a size reduction facility from 1986 through 1989. The ASRF may be used for size reduction of gloveboxes removed during the D&D of Buildings 776 and 777.

The ASRF has four major areas, which are the Manual Disassembly Area (MDA), Transfer Area, Remote Disassembly Area (RDA) and Cutting Area. The MDA is an entry or containment airlock. Packaged equipment to be size reduced is placed in the MDA. The outer packaging (i.e. plywood) is removed in the MDA. In addition, the MDA is used as a repackaging area for waste in drums or crates. A jib crane in the Transfer Area picks up the item to be size reduced in the MDA, brings it into the Transfer Area, then positions it in the RDA. There are manipulators and remote tools that can disassemble pieces in this area. There are positioning tables that the items can be placed on for disassembly. The final canyon area is the Cutting Area. Plasma torches are used in this area to cut glovebox shells or large equipment into small pieces that will fit into Standard Waste Boxes (SWBs). Once the cutting is completed, the pieces are passed through Glovebox J-340 into J-357. Glovebox J-340 was designed with a steam cleaner. Steam condensate was collected in two pencil tanks below Glovebox J-340. The steam cleaner was used on a limited basis and is not planned for further use. The pieces are lowered into a SWB that is positioned below Glovebox J-357(reference WSRIC book).

Glovebox J-176 has a drum drop and three barrel drops. This glovebox was originally designed as a waste sorting area. Lately, Glovebox J-176 has been used for leaded glove washing and LECO crucible repackaging. Glovebox J-177 and 270 are used for repairs of the manipulator arms and plasma torches. In addition Glovebox J-177 has been used for the storage of RCRA-regulated liquids in plastic bottles. Glovebox J-341 contains the pumps and filters that support the steam cleaner in J-340.

The last usage of Rooms 130 and 130A during the production era was a control room for the ASRF. The south west corner of Room 130 is a cold storage area for office supplies accessible from Room 119. The available records do not indicate any historical production-related processes that were housed in these three rooms. This area was originally a portion of Room 122, which no longer exists (Reference Drawing 1-7971-76). Between 1956 and 1968, Room 130 was constructed. At the time of the 1969 fire, Room 130 was used as a tool crib (Reference Drawing E-14376-12). Rooms 130A and 130B were added at a later date by subdividing the area of the original Room 130.

Room 228 is used to store supplies for the ASRF on the 2nd floor. Room 209 contains the upper portion of the ASRF including a "hot" maintenance area.

Below grade features: There is a below grade feature of note in the ASRF area. There is a "sheep dip" that is filled in with concrete. Contaminated concrete from the fire cleanup may have been used to fill a portion of the sheep dip. Refer to drawing 1-12570-76 for more information on location.

Constituent	Present?	Comments
Asbestos	Yes	There is insulation on the steam piping within Room 228. There are high-temperature mittens within Glovebox J-341. There are no fire blankets or floor tile associated with this set.
Beryllium	Yes	Beryllium contaminated metal could have been size reduced in the ASRF.
Chemicals	Yes	The oil in equipment and any residual condensate in the steam condensate tanks or piping will be drained during deactivation. The containers of liquid in the gloveboxes and the DOP in Room 228 will be removed during deactivation.
Lead and other heavy metals	Yes	There are leaded gloves on gloveboxes. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent lights can contain mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	Not determined	The gloveboxes in this set have not be scanned for SNM holdup. The scans will be performed in FY99 and FY00.
Radioisotope source	Yes	There are several Pu sources within the ASRF. The sources will be removed when this set is deactivated.
Radiological	Yes	The internal surfaces of the ASRF are plutonium contaminated. The gloveboxes and the canyons are expected to be contaminated $>10^6$ dpm Pu on the inner surfaces. The contamination beneath the paint in the rooms can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a contamination range of 10^5 - 10^6 cpm for Rooms 130, 130A, 209 and 228.

Process Number: 776_777-067-00

Title: SET 67 Rooms 123, 134, 137; Compliance areas Part A 49.02 and Part B Unit 11

Physical Description: Room 123 is a storage alcove. Room 134 is the largest room in Building 776. Room 137 is a stairwell between the 1st and 2nd floors. The equipment present in this set includes a fork truck, control panels, storage cabinets, and personnel contamination monitors (PCMs). The set is irregularly shaped and not easily defined by column numbers. .

Process Description: The area covered by this set was part of the original building construction. However, many of the walls in this area were added after the 1969 fire cleanup.

There are no major processes associated with this set. The area is used primarily for waste container storage, to house support equipment for adjacent processes (e.g. Advanced Size Reduction, Supercompactor, both Fluidized Bed Incinerators, Size Reduction Vault), and contamination monitoring for personnel and equipment. Prior to the 1969 fire, this area was filled with gloveboxes that supported plutonium foundry operations. After the 1969 fire, several of the casting furnaces were repaired and operated until Building 707 began operations in 1972. By 1974, there were no gloveboxes within this set.

142

Below grade features: There are three below grade features of note in Room 134. First, there is a former machine pit that is filled in with concrete. The pit is west of the ASRF MDA entrance and is 22 to 23 feet deep. The pit details are on drawing RF-76-17219. Ground penetrating radar investigation of the pit did not conclusively indicate the presence of voids or equipment in the concrete. The pit for the 4-high mill was located mainly under Set 63 and partially under this set (reference drawing 76-17217). The pit was filled with concrete during the fire cleanup. Based on input from personnel on the cleanup, several rolling mill rolls and the saw base used in an attempt to cut them up were placed in the pit. Ground penetrating radar investigation of the area was not conclusive on the number or size of metallic items in the pit. There is a 7 foot long x 7 foot wide x 14 foot deep footing for the 4-high rolling mill south of the filled pit.

Constituent	Present?	Comments
Asbestos	No	There are no fire blankets, insulation or floor tile associated with this set.
Beryllium	Yes	Beryllium parts were moved through this set on carts. There is no indication that the rooms became contaminated from these parts. Surface surveys will be performed prior to initiating decommissioning activities to confirm there is no beryllium contamination in this area.
Chemicals	Yes	Any liquids in equipment will be drained during deactivation. The gas cylinders associated with the PCMs will not be removed until the PCMs are no longer needed
Lead and other heavy metals	Yes	Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent lights can contain mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	There is no location (i.e. Zone 1 ducts, gloveboxes, and tanks) for holdup within this set.
Radioisotope source	No	No sources were noted during the walkdown of this set.
Radiological	Yes	The contamination beneath the paint in the rooms can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a contamination > 10^6 cpm .

Process Number: 776_777-068-00

Title: SET 68 Rooms 001 (basement), 127, 127A, 127B and Compliance area Part B 90.66

Physical Description: The set is irregularly shaped and not easily defined by column numbers. The set is located between columns 7-13 and columns G-L.

Process Description: The area covered by this set was part of the original building construction. Prior to 1969, Rooms 127, 127A, and 127B did not exist. These rooms were created by adding walls within Room 134 after the fire cleanup.

143

There are no processes currently associated with this set. The drums previously stored in the basement were removed in 1997. Rooms 127 is used for waste container storage, There is a contamination control cell in Room 127 that is not in use. Room 127A and 127B are used for access to Room 127. Prior to the 1969 fire, this area, including Room 001, was filled with gloveboxes that supported plutonium foundry, fabrication, and inspection operations (reference 1956 and 1968 floor plans, walkdowns with retired foundry manager and retired assembly manager). By 1974, there were no gloveboxes within this set.

Room 001 is below grade and has ground water inleakage periodically. There is a pump in a Raschig ring-filled sump in the northwest corner of the room to remove water if the water flows into the sump. The ground water inleakage was frequent enough in the past to corrode the bottoms of drums stored on the floor. The drums were removed and pallets were placed on the floor to keep the drums off the floor.

Below grade features: There are two below grade features of note in the ASRF area. First, there is a "sheep dip" that is filled in with concrete. Contaminated concrete from the fire cleanup may have been used to fill a portion of the sheep dip. Refer to drawings 1-12570-76 for more information on location. The second area is a room that contained pencil tanks and a sump for machining coolant beneath a hydroform press that once operated in Room 127(then, Room 134). The access was through a doorway on the landing of the stairs down to Room 001. Ground penetrating radar investigation of this area indicates there is a void in the area of the room but the room is mainly filled up. Refer to drawing 76-17221 for details of the room.

Constituent	Present?	Comments
Asbestos	No	There are no fire blankets, insulation or floor tile associated with this set.
Beryllium	No	There is no indication that beryllium was processed or stored in these rooms. Surface surveys will be performed prior to initiating decommissioning activities to confirm there is no beryllium contamination in this area.
Chemicals	No	There are no chemicals in this set.
Lead and other heavy metals	Yes	The fence around the process waste tanks (Set #69) has 1/8" lead shielding on it. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent lights can contain mercury.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM Holdup	No	There is a contamination control cell in Room 127. While there is contamination in this area, there are not gram amounts of plutonium based on its use to repackage drums of waste or residues.
Radioisotope source	No	No sources were noted during the walkdown of this set.
Radiological	Yes	The contamination beneath the paint in the rooms can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a contamination > 10^6 cpm . The paint on the floor has bubbled up several times and requires repair. When the old paint is removed, heavy contamination is found on the concrete.

144

Process Number: 776_777-069-00

Title: SET 69 Tanks T1A, T1B, T2A, T2B, T3; bermed area, and Compliance area Part A 40.70, 40.71, 40.72 and 40.73

Physical Description: The set is located within Room 127, Set 68

Process Description: This set consists of five fiberglass tanks within a bermed area. Four of the tanks are process waste tanks (T1A, T1B, T2A, and T2B). The fifth tank, T3, is a Raschig ring-filled tank for the collection of plenum deluge water.

The process waste tanks have been in use since 1977 (reference 1975 criticality infraction report for SRV tanks). Examples of the liquids collected include condensate from the 2nd floor, rainwater collected within the building, wash water from the Size Reduction vault, aqueous samples and excess chemicals that can be treated in Building 374. Tanks T2A and T2B are used for waste shipped from Building 779. T1A and T2A collect wastes from Buildings 776 and 777. The liquids from the tanks are pumped through the process waste lines to Building 374 via Valve Vault 9 (reference WSRIC book). Prior to the opening of Building 374 in the early 1980s, the liquid was pumped to Building 730 (concrete waste tanks) then to Building 774 for treatment.

Liquid from plenum deluge tests or activation on the 2nd floor are collected in Tank T-3. Since the only routine liquid that enters Tank T-3 is small amounts from flow tests, the tank is not pumped routinely.

Constituent	Present?	Comments
Asbestos	No	There is no insulation, floor tiles, or fire blankets associated with this set.
Beryllium	Yes	Beryllium contaminated metal could have been cleaned in the SRV. Wash water from the SRV was shipped to Tanks T1A and T1B. The process waste from Building 779 could have contained small amounts of beryllium. This possible beryllium contamination is not a safety concern due to (1) the suspension in water and (2) and the controls necessary for the radiological contamination.
Chemicals	Yes	Any liquids in the tanks or piping will be drained prior to removal of the piping. The process waste tanks are RCRA regulated
Lead and other heavy metals	Yes	The tanks were permitted for RCRA heavy metals.
SNM Holdup	Not determined	The process waste tanks are limited to fissile exempt liquid by the Nuclear Materials Safety limits. Tank T-3 could be more contaminated inside since the water from the plenums is not necessarily fissile exempt liquid.
Radioisotope Sources	No	No sources were noted during the set walkdown.
PCBs	No	There are no capacitors or ballasts associated with this set. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.

Constituent	Present?	Comments
Radiological	Yes	The process waste tanks are limited to fissile exempt liquid by the Nuclear Materials Safety limits. Tank T-3 could be more contaminated inside since the water from the plenums is not necessarily fissile exempt liquid. The contamination beneath the paint in the rooms can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a contamination > 10^6 cpm .

Process Number: 776_777-070-00

Title: SET 70 Rooms 205, 206, 208, 219, and 232 to 256 (not all inclusive)

Physical Description: The rooms in this set are located on the second floor of Building 776 and 777B. There is no major equipment in these rooms.

Process Description: Rooms 219, 232, and 233 are part of the original building construction. The remaining rooms in this set are part of an addition to Building 777 referred to as Building 777B. The addition was completed in 1966.

There are no processes, past or present, associated with the rooms in this set

Rooms 205, 206, 208, 232, 233, 247, 247A, 247B, 254, 255, and 256 are offices. Room 206 was once a men's restroom (reference tape narrated by retired utilities manager).

Rooms 233B and 243 are hallways with some storage

Rooms 252 and 253 are stairwells

Room 219 is a storage room

Room 241 is a mechanical room

Room 242 is a janitor's closet

Room 244 is a women's restroom

Constituent	Present?	Comments
Asbestos	Yes	There are floor tiles and pipe insulation in several of the rooms. The floor tiles and insulation will be managed as asbestos waste.
Beryllium	Not determined	Beryllium was not stored or processed on the second floor of Building 776 or 777B. Beryllium was handled on the first floor of Building 777B. In process surveys for beryllium contamination will be needed when building components between the floors are removed. The only potential site of beryllium contamination on the second floor of Building 776 is in the exhaust ducting and plenums. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	No	No chemicals were identified during the set walkdown
Lead and other heavy metals	Yes	Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The fluorescent lights can contain mercury.
SNM Holdup	No	There are no areas for SNM holdup in this set.
Radioisotope Sources	No	No sources were noted during the set walkdown.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
Radiological	Yes	The contamination beneath the paint in the rooms can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a range of contamination 10^3 - 10^6 cpm .

Process Number: 776_777-071-00

Title: SET 71 Superdry air drying system, 2nd floor

Physical Description: The Superdry air drying system is on the 2nd floor. The major components are two dryers with rotating beds filled with silica gel, supply fans, and cooling coils. The system is located between columns 14 – 16 and E – H.

Process Description: The superdry air drying system provided extremely low humidity air to the Superdry facility (Set #27). The dry air was required to improve the quality of the Pu parts during assembly since Pu metal is readily reacts with moisture in the air.

The two dryers in the system were operated in parallel or in series. The recirculated air from the Superdry rooms or the makeup air was drawn across the rotating silica gel beds to remove moisture from the air. The silica gel was replaced approximately every other year due to mechanical breakdown of the silica. Cooling for the air was accomplished with brine coils around the ducting. Moisture was driven from the silica beds by heating purge air with steam to over 100°C . The purge air was exhausted through Plenum 250. The contaminated exhaust from the downdraft rooms and the lathe exhaust lines was piped to Plenum 206 (reference interview with retired utilities manager).

147

Constituent	Present?	Comments
Asbestos	Yes	The insulation on the ducting contains asbestos.
Beryllium	Yes	Beryllium was stored, cleaned, and assembled in the Superdry facility. None of these operations would cause significant airborne beryllium contamination. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	The dryers are filled with silica gel.
Lead and other heavy metals	Yes	Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item.
PCBs	No	There are no ballasts , capacitors, or PCB oils associated with the superdry air drying system. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	No	Glovebox exhaust did not pass through the dryers.
Radioisotope sources	No	There are no sources in this set
Radiological	Yes	The dryers may be slightly contaminated from room exhaust

Process Number: 776_777-072-00

Title: SET 72 Glovebox dry air drying system, 2nd floor

Physical Description: The Kathabar system for this set is comprised of two kathabar units on the second floor. There are nine Kathabar systems, numbered K1 through K9, for room air that are included in Set #48

Process Description: The Kathabar system for the GBDA System was installed in 1968 (reference Building 776 Data File). The Kathabar units used Kathene to dehumidify the air in a similar fashion to the Kathabars for room air in Set 48 except the GBDA system used refrigeration compressors instead of brine chillers. There was a past effort to drain the refrigerant from the compressors. Kathene is a mixture of lithium chloride, sodium chromate, and water. The condensed water from the drying of the air was discharged to the sanitary waste system The GBDA ceased operation within hours of the 1969 fire (reference interview with retired utilities manager)

Constituent	Present?	Comments
Asbestos	Yes	The insulation on the Kathabar K-1 is listed in the asbestos inventory. Insulation on the remaining units will be managed as asbestos
Beryllium	No	There is no beryllium associated with the Kathabar units. Beryllium was not stored or processed on the second floor. The only potential site of beryllium contamination on the second floor is in the exhaust plenums. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Any freon refrigerant remaining in the compressors will be removed during deactivation.

148

Constituent	Present?	Comments
Lead and other heavy metals	Yes	Kathene sludge has been analyzed and shown to contain regulated amounts of cadmium, chromium, and lead
PCBs	Not determined	The lubricating oil in the Kathabars will be tested for PCBs since the unit is pre1970s and the oil has not be changed since the 1960s. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	No	Glovebox exhaust was not routed through this unit during its operation. The contamination in the unit is from the makeup air drawn from the 2nd floor during the 1969 fire.
Radioisotope sources	No	There are no sources in this set
Radiological	Yes	The GBDA Kathabar is known to be internally contaminated from the 1969 fire .

Process Number: 776_777-073-00

Title: SET 73 Remainder of 2nd floor equipment not in other sets

Physical Description: This set includes a variety of equipment not included in the other sets on the 2nd floor of Building 776. The major equipment includes: chillers, hot water tanks, reheat heat exchanger, freon cooler, pumps, tape machines, air compressors, an unused exhaust fan for the Advanced Size Reduction Facility, hydraulic oil system, and Fluidized Bed Incinerator air dryer

Process Description: The following description details the highlights of the utility equipment in this set. Except as detailed below, the equipment is standard utility equipment.

Freon cooler – This unit provided coolant (freon) to cool the gaskets on the molten salt and electrorefining cells. The unit was shut down in the mid-1980s after it was discovered that the gaskets did not require the cooling protection provided by the cooler. The freon within the unit was at a positive pressure with respect to the glovebox atmosphere (reference utility equipment tape narrated by retired utilities manager and interview with former molten salts operations foreman).

Reheat heat exchanger – the reheat system provided additional hot water capacity by reheating water with steam. A line from the system was incorrectly connected to a contaminated glovebox heat exchanger. The system was shut down in the 1980s when the contamination was discovered and the contamination could not be flushed from the system. An effort was made to drain the system but residual liquid may remain in the system (reference utility equipment tape narrated by retired utilities manager and interview with current utilities foreman and manager).

Constituent	Present?	Comments
Asbestos	Yes	Asbestos has been detected in multiple insulation samples on the 2nd floor, The insulation on the piping and equipment in this set will be managed as asbestos contaminated waste.

Constituent	Present?	Comments
Beryllium	No	Beryllium was not stored or processed on the second floor. The only potential site of beryllium contamination on the second floor is in the exhaust plenums. Surface surveys will be performed prior to initiating decommissioning activities.
Chemicals	Yes	Any liquids or compressed gases will be drained from the equipment prior to removing the equipment. This includes brine, freon, oil, and water.
Lead and other heavy metals	Yes	Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item.
PCBs	No	Capacitors, ballasts, and PCB oils have not been identified within this set. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	No	The equipment in this set was no used to process SNM.
Radioisotope sources	No	There are no sources in this set
Radiological	Yes	The reheat system is known to be internally contaminated. The remaining equipment may be contaminated since the set is contained within an Radiation Buffer Area (RBA). Unless the equipment is unpainted and 100% surveyable, the equipment will be disposed of as low-level waste.

Process Number: 776_777-074-00

Title: SET 74 Building 702, 712, and 712A

Physical Description: Building 702 is a pump house for cooling water. Building 712 is a cooling tower. Building 712A is a valve pit for Building 712. All of these buildings are located north of Buildings 776/777.

Process Description: Buildings 702, 712, and 712A were built between 1960 and 1962. The processes in these buildings have not operated since approximately 1992.

Buildings 702 and 712 are known as Pump House and Cooling Tower #1. Warm, treated water from the heat exchangers in Buildings 703, 776, and 777 was cooled in Building 712. Four fans in Building 712 were used to cool the water. Wind-blown dirt, rust chips, and precipitates from the cooling tower water accumulated as a sludge in the cooling tower sump. The sludge was disposed of in the landfill. The cooling tower was periodically cleaned or blown down to clean the equipment. The blowdown water was discharged to Building 995. Building 702 contains three motors and five pumps (four of which were driven by natural gas) which received water from Building 712 and pumped it to the heat exchangers in Building 703 and in the Building 776 compressor house (reference archived WSRIC books for Building 702 and 712).

Building 712A is known as the propane shed. The propane mixers in this area were used to mix propane from a large tank with air to the correct specific gravity to be used as a replacement fuel for natural gas. The propane-air mixture could be used in Building 702 and Room 150, Building 776 (reference interview with retired utilities manager).

150

Constituent	Present?	Comments
Asbestos	Yes	The insulation on the steam lines in Building 702 will be managed as asbestos waste unless sampling indicates otherwise. The baffles on the cooling tower will be sampled for asbestos. The north and center pump for Building 712 are noted as "asbestos protected" on drawings.
Beryllium	No	There is no beryllium associated with process cooling water system.
Chemicals	Yes	There are several drums of oil that will be removed from Building 702 during deactivation. Liquids from the motors, pumps, and piping will be drained also.
Lead and other heavy metals	Yes	The fluorescent bulbs and mercoid switches can contain mercury. The incandescent lights can contain lead.
PCBs	No	There are no capacitors, ballasts, or PCB oils in this set
SNM holdup	No	SNM was never handled in these buildings
Radioisotope sources	No	There are no sources in this set
Radiological	No	There is no indication of radiological contamination in these buildings. The building structure will be surveyed as required to "free release" the building components for recycle or landfill disposal.

Process Number: 776_777-075-00

Title: SET 75 Building 781

Physical Description: Building 781 is located east of Building 777. The building is below grade except for the entrance. The major equipment in the building is a helium compressor and a test chamber.

Process Description: The building was constructed in 1965 at the same time Rooms 459 and 459A were added on to Building 777 (reference Building 776 data file). The compressor in Building 781 could supply helium at up to 100 ksi to the chamber in Room 459A or in Building 781.

Constituent	Present?	Comments
Asbestos	No	There are no floor tiles, insulation, or fire blankets associated with Building 781.
Beryllium	Not determined	There is no process history for the items tested within the chamber in Building 781.
Chemicals	Yes	A cylinder of helium in the building will be removed prior to D&D
Lead and other heavy metals	Yes	The incandescent lights can contain lead.
PCBs	No	There are no capacitors, ballasts, or PCB oils in this set
SNM holdup	No	SNM was never handled in this building
Radioisotope sources	No	There are no sources in this set

Constituent	Present?	Comments
Radiological	No	There is no indication of radiological contamination in this building. However, the compressor lines from Building 781 pass into a Contamination Area (CA) in Room 459A , Building 777. The building structure will be surveyed as required to "free release" the building components for recycle or landfill disposal.

Process Number: 776_777-076-00

Title: SET 76 Building 701, 710, and 730

Physical Description: Building 701 is a research building. Building 710 is a steam reducing station. Building 730 is a set of underground process waste tanks. . The tanks are concrete and have a 26-foot depth. The capacity of Tanks 776 A and 776 B is 22,500 gallons each, and the capacity of Tanks 776 C and 776 D is 4500 gallons. The dimensions of tanks 776 A and 776 B are 25' x 15' x 10' each and Tanks 776 C and 776 D are 5' x 15' x 10' each (reference Historical Release Report page 700-28). Two of the tanks have been filled with foam.

All of these buildings are located north of Buildings 776/777.

Process Description: Buildings 730 was constructed in the 1956 (reference Historical Release Report). In the early 1960s, Building 701 was built. Building 710, a.k.a. the steam shed or C-Valve Station, is a relatively new structure that was built in the early 1980s.

Building 701 was originally used as a paint and carpenter shop. When these operations were moved out of the building in the 1970s, the building was used as a research and development area, with an emphasis on waste treatment. The processes included microwave melting, glass melting, and biological treatment. The microwave melting and glass melting process development used simulated non-radioactive sludge from Building 374 and 774 as feed material (reference archived Building 701 WSRIC processes 1 through 3)

Steam from the steam plant (building 443) is separated into supply lines for many buildings in Building 710.

The tanks in Building 730 handled a variety of liquid wastes over their lifetime. A pipe header at the tanks allowed alternative pumping the laundry water to the sanitary sewer system, the Solar Evaporation Ponds, or Building 774. Tanks 776 A and 776 B are laundry waste holding tanks and Tanks 776 C and 776 D area process waste holding tanks. If tanks C and D overflowed, the excess liquid could drain into tanks A and B, and vice versa (reference Historical Release Report, page 700-28). The two tanks that are not filled with foam are used as collection tanks for fire deluge water from the Zone 2 plenums.

Constituent	Present?	Comments
Asbestos	Yes	The insulation in these buildings will be managed as asbestos waste unless sampling indicates otherwise.
Beryllium	Yes	There may be historical beryllium contamination from the laundry water in Building 730. There is no indication of beryllium handling or storage in Building 701 or 710.
Chemicals	Yes	There are several gas cylinders that will be removed from Building 701 during deactivation. Liquids from the motors, pumps, and piping will be drained also.

Constituent	Present?	Comments
Lead and other heavy metals	Yes	The fluorescent bulbs can contain mercury. The incandescent lights can contain lead. Sodium vapor lights can contain lead and mercury. There are leaded gloves stored in this set. There are treatability wastes in Building 701 that must be disposed of prior to D&D
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings.
SNM holdup	No	SNM was never handled in these buildings
Radioisotope sources	No	There are no sources in this set
Radiological	Yes	The liquids handled in Building 730 were radioactively contaminated. Building 701 has be contaminated twice by incidents related to process waste backing up into a toilet in 1972 and personnel spreading contamination from Building 730 in 1975. The building was decontaminated after both incidents. Surveys of the building components will be required for "free release" to a landfill or for metal recycle. There is no indication of radiological contamination in Building 710.

Process Number: 776_777-077-00

Title: SET 77 Chillers #2 and #3 (not in use) in Room 150

Physical Description: Two natural gas fired brine chillers in Room 150, Building 776. These chillers have been lo[illegible] out since 1993.

Process Description: Brine is a glycol-water mixture used to cool the air entering the building. The system is a closed loop. The brine is cooled with a chillers located in Room 150. The chillers in service are powered by electricity. Chiller #2 and #3 were installed before 1969.

Constituent	Present?	Comments
Asbestos	Yes	Asbestos has been detected in samples of the Chiller #5 insulation. Based on this information and the age of Chillers #2 and #3, it is assumed that the insulation on these chillers contains asbestos.
Beryllium	No	There is no indication of beryllium handling or storage in Room 150.
Chemicals	Yes	Any brine or oil remaining in the chillers will be drained prior to removal of the chillers.
Lead and other heavy metals	Yes	Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item.
PCBs	No	There are no ballasts, capacitors, or PCB oils associated with the chillers.
SNM holdup	No	SNM was never handled with this equipment
Radioisotope sources	No	There are no sources in this set

Constituent	Present?	Comments
Radiological	Yes	The contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a contamination range of 10^4 - >10^6 cpm.

Process Number: 776_777-078-00

Title: SET 78 Miscellaneous unused piping (e.g. machine coolant, CCl4, trichloroethane , process waste, and argon)

Physical Description: This set includes the piping for supply and disposal of oil, carbon tetrachloride, trichloroethane and process waste within Building 776 and 777. Also, the argon recirculation piping in Special Assembly (Room 475) is included within this set. The piping that is exterior the buildings is included in Set 81. Process waste lines located below grade are not included in this set nor the scope of the D&D project

Process Description: The process description will be divided into major groupings of piping as follows: machine coolant, carbon tetrachloride, trichloroethane, process waste, and argon.

Machine coolant – Machine coolant was supplied to lathes, the five-axis mill and jig borers in Rooms 131 and 134E from a tank located on the second floor of Building 776. The tank was filled Texaco Regal oil from drums. The coolant was recirculated within the glovebox. The coolant became mixed with the carbon tetrachloride used to degrease the parts. The coolant was filtered on the recirculation systems to remove pieces of Pu metal generated from machining. At operations shutdown for SNM inventory or when the coolant was no longer suitable for use, the liquid was pumped to a series of pencil tanks in Rooms 131, 134E, and 430 for storage. These tanks were removed in 1995. The liquid waste from the pencil tanks was transferred through filter box 642 (set #6) into the raschig ring filled tanks in Set #7. The liquids from the raschig ring filled tanks were shipped to Building 774. The piping for the machine coolant is located in the overheads and alongside the chainveyor supports.

Carbon tetrachloride – Carbon tetrachloride was supplied to lathes, the five-axis mill, briquetting press, inspection boxes and jig borers in Rooms 131,134, and 430 from a tank located north of Building 776. The tank was filled by tanker truck. In boxes where carbon tetrachloride was used to remove machine coolant, the carbon tetrachloride was recirculated with the machine coolant within the glovebox. At operations shutdown for SNM inventory or when the carbon tetrachloride was no longer suitable for use, the liquid was pumped to a series of pencil tanks in Rooms 131, 134E, and 430 for storage. These tanks were removed in 1995. The waste liquid from the pencil tanks was transferred through filter box 642 (set #6) into the raschig ring filled tanks in Set #7. The liquids from the raschig ring filled tanks was shipped to Building 774. The piping for the carbon tetrachloride is located in the overheads and alongside the chainveyor supports.

Trichloroethane – Ultrasonic cleaner/vapor degreasers throughout Building 777 were supplied with 1,1,1-trichloroethane from a supply tank on the second floor of Building 707. Prior to the supply coming from Building 707, there was a supply tank on the second floor of Building 776. Prior to 1974, the system supplied trichloroethylene, instead of 1,1,1-trichloroethane. The waste 1,1,1-trichloroethane from the ultrasonic cleaners was pumped to two raschig ring-filled tanks in Room 430. From these tanks, the waste was pumped to Building 774. The piping from the tanks to Room 141 was removed in 1998. A line for waste trichloroethane from Tank V-100 in Building 707 connects to the raschig ring filled tanks in Room 430.

154

Process waste – The process waste system consists of piping to and from the four fiberglass process waste tanks in Room 127, Building 776. The waste lines to the tanks originate on the second floor, in the Building 776 and 777 decontamination rooms, Room 461, Room 474, Size Reduction, and Advanced Size Reduction. Many of these sources have been blanked off since 1989. The drain line from the tank is routed to Valve Vault 9, north of the building. The original process waste lines in the building including the transfer line from Building 779 were installed below grade. Prior to the 1969 fire, there were several floor drains in the first floor that were connected to the process waste system. These drains were filled in during the fire cleanup.

Argon - The inert surveillance gloveboxes on the west side of Room 475 were supplied with a low moisture/low oxygen atmosphere. The atmosphere was 94% argon and 6% hydrogen. The gas was gettered for oxygen and then drawn through a dessicant for water removal. The gas was recirculated between the gloveboxes and the gettering/dessicant columns.

Constituent	Present?	Comments
Asbestos	No	There is no pipe insulation on these piping systems.
Beryllium	Yes	The possibility of beryllium contamination exists in the waste lines (process, machine coolant, and trichloroethane). This possible beryllium contamination is not a safety concern due to (1) the suspension in oil and (2) and the controls necessary for the radiological contamination. Beryllium contamination is expected in the argon system as well.
Chemicals	Yes	Sections of piping will be drained prior to removal of the pipe. The liquids will be characterized according to the individual system (i.e. process waste, trichloroethane, machine coolant)
Lead and other heavy metals	No	No heavy metals were identified by the walkdown or in the process description.
PCBs	No	There are no PCB oils within this set
SNM holdup	Not determined	The piping will be scanned prior to disposal to comply with current criticality limit requirements. The holdup amounts will be modest if any for the waste lines. The amounts in the argon system could be higher than the other systems in this set if the argon was not filtered prior to leaving the glovebox.
Radioisotope sources	No	There are no sources in this set
Radiological	Yes	Based on the removal of waste trichloroethane and machine coolant lines in 1995 and 1998, the interior of this piping is contaminated >10^6 dpm. The painted supply piping may be contaminated on the exterior. The process waste piping will be contaminated to varying degrees depending on the source of the liquid (i.e. the line from Size reduction will be more contaminated than the lines from Advanced Size Reduction or the 2nd floor). The contamination in the argon line in Room 475 are assumed to be contaminated >10^6 dpm since glovebox atmosphere was in these line.

153

Process Number: 776_777-079-00

Title: SET 79 Criticality accident alarm system and deluge system

Physical Description: The criticality accident alarm system (CAAS) is comprised of 23 neutron detectors, 24 warning beacons, a master panel, and wiring to connect the components together. The deluge system is a fire sprinkler system within the nine Zone 1 and 2 exhaust plenums

Process Description: The CAAS is required to warn personnel of a criticality accident. If two neutron detectors within the facility area detect a specified number of neutrons within a short period of time the system alarms. The alarm consists of activation of the beacons and the audible alarm over the Life Safety/Disaster Warning system (LS/DW). The master panel in Building 750 is used to monitor the activity of each of the detectors. In case of an alarm condition, the panel will indicate which detectors alarmed or "dropped".

In the event of a fire in the plenum area, the deluge system saturates the filters to prevent the filter media from burning. Water from the Zone 1 deluge system would drain to Tank T-3 (Set #69) in Room 127. Water from the Zone 2 deluge system would drain to Building 730 (Set #76). The deluge system for the transformers outside the building will be removed with the transformers (Set #81).

Note: D&D of this set will consist of (a) removal of the neutron detectors, criticality beacons, and master panel and (2) disconnecting (i.e. turning off and draining) the plenum deluge system. The wiring and conduit for the CAAS is part of Set 83. The piping and heat detectors for the deluge system is included in Sets 80 and 83.

Constituent	Present?	Comments
Asbestos	No	There are no floor tiles, insulation, or fire blankets associated with this set.
Beryllium	No	There is no indication of beryllium contamination on the components of the set that will be removed during D&D. Beryllium surveys will be required to "free release" the system components.
Chemicals	Yes	The water from the deluge valve to the supply will need to be drained. The system is "dry" within the plenum.
Lead and other heavy metals	No	No heavy metals were identified by the walkdown or in the process description.
PCBs	No	There are no capacitors, ballasts, or PCB oils within this set
SNM holdup	No	There is no SNM associated with this set.
Radioisotope sources	No	There are no sources in this set
Radiological	No	Radiological contamination is not encountered when the neutron detectors are replaced or serviced.

156

Process Number: 776_777-080-00

Title: SET 80 Plenums and associated ductwork for Zone 1 ventilation

Physical Description: There are seven Zone 1 plenums on the second floor of Building 776. The plenums are numbered 201 through 207. The plenums are metal rooms with HEPA filters inside.

Process Description: The plenums provide 4-stage HEPA filtration for the glovebox (Zone 1) exhaust. The exhaust is transported from the gloveboxes in 2" to 6" diameter ducts. These ducts branch into headers that are 18" to 28" in diameter. The headers deliver the exhaust to the plenum. The negative pressure for the plenums is supplied by dual., belt driven fans powered by 2 to 75 horsepower motors. The HEPA filters are 24"x24"x12" and are in various size of arrays depending on the plenum. The filters are tested periodically with an aerosol suspension of dioctyl phthalate to test the removal efficiency. The filters are removed when they fail the testing or the differential pressure across the filters is too great, due to the loading of particulates on the filter. Some plenums have demisters in front of the filters to keep the filter media as dry as possible. In the event of a fire in the plenum area, a deluge system saturates the filters to prevent the filter media from burning.

Constituent	Present?	Comments
Asbestos	No	HEPA filters in the 1960s and 1970s contained some asbestos. However, these filters have been replaced by non asbestos filters.
Beryllium	Yes	The ducting from the gloveboxes and hoods that processed beryllium will be considered beryllium contaminated.
Chemicals	Yes	Other than the DOP on the filters from testing, there are no chemicals associated with this set
Lead and other heavy metals	No	No heavy metals were identified by the walkdown or in the process description.
PCBs	No	There are no capacitors, ballasts, or PCB oils within this set
SNM holdup	Yes	The plenums are scanned on an annual basis to determine the amount of holdup present. The ducting was scanned in 1990 to determine the amount of SNM within the ducting. SNM was removed from the molten salts duct at that time. SNM holdup will be reduced to the safeguards termination limits during deactivation.
Radioisotope sources	No	There are no sources in this set
Radiological	Yes	The plenums are High Contamination Areas. The plenums and ducting contain gram amounts of plutonium and are therefore contaminated in excess of 10^6 dpm.

157

Process Number: 776_777-081-00

Title: SET 81 miscellaneous external stuff (cargo containers, exterior piping, and transformers)

Physical Description: This set includes 16 cargo containers used by the facility, exterior piping, and four transformers around Buildings 776/777. The cargo containers are located west of Building 776, next to Building 701, and in the Building 964 yard.

Process Description: There is no process associated with this set. A description of each of the items is included.

The cargo containers are used to store chemicals, carpenter supplies, excess equipment from molten salts and Building 701 operations, and microwave treatability samples. The usable materials are consumed as needed, the chemicals are shipped for disposal, and the excess equipment is dispositioned through Property Utilization and Disposal.

The exterior piping consists of primarily of conduit and steam lines. There are limited amounts of other piping (i.e., abandoned natural gas, process waste, liquid nitrogen, process cooling water, exhaust ducting on the roof). The steam lines and piping that comes north out of Room 150 is supported off the ground. Most of the other piping and conduit is attached to the building.

There are four transformers exterior to the building. The transformers are designated 776-1, 776-2, 776-4, and 777-1. Transformer 776-4 and the concrete pad beneath it were replaced in the mid 1980s as part of the hazards elimination program. The replaced transformer and pad had PCB contamination.

Constituent	Present?	Comments
Asbestos	Yes	Much of the steam condensate line insulation has been replaced with nonasbestos insulation. Any insulation that has not been replaced or installed recently will be managed as asbestos unless sample results indicate the insulation is nonasbestos.
Beryllium	Yes	The process waste lines may have low levels of beryllium contamination (see tank sets #7, #26, and #69). This possible beryllium contamination is not a safety concern due to (1) the suspension in liquid and (2) and the controls necessary for the radiological contamination.
Chemicals	Yes	There are chemical containers that will be removed from cargo containers during deactivation. Any residual liquids in the piping will be removed prior to D&D of the set. The dielectric fluid in the transformers will be sampled and removed prior to removal of the transformer carcasses.
Lead and other heavy metals	Yes	Sodium vapor lights can contain lead and mercury. There are treatability wastes in cargo containers that must be disposed of prior to D&D
PCBs	No	The dielectric fluid in the transformers is non-PCB. The fluids will be resampled when the transformers are deactivated.
SNM holdup	Not determined	The contaminated piping was used to ship process waste. Based on the removal of the trichloroethane piping in Rooms 141 and 430, there is no detectable holdup in the piping. The piping will require scanning prior to packaging to comply with the current criticality controls for waste drums and boxes.

158

Constituent	Present?	Comments
Radioisotope sources	No	There are no sources in this set
Radiological	Yes	The process waste lines are internally contaminated and will be disposed of as transuranic or low-level waste depending on the level of contamination. The other piping will be surveyed to assure it is free of contamination and can be "free released" for recycle. The cargo carriers, their contents, and the transformer carcasses will be surveyed for "free release" also.

Process Number: 776_777-082-00

Title: SET 82 Building shell (1st and 2nd floors) includes Docks 2 through 6

Physical Description: This scope of this set is the building structure above grade which includes the exterior and interior walls, 2nd floor, original roof, replacement roof, 779 tunnel, and the above grade features of the docks.

Process Description: There is no process associated with the building shell. The following information is presented about the hazardous constituents suspected or known to be present.

Constituent	Present?	Comments
Asbestos	Yes	The walls contain several asbestos features. Much of the original exterior walls are covered with transite panels. Where asbestos insulated pipes pass through the 2nd floor, asbestos insulation may be present in the pipe section remaining in the floor. The mortar filling the cinder blocks in the walls will be sampled for asbestos.
Beryllium	Yes	Beryllium surveys will be needed for the building structure once the equipment is removed. The areas that have known or suspected contamination can be found on the beryllium map in the report or the constituent tables for individual process sets.
Chemicals	Yes	The wall along column line L between columns 7 and 9 is potentially contaminated with carbon tetrachloride and oil. In the 1960s prior to the 1969 fire, waste machine coolant mixed with carbon tetrachloride sprayed onto the wall when drums of the liquid were overfilled. There are numerous other incidents were the same waste leaked onto the 1st floor in other areas of the building. Since the 1st floor will not be removed during D&D, these sites do not affect characterization of the waste generated by D&D.
Lead and other heavy metals	Yes	Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. The concrete near the Kathabar units on the second floor is contaminated with Kathene. Kathene sludge contains chromium, cadmium, and lead. The levels of these metals in the concrete have not been determined. Based on comments from a former NDT employee, the north, west and east walls of Room 473 may contain lead "wool" within the concrete. The lead was added to increase the shielding provided by the walls.

159

Constituent	Present?	Comments
PCBs	No	There are no building components identified as PCB contaminated. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	No	While portions of the building are heavily contaminated, there are no areas that contain SNM holdup. The areas that contain or potentially contain holdup are equipment used to directly process SNM (gloveboxes) or can accumulated SNM (duct work, plenums) from Zone 1 exhaust. These types of equipment are included in other sets.
Radioisotope sources	No	There are no sources in this set
Radiological	Yes	The contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a contamination range of not detectable to> 10^6 cpm. The building shell will be surveyed for radioactive contamination after the equipment is removed.

Process Number: 776_777-083-00

Title: SET 83 Plenums and associated ductwork for Zone 2 - plus supply fans S1 - S9, HP heads, air, N_2, sanitary drains, domestic water, electrical, UPS batteries (room 230) LSDW batteries, Rooms 230A, 231, 231A, and 232A, fire systems, Building 703, 713 (cooling tower), and 713A.

Physical Description: The set is adequately described by the title. The set consists of three outbuildings, equipment on the 2nd floor of Building 776, and piping/ducting/conduit throughout Buildings 776/777.

Process Description: The process description for Set 83 is broken into three parts, (1) outbuildings, (2) Zone 2 plenums and ductwork, and (3) remaining equipment in Building 776/777.

Buildings 703, 713, and 713A were built between 1960 and 1962.

Buildings 703 and 713 are known as Pump House and Cooling Tower #2. Building 703 receives both raw (untreated) and domestic (treated) water for Building 713 makeup. Building 712 was supplied by Building 703 until the Building 712 was shut down in 1992. Nalco 2536 is added to the process cooling water as a corrosion inhibitor. Nalco 2826 Cooling Treatment, Nalco 2590 Microbicide, and makeup water area added to the cooling tower water. Building 713 receives warm, treated water from the heat exchangers in Buildings 703, 776,and 777. Three fans in Building 713 are used to cool the water. Wind-blown dirt, rust chips, and precipitates from the cooling tower water accumulate as a sludge in the cooling tower sump. The sludge is disposed of in the landfill. The cooling tower is periodically cleaned or blown down to clean the equipment. The blowdown water is discharged to Building 995. (reference archived WSRIC books for Building 703 and 713).

Building 712A is known as the valve shed or valve pit. It contains the service valving for Building 713.

Constituent	Present?	Comments

160

Asbestos	Yes	The insulation on the piping and structure will be managed as asbestos waste unless sampling indicates otherwise. The baffles on the cooling tower will be sampled for asbestos.
Beryllium	No	There is no beryllium associated with process cooling water system.
Chemicals	Yes	There are containers of oil and Nalco 2826 that will be removed from Building 702 during deactivation. Liquids from the motors, pumps, and piping will be drained also.
Lead and other heavy metals	Yes	The fluorescent bulbs can contain mercury (Building 703).
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings.
SNM holdup	No	SNM was never handled in these buildings
Radioisotope sources	No	There are no sources in this set
Radiological	No	There is no indication of radiological contamination in these buildings. The building structure will be surveyed as required to "free release" the building components for recycle or landfill disposal.

Process Description: Plenums PL-250, PL-251, and PL-252 provide 2-stage HEPA filtration for the glovebox (Zone 2) exhaust . The exhaust is transported from the room in ducts. These ducts branch into headers. The headers deliver the exhaust to the plenum. The negative pressure for the plenums is supplied by dual, belt driven fans powered by up to 100 horsepower motors. The HEPA filters are 24"x24"x12" and are in various array sizes depending on the plenum. The filters are tested periodically with an aerosol suspension of dioctyl phthalate to test the removal efficiency. The filters are removed when they fail the testing or the differential pressure across the filters is too great, due to the loading of particulates on the filter. In the event of a fire in the plenum area, a deluge system saturates the filters to prevent the filter media from burning. Plenum PL-250 is the original plenum in the building. This plenum is the largest plenum in the building and is constructed of cinder block. The plenum has four sections. Each section has an exhaust fan. Plenums PL-251 and PL-252 are smaller plenums constructed of metal.

Constituent	Present?	Comments
Asbestos	No	HEPA filters in the 1960s and 1970s contained some asbestos. However, these filters have been replaced by non asbestos filters.
Beryllium	Yes	The ducting from the rooms with beryllium contamination will be considered beryllium contaminated.
Chemicals	Yes	Other than the DOP on the filters from testing, there are no chemicals associated with this set
Lead and other heavy metals	No	No heavy metals were identified by the walkdown or in the process description.
PCBs	No	There are no capacitors, ballasts, or PCB oils within this set
SNM holdup	No	While Zone 2 exhaust can be contaminated, there are not gram amount of plutonium associated with the ducting and plenums unlike of the Zone 1 plenums and ducting.
Radioisotope sources	No	There are no sources in this set
Radiological	Yes	The plenums are High Contamination Areas. Several room exhaust ducts on the 1st floor are marked "contains fixed contamination".

161

Process Description: The ventilation for the building is delivered by nine large supply fans numbered S-1 through S-9. With the exception of S-5, the supply fans are the original fans installed in the building. Fan S-5 was replaced after the 1969 fire due to heavy contamination. HEPA filters were added around the supply fan intakes after the 1969 fire to filter airborne contamination, in case there was a flow reversal.

The health physics vacuum system provides vacuum to sampling heads and air monitors throughout Building 776/777. The filter paper on the heads and inside the air monitors provide warning of airborne contamination in the work areas. The air monitors contain plutonium standards.

The plant air, instrument air, and nitrogen systems are standard compressed gas utility systems. The nitrogen is provided by the nitrogen plant northwest of Building 551.

There is an extensive system of sanitary drains in the facility. Many have been out of service for many years. Portions of the system are below grade.

The domestic water, fire and electrical systems are included in this set.

The Life Safety/Disaster Warning System (LSDW) and Uninterruptible Power System Batteries are located on the 2nd floor of Building 776. These systems provide power to the LSDW, criticality detection system and utility control room when normal or emergency power are not available. The batteries are lead-acid batteries.

Rooms 230 (UPS system) 230A (contains control room fan), 231 (control room), 231A (break room) , and 232A (restroom) are operated by the utilities department.

162

Constituent	Present?	Comments
Asbestos	Yes	The pipe insulation, ceiling tile, and floor tile will be managed as asbestos waste unless sampling indicates otherwise.
Beryllium	No	There is no beryllium associated with these utility systems.
Chemicals	Yes	The electrolyte in the batteries is acidic.
Lead and other heavy metals	Yes	The fluorescent bulbs can contain mercury. There is lead within the LSDW and UPS batteries. The incandescent bulbs can contain lead.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. The switchgear will be inspected for PCB capacitors when it is deactivated.
SNM holdup	No	SNM was not processed in this equipment
Radioisotope sources	Yes	The sources in the air monitors will be removed with the air monitors.
Radiological	Yes	The remaining equipment may be contaminated since the set is contained within an Radiation Buffer Area (RBA) and Contamination Area (CA). Unless the equipment is unpainted and 100% surveyable, the equipment will be disposed of as low-level waste.

163

Constituent	Present?	Comments
Asbestos	Yes	The pipe insulation, ceiling tile, and floor tile will be managed as asbestos waste unless sampling indicates otherwise.
Beryllium	No	There is no beryllium associated with these utility systems.
Chemicals	Yes	The electrolyte in the batteries is acidic.
Lead and other heavy metals	Yes	The fluorescent bulbs can contain mercury. There is lead within the LSDW and UPS batteries. The incandescent bulbs can contain lead.
PCBs	Yes	The ballasts within the fluorescent light fixtures will be managed as PCBs. A final PCB determination is made when the ballasts are removed based on markings. The switchgear will be inspected for PCB capacitors when it is deactivated.
SNM holdup	No	SNM was not processed in this equipment
Radioisotope sources	Yes	The sources in the air monitors will be removed with the air monitors.
Radiological	Yes	The remaining equipment may be contaminated since the set is contained within an Radiation Buffer Area (RBA) and Contamination Area (CA). Unless the equipment is unpainted and 100% surveyable, the equipment will be disposed of as low-level waste.

Process Number: 776_777-084-00

Title: SET 84 Floors and below-grade features filled with concrete, including equipment from the 1969 fire cleanup.

Physical Description: This scope of this set is the main (1st) floor, basement (Room 1 and 2) floors, 771 tunnel surfaces, and the below grade features from Figure 4 of the DOP (Areas A – H):

Area A – Stairwells (5) under main floor slab
Area B - Possible equipment burial area
Area C – 4-high rooling mill pit
Area D – Marform press pit
Area E – Hydroform press room
Area F – Autoclave equipment pit
Area G – Washing machine drain pit
Area H - Paint Trap

The sainitary and process waste piping within or below the flooring is not considered part of this set since the piping is within the Environmental Restoration scope.

Process Description: There is no process associated with the floor. Machining oil/degreasing solvent (carbon tetrachloride) mixtures were spilled on the floors prior to and after the 1969 fire (ref. incident reports and retiree interviews). The areas affected are Room 127, 131, and 134E.

Stairwells (referred to as sheep dips) were built into the floor to allow passage beneath equipment usually chainveyor lines (ref drawings RF76-17206, 14376). The stairwells were filled in as the equipment configurations changed. As part of the 1969 fire cleanup, contaminated concrete from other areas was placed in the stairwells (ref. cleanup logbook).

An area in Room 127 is considered as a suspect area of concern. During a maintenance job in late 1994, the concrete appeared soft. As the floor was scraped to remove paint, high levels of contamination

164

developed along with a "puff" of air, and the maintenance crews encountered what they believed were metal plates. Based on Ground Pentetrating Radar (GPR) investigation of the area, there does not appear to be anything buried. However, the radar did identify a steel plate within the floor. The radar can not penetrate the plate.

Based on retiree interviews, there is equipment encased in concrete in the 4-high rolling mill pit. This pit is located in the beneath the floor of Rooms 118E, 118G, 118H, and 134 (ref drawing RF76-17217). A german-made saw (Transyeager) with a 54" blade was used to was used to size reduce the rolling mill rolls from the 4-high mill. The saw was too high or large to cut rolls, so the saw was placed in the pit. The cleanup crews tried to cut up rolls to no avail There wasn't a waste box large enough to hold the large rolls so the rolls and saw were buried in the pit and covered with cement (reference retiree interviews). The GPR investigation of the floor indicates a definite density change within the floor.

The Marform press pit is located west of the Manual Disassembly Area of the Advanced Size Reduction Facility in Room 134 (reference drawing RF76-17219). The Marform press was removed as part of the 1969 fire cleanup. The pit filled with thousands of gallons of firewater that was pumped out in 1969 (reference AEC cleanup status reports). The pit was filled in concrete. There is no conclusive information by process knowledge or GPR investigation to confirm or deny the presence of buried equipment in this area.

A room beneath Room 127 was filled in with concrete. When the hydroform press in Room 127 (then Room 134) was operational, the room contained pencil tanks and a liquid sump. The entrance to the room was from the stairway landing to Room 1. There is conflicting information on when the room was filled in. The GPR investigation from Room 127 indicates there is an airspace on top of the fill within the room. The construction of the room is shown on drawing RF76-17221.

Room 153 was added to the facility as an autoclave facility. The facility was used explore hot and cold wall autoclaving of pits. The autoclaves extended over 20 feet below grade (reference classified report RFP-1588). Pits with beryllium parts were processed in this area. Trichloroethylene was used for cleaning. In the 1970s, the autoclaves were cemented over and a carpenter shop was moved into the room.

The original laundry was located where Room 125 is now. There was a shallow (less than 1 foot) drain built into the floor that extended less than 20 feet across the room (reference drawing RF76-17211). The drain was filled in after the laundry was moved in the late 1950s –early 1960s.

Room 133 was originally used as a paint shop. A paint trap was constructed in the floor, on a process waste line, as part of the original building floor construction (reference drawing RF76-14205). This trap was removed and the resulting hole filled in, after the paint shop was relocated in the late 1950s – early 1960s.

Constituent	Present?	Comments
Asbestos	Yes	It is assumed that the insulation on the autoclave contains asbestos.
Beryllium	Yes	Beryllium surveys will be needed for the building structure once the equipment is removed. The areas that have known or suspected contamination can be found on the beryllium map in the report or the constituent tables for individual process sets. The autoclaves processed beryllium parts.
Chemicals	Yes	There are numerous other incidents in Room 127, 131, and 134E where the same waste leaked onto the main floor. This oil/carbon tetrachloride mixture was cleaned up in accordance with decontamination practices or procedures in effect at the time of the spill. The stairwells, mill/press pits,and the hydroform equipment room floor were most likely contaminated with this waste at various times. There is no information on the presence or absence of leakage from the paint trap. Trichloroethylene was used for cleaning items porcessed in the autoclaves.
Lead and other heavy metals	Yes	Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item.
PCBs	No	There are no building components identified as PCB contaminated. Any paint samples gathered within the building will be analyzed for PCBs, since PCBs have been found in paint samples taken from other buildings.
SNM holdup	Not determined	While portions of the main floor of the building are heavily contaminated, there are no areas that contain SNM holdup. The areas that contain or potentially contain holdup are equipment used to directly process SNM (gloveboxes) or can accumulate SNM (duct work, plenums) from Zone 1 exhaust. The rolling mill rolls will need to be scanned for holdup.
Radioisotope sources	No	There are no sources in this set
Radiological	Yes	The contamination beneath the paint can not be measured due to the paint shielding the alpha particles. The contamination levels identified after the 1969 fire will be used as the basis. The map of floor contamination levels after the fire indicates a contamination range of not detectable to> 10^6 cpm. The depth of the contamination into the floor has not been established. The contaminated fire water from the 1969 fire may have penetrated the floors at the expansion joints (Ref Appendix A-1 Surplus Defense Nuclear Production Facilities Element)

Appendix A. Set Locations and Descriptions

167

SET 1 Room 125 and Dimensional Metrology Lab Glovebox (recommended cut at flange connecting into north/south D-Line, outside of metal module Room 125)

SET 2 Room 126, 132, 133, 137B

SET 3 Hydraulic oil system , 2nd floor in Room 233A

SET 4 Portion of Room 131 east/west D-Line and Gloveboxes 601, 602, 604, 605, 606, 608, and 612. This set is the westernmost portion of the Development Line extending from the "sheep dip" to the west wall of Room 131.

SET 5 Portion of Room 131 east/west D-Line and Gloveboxes 614 - 617 and 619 - 622
The portion of the Development Line included in Set 5 extends east from the "sheep dip" to the western edge of the north-south chainveyor section in Room 131.

SET 6 Portion of Room 131 north/south D-Line and Gloveboxes 626 - 628, 630, 632, 636, and 642
The portion of the Development Line included in Set 6 extends north from the Building 707 crossover chainveyor in Room 120 , through Room 131, and to the "sheep dip" on the south side of Room 134E.

SET 7 Tanks 1103, 1104, and 1106 (Compliance Areas 95.006 - 95.008) and associated ancillary equipment in Room 131

SET 8 Rooms 120, 130B, 131 (including Compliance Area 90.49), 131A, and Dock 1
This set includes the remaining items in Room 131 that are not covered by Sets 4 - 7.

SET 9 Room 134E, This set includes all of the items within Room 134E except the gloveboxes which are included in Sets 10 and 11.

SET 10 Room 134E – Gloveboxes 505, 509, 751, 752, 624 and associated M-Line and north/south D-Line (Recommended cuts at the expansion joint in D-Line just past Glovebox 509, the wall of M-Line going into Room 430 and the expansion joint in M-Line before Set 11)

SET 11 Room 134E – Gloveboxes 746, 747, 748, 749 and associated M-Line
Recommended cut at expansion joint of M-Line (Set 10)

SET 12 Rooms 401, 402, 402A, 403, 404, 405, 406, 407, 409, 410, 411

SET 13 Rooms 416, 416B, 417, 418, 419, 420, 429, 431, 431A, 431B

SET 14 Room 415 and associated Gloveboxes 201 through 205, 207 through 214, 216 through 222

SET 15 Room 416A (Vault)

SET 16 Room 426, 427, 427A, and 428

SET 17 Room 430 Glovebox 481, recommended cut at flange into A-Line (cold box)

SET 18 Room 430 Gloveboxes 360, 361, 362, 363, 364, 367,368, 369, 370, 371, 372, 373, 465 (a.k.a. 365 and 366) and associated G2-Line
Recommended cuts at the central flanged area coming from G1-Line (Set 23) and isolating Gloveboxes 465 and 368 from A-Line

SET 19 Room 154A

SET 20 Room 430 Gloveboxes 401, 402, Hood area and Room 424

SET 21 Room 430 Gloveboxes 403, 404, 405, 408, 409, 413, 426, 427, 450 and associated A-Line
Recommended cuts at the 15inch flanged section connecting the other part of A-Line and at the flange between Glovebox 427 and 451

SET 22 Room 430 Gloveboxes 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 451, 452, 454, 456, 457, 458, 459, 462, 464, and associated A-Line
Recommended cuts same as Set 21 and Set 18 with a cut at the flange between Glovebox 464 and 466 and at the wall going into Room 432B (Glovebox 461)

SET 23 Room 430 Glovebox 515, associated R-Line and Gloveboxes 318, 320, 321, 323, 324, 327, 328, 329, 330 and 331
Recommended cuts at the line expansion joint just before Glovebox 509, the wall going into the NDT vault, the central flange going to G2 Line and the bottom of the overhead line coming from M-Line (set 24), where it flanges into G1-Line

SET 24 Room 430 Gloveboxes 756, 758, 759, 760, 761, 762, 763, 764 and associated M-Line
Recommended cut at the chainveyor expansion joint near the wall going into room 134E and at flange after overhead section

SET 25 Room 430, Compliance areas 90.67, 95.017, 95.018 and 90.45

SET 26 Tanks T2, T1, and FL1 – Room 430, Compliance area 56.06 and 56.08

SET 27 Rooms 432, 432A, 432B, 432C, 432D, 440 and Glovebox 461
Compliance area Part B Unit 17

SET 28 Room 433

SET 29 Room 437 Glovebox A1, A2, A3 and associated Lines

SET 30 Room 442

SET 31 Room 443 and NDT Line (from the wall adjacent to Set 23)

SET 32 Rooms 436, 444, 446, 447, 448, 449, 450, and Compliance area 90.86

SET 33 Room 445 and Gloveboxes 494, 495, 499, 500, 501, 502

SET 34 Room 452 Gloveboxes 022, 027, 029, 034, 035, 522, 548 and associated H-Line
Recommended cut between GB's 522 & 523

SET 35 Room 452 Gloveboxes 026, 523, 524, 525, 526, 527, 528, 530, 532, 537, 538, 026, 541, and associated H-Line

SET 36 Rooms 452 and 475 with Gloveboxes 536, 543 and 544 and machining equipment Recommended cut and junction with H-Line

SET 37 Rooms 453, 454, 460

SET 38 Rooms 455, 456, 457, 461, 458

SET 39 Rooms 459 and 459A

SET 40 Room 462 – A Vault

SET 41 Room 463 and Gloveboxes A4, A5, A6, A7, A8, A9, A11 (recommended cut at chainveyor firedoor)

SET 42 Rooms 463A, 463B, 464, 477, 477A

SET 43 Rooms 465, 465A and the north end of Room 445

SET 44 Rooms 466, 467, 468, 469, 470, 471, 472, 474, 474D

SET 45 Rooms 473, 476

SET 46 Room 478 – B Vault

SET 47 Rooms 479, 481, 482, 483, 483A, 483B including compliance area Part B 90.68

SET 48 Kathabar systems except inside plenums

SET 49 Modulab

SET 50 Rooms 101, 102, 103, 103A, 104, 104A, 104B, 104C, 104E, 106A, 106D, 107, 107D, 107E, 108, 108A, 108B, 108C, 109, 109A, 109C, 109D, 110, 112, 112A, 112B, 113, 113B, 113C, 114, 116B, 117, 119, 120, 121, 129, 140, 149

SET 51 Gloveboxes in Room 154A; 046, 494 ('cold box' off Glovebox 495), 495, 496, 499, 501, 502, 503, 505, 506, and 507

SET 52 Tanks T360 and T370 plus Gloveboxes 361 and 371 and bermed area, Compliance areas 94.007 and 94.008

SET 53 Room 152 – Vault, Compliance area 90.85

SET 54 Rooms 153, 154, 154B, 155, 161B, including Compliance Areas 94.001, 94.002, and 94.003

SET 55 Tanks SRV3, SRV4, SRV5, GB0001, Compliance area 94.001, 94.002, 94.003

SET 56 Room 161 and 161A

SET 57 Rooms 156, 159, 159A, 159B, 159C, 160 (the enclosed portion of Dock 5)

SET 58 Rooms 157 and 158

SET 59 Rooms 002, 138, 139, 144, 147, room south of Room 144, and tunnel to Building 771

SET 60 Rooms 146, 146A, 146B, 146C

SET 61 Room 135 (Pilot FBI), Compliance area Part A 49.02

SET 62 Tanks FBI 1 and FBI 2 and associated room, Compliance areas Part A 44.01 and 44.02

SET 63 Rooms 118, 118A, 118B, 118C, 118D, 118E, 118F, 118G, 118H, Compliance area Part A 49.01

SET 64 SARF (Gloveboxes 512, 513, 515, 517, 518, 521-1, 521-2), Compliance area Part A 74

SET 65 Rooms 127J, 136, 141, 148, 150, 150A

SET 66 ASRF, including RDA, MDA, Transfer area, J177, J176, J340, J357, J270, Rooms 130, 130A, 209, 228 and filter units

SET 67 Rooms 123, 134, 137, Compliance areas Part A 49.02 and Part B Unit 11

SET 68 Rooms 001 (the basement) 127, 127A, 127B, Compliance areas Part B 90.66

SET 69 Tanks T1A, T1B, T2A, T2B, T3 and bermed area, Compliance area Part A 40.70, 40.71, 40.72 and 40.73

SET 70 Rooms 205, 206,219, and 232 to 256 (not all inclusive)

SET 71 Superdry air drying system, 2nd floor

SET 72 Glovebox dry air drying system, 2nd floor

SET 73 Remainder of 2nd floor equipment not in other sets

SET 74 Building 702, 712, and 712A

SET 75 Building 781

SET 76 Building 701, 710, and 730

SET 77 Chillers #2 and #3 (not in use) in Room 150

SET 78 Miscellaneous unused piping (e.g. machine coolant, ccl4, trichloroethane, process waste, argon)

SET 79 Criticality accident alarm system and deluge system

SET 80 Plenums and associated ductwork for Zone 1 ventilation

SET 81 miscellaneous external stuff (cargos, exterior piping, and transformers)

SET 82 building shell (1st and 2nd floors) including Docks 2 through 6

SET 83 Plenums and associated ductwork for Zone 2 - plus supply fans S1 - S9, HP heads, air, N_2, sanitary drains, domestic water, electrical, UPS batteries (Room 230) LSDW batteries, Rooms 230A, 231, 231A, and 232A, fire systems, Buildings 703, 713 (cooling tower), and 713A.

Appendix B. Building 776/777 Radiological Contamination

Date	Inv. #	Room		Area	No. of Samples	Range DPM/100 cm2		Notes
4/15/96	776-071	118	E	Column H6	1	4,000		
12/23/95	776-045	125		GB 125	7	2,000	10,000	
4/15/96	776-071	127		Column H10	1	200,000		Column to be repainted magenta 2nd time
4/15/96	776-071	127		Column H9	1	2,000		
4/15/96	776-071	127		Column J9	1	4,000		
10/10/95	776-049	131		GB 601	4	10,000	64,000	
10/10/95	776-051	131		GB 602	1	2,000,000		
10/10/95	776-052	131		GB 605	10	1,000	100,000	
11/16/95	776-053	131		GB 607	3	10,000	100,000	
11/16/95	776-054	131		GB 608	3	1,000	75,000	
11/16/95	776-055	131		GB 612	1	12,000		
10/10/95	776-056	131		GB 614	2	1,000,000	1,000,000	
10/11/95	776-057	131		GB 616	4	40,000	1,000,000	
11/20/95	776-059	131		GB 619	6	4,000	600,000	
11/20/95	776-058	131		GB 620	1	40,000		
11/20/95	776-061	131		GB 621	7	1,000	50,000	
11/20/95	776-062	131		GB 626	12	1,000	1,000,000	
11/20/95	776-063	131		GB 627	2	8,000	10,000	
11/20/95	776-064	131		GB 628	1	1,000,000		
11/21/95	776-065	131		GB 630	5	500	80,000	
11/17/95	776-066	131		GB 632	5	10,000	120,000	
11/17/95	776-067	131		GB 642	5	5,000	25,000	
11/18/95	776-068	131		GB D-Center	8	1,200	10,000	
4/15/96	776-071	134	E	Column E13	1	1,000		
1/16/96	776-038	134	E	GB 746	13	1,000	2,000,000	
1/17/96	776-039	134	E	GB 748	11	2,000	100,000	
1/18/96	776-040	134	E	GB 749	6	5	20,000	
1/16/96	776-041	134	E	GB 751	3	10,000	25,000	
1/16/96	776-042	134	E	GB 752	1	2,000,000		Box under plastic
1/20/96		134	E	GB R-Center	28	1,000	400,000	
7/9/97	776-082	134	E	Tanks	2	5,000	10,000	Blue tanks on wall
1/19/96	776-083	134	E	GB M-Center	28	2,000	800,000	
2/29/96	776-035	134	W	Above ASR	7	5,000	15,000	Above west side of Advanced Size Reduction
2/3/97	776-075	134	W	Floor	4	2,000	5,000	Floor, located 20 feet N column D6, painted
12/23/97	776-087	134	W	N. ASR	1	5,000		North side Advanced Size Reduction
1/22/97	776-074	134	W	SOP	2	2,300	10,800	
7/9/97	776-081	134	W	Wall	1	1,000		N. wall by Column D8
5/29/96		134	W	Wall				Repaint over chipped area on south wall
2/7/96		134		Door to 146	6	8,000	100,000	SSC at door to Room 146 size reduction
5/22/96	776-072	134		Wall	6	100,000	100,000	South side between columns D8 & D9
1/24/96	776-069	154	A	GB 495	3	2,000	200,000	
1/24/96	776-070	154	A	GB 496	7	1,000	100,000	
1/22/96	776-047	154	A	GB 499	5	3,000	36,000	
1/23/96		154	A	GB 500	1	50,000		
1/23/96		154	A	GB 502	7	2,500	1,000,000	
1/23/96		154	A	GB 503	6	2,000	26,000	

Date	Inv. #	Room	Area	No. of Samples	Range DPM/100 cm2		Notes
1/22/96	776-048	154 A	X-046	7	2,000	200,000	Box is roped off and posted as a HCA
4/15/96	776-071	154	Elevator Door	1	4,000		
4/15/96	776-071	430	Column D16	1	2,400		
6/13/96	776-073	430	Column L18	1	120,000		
10/9/97	776-086	430	Floor	12	2,000	200,000	Area painted over
12/12/95	776-033	430	GB 318	9	5,000	50,000	First six readings are glovebox seams
12/12/95	776-034	430	GB 320	9	4,000	1,000,000	
12/8/95	776-035	430	GB 321	8	4,000	400,000	
12/8/95	776-037	430	GB 324	10	5,000	100,000	
12/12/95	776-032	430	GB 328	40	1,000	120,000	
12/13/95	776-031	430	GB 329	4	3,000	7,000	These four reading on seams
12/12/95	776-030	430	GB 330	5	2,000	6,000	All metal window frames on south side of box
12/12/95	776-029	430	GB 331	5	1,000	50,000	
12/13/95	776-028	430	GB 360	21	1,000	250,000	
12/13/95	776-027	430	GB 362	17	2,500	200,000	
12/14/95	776-026	430	GB 368	33	1,500	100,000	
12/13/95	776-025	430	GB 370	17	2,000	900,000	
12/14/95	776-024	430	GB 371	1	120,000		
12/14/95	776-023	430	GB 372	6	2,000	9,000	
12/14/95	776-022	430	GB 373	2	80,000		1,000 - 80,000 on top of box
12/15/95	776-018	430	GB 405	4	10,000	30,000	
1/4/96	776-020	430	GB 422	7	2,000	200,000	
1/3/96	776-021	430	GB 433	6	2,000	100,000	
12/19/95	776-019	430	GB 441	8	10,000	40,000	
1/3/96	776-014	430	GB 444	17	4,000	200,000	
12/20/95	776-015	430	GB 445	8	2,000	10,000	
12/21/95	776-016	430	GB 447	12	1,500	700,000	
12/20/95	776-017	430	GB 448	2	10,000	28,000	
1/2/96	776-010	430	GB 452	1	400,000		Under purple paint
12/21/95	776-011	430	GB 456	5	3,000	2,200,000	Top of glovebox 70,000 DPM
12/21/95	776-012	430	GB 458	9	2,000	200,000	Frame all around
1/2/96	776-013	430	GB 464	4	2,000	700,000	
12/18/95	776-005	430	GB 465	15	1,000	70000	Complete top of box is 50000 dpm
1/2/96	776-006	430	GB 467/468	21	2,000	400,000	
1/2/96	776-007	430	GB 509	2	1,500	5,000	
1/2/96	776-008	430	GB 515	1	25,000		Under plastic
1/2/96	776-009	430	GB 756	2	2,000		
1/26/95	766-001	430	GB 758	2	1,000		
1/3/96	766-002	430	GB 759	3	1,000	75,000	
1/3/96	766-003	430	GB 761	3	750	250,000	
1/2/96	766-004	430	GB 762	6	1,500	8,000	
1/11/96		430	GB A Center	96	1,500	1,500,000	
1/15/96	776-060	430	GB G-Center	2	10,000	10,000	
11/12/96	776-050	430	GB G2 Center	76	2,000	1,000,000	
1/10/98		430	GB M Center	28	3,500	250,000	
1/15/96		430	GB R Center	41	800	200,000	
1/30/96		437	GB A-1	3	5,000	100,000	

175

Date	Inv. #	Room	Area	No. of Samples	Range DPM/100 cm2		Notes
11/22/95	776-046	437	GB A-3	1	20,000		
11/20/95	776-043	463	GB A-6	4	6,000	100,000	
11/21/95	776-044	463	GB A-9	1	2,000		
1/30/96		463	GB C-5	2	5,000	150,000	

Appendix C. Building 776/777 Cluster Asbestos Containing Material

Reference	Building	Room		Area	Results	Notes
Asbestos Inventory	776	103		Ceiling		Sprayed on insulation areas; entire surface crumbling; further renovation planned may disturb ceiling
Asbestos Inventory	776	103	A	Ceiling		Sprayed on insulation areas; entire surface crumbling; further renovation planned may disturb ceiling
776-980107-01-02	776	107		Ceiling	ND all layers	Ceiling tile, type 1, south end of room along west wall; yellow foam
776-980107-01-04	776	107		Ceiling	ND all layers	Ceiling tile type 2, south end of room along west wall; white/grey fibrous
776-980120-01-02	776	108		Ceiling	ND all layers	Ceiling tile, type 1; NW corner of room; grey fibrous material
776-980120-01-03	776	108		Ceiling	ND all layers	Ceiling tile, type 2; NW corner of room; grey fibrous material
776-980120-01-04	776	108		Ceiling	ND all layers	Ceiling tile, type 3; N quadrant of room; grey fibrous material
Asbestos Inventory	776	111		Ceiling		Sprayed on insulation areas; entire surface crumbling; further renovation planned may disturb ceiling

Reference	Building	Room		Area	Results	Notes
776-96-10-28-69-00	776	112	B	Ceiling	ND	Ceiling insulation fell on floor; white chalky substance
776-980212-01-01	776	104	E	Ceiling	ND all layers	ceiling tile
Asbestos Inventory	776	143	B	Ceiling		Sprayed on insulation areas; entire surface crumbling; further renovation planned may disturb ceiling
Asbestos Inventory	776	Hall - way 1		Ceiling		Sprayed on insulation areas; entire surface crumbling, renovations planned may disturb ceilings
777-970312-01-01	777	131		Ceiling	ND	Ceiling tile by column B16
777-970312-01-02	777	464		Ceiling	ND	West end, ceiling material (T0085583)
777-970312-01-03	777	464		Ceiling	Trace levels of chrysolite in paint ND in plaster	East End, ceiling material, (T0085583), 4/10/97 letter
Not Available	701	106		Equipment	Chrysotile 1% Amosite 3%	Beckley furnace; sample obtained from inside of the furnace; multicolored plaster

Reference	Building	Room	Area	Results	Notes
701-94-05-04-07-01	701	106	Equipment	ND	Sample collected from fire brick inside the Beckley furnace; white granular (crystalline) plaster
701-98-05-04-07-02	701	106	Equipment	ND	Sample collected from fire brick inside the Beckley furnace; white crystalline plaster
701-98-05-04-07-03	701	106	Equipment	Chrysotile, trace	Sample collected from fire brick inside the Beckley furnace; white crystalline plaster
778-930125-01-01	776	118	Equipment	ND	Bulk sample of the insulating material on the fluid bed incinerator unit; results indicated 99% fibrous glass and 1% non-fibrous materials
776-96042380-01	776		Equipment	ND	FBI- white fibrous material; location of insulation not recorded
776-96042380-02	776		Equipment	ND	FBI- yellow and white insulation; fibrous material; location of insulation not recorded
776-970408-69-01	776	150	Equipment	Layer A: Chrysotile 80%; Layer B, C, D: ND	Chiller #5, North end cap; see map
776-970408-69-02	776	150	Equipment	Layer A: Chrysotile 80%; Layer B, C, D: ND	Chiller #5, South end cap; see map

Reference	Building	Room	Area	Results	Notes
776-970408-69-03	776	150	Equipment	ND	Chiller #5, ancillary piping on east side of chiller; see map
776-971125-01-01	776	150	Equipment	ND	Chiller #5, North end cap; see map
776-971125-01-02	776	150	Equipment	ND	Chiller #5, North end cap; see map
776-97-1125-01-03	776	150	Equipment	ND	Chiller #5, North end cap; see map
776-97-1125-01-04	776	150	Equipment	ND	Chiller #5, North end cap; see map
776-97-1125-01-05	776	150	Equipment	<1% chrysoltile	Chiller #5, North end cap; see map
776-971125-01-06	776	150	Equipment	ND all layers	Chiller #5, South end cap; see map
776-971125-01-07	776	150	Equipment	ND all layers	Chiller #5, South end cap; see map

Reference	Building	Room	Area	Results	Notes
776-971125-01-08	776	150	Equipment	ND all layers	Chiller #5, South end cap; see map
776-971125-01-09	776	150	Equipment	Layer A: Chrysotile 82% Layer B: ND Layer C ND	Chiller #5, South end cap; see map
776-971125-01-10	776	150	Equipment	Layer A: Chrysotile 75%, layer B: ND	Chiller #5, ancillary piping on east side of chiller; see map
776-971125-01-11	776	150	Equipment	ND all layers	Chiller #5, ancillary piping on east side of chiller; see map
776-971125-01-12	776	150	Equipment	Layer A, C: ND, Layer B: Chrysotile 75%	Chiller #5, ancillary piping on east side of chiller; see map
776-971125-05-13	776	150	Equipment	Layer A, B, D: ND Layer C: Chrysotile 72%	Chiller #5, ancillary piping on east side of chiller; see map
776-971125-01-14	776	150	Equipment	Layer A: Chrysotile 55%, Layer B, C D: ND	Chiller #5, ancillary piping on east side of chiller; see map
776-971125-01-15	776	150	Equipment	Layer A, B, D: ND Layer C: Chrysotile 75%	Chiller #5, ancillary piping on east side of chiller; see map

Reference	Building	Room	Area	Results	Notes
776-971217-01-01	776	150	Equipment	ND all layers	Chiller #5, North end cap; see map
776-971217-01-03	776	150	Equipment	Layer A: Chrysotile 60%, Layer B, C, D: ND	Chiller #5, North end cap; see map
776-971217-01-04	776	150	Equipment	Layer A: Chrysotile 50%, Layer B, C, D: ND	Chiller #5, North end cap; see map
776-971217-01-05	776	150	Equipment	ND all layers	Chiller #5, North end cap; see map
776-971217-01-06	776	150	Equipment	ND all layers	Chiller #5, North end cap; see map
776-971217-01-07	776	150	Equipment	A: Chrysotile 59%, Amosite 1% ; B: 60% Chrysotile; C: Chrysotile TR; D:ND	Chiller #5, North end cap; see map
776-971217-01-08	776	150	Equipment	A: Chrysotile 50%, Amosite TR; B, C D: ND	Chiller #5, North end cap; see map
776-97-04-07-69-01	776	150	Equipment	ND	Chiller #4, west side Room 150, white/gray TSI, see map

Reference	Building	Room		Area	Results	Notes
776-97-04-07-69-02	776	150		Equipment	ND	Chiller #4, west side Room 150, white/gray TSI, see map
776-980318-01-20	776	159	C	Equipment	ND asbestos all layers; Appears to contain RCF, can't confirm	**Paragon oven** Insulation from Paragon oven found laying on floor; bulk samples taken to determine asbestos and refractory ceramic fiber (RCF)
776-980318-01-21	776	159	C	Equipment	ND asbestos all layers; Appears to contain RCF, can't confirm	**Paragon oven** Insulation from Paragon oven found laying on floor; bulk samples taken to determine asbestos and refractory ceramic fiber (RCF)
Asbestos Inventory	776	201		Equipment		Kathabar Unit A (contaminated) 1. flash tank 455406 steam 30 at elbow to tank CS elbow at valve trace to floor; 2. Turbine exhaust receiver mult places on tank and elbow on bottom; 3. N side turbine CS exposed at spring valve; 4. Refrigerant tank elbow
Asbestos Inventory	776	235		Equipment		**1. Regenerator unit at valve 776048** 1. Steam 30 all pipes extensive damage. Exposed crumbling trace all.
Asbestos Inventory	776	237		Equipment		**Freon cooling unit column B2W** 1. Tank insulation torn at bottom 2. Reducing tank mult damage to surface and pipes W end of tank jacket removed large surface area exposed crumbling
Asbestos Inventory	776	237		Equipment		**Domestic hot water tank 450757 Col F2W** 1. Valve array N side of tank steam 30 pipes mult sections exposed and crumbling trace all
776-980313-01-01	776	237		Equipment	ND all layers	Northeast side of the hot water heater tank, PMO# 455-375

Reference	Building	Room	Area	Results	Notes
776-980313-01-02	776	237	Equipment	ND all layers	Southwest side of the hot water heater tank, PMO# 455-375
776-940203-07-07	777	150	Equipment	Chrysotile TR, Chrysotile 20%, Crocidolite 10%	Insulation of a natural gas generator, silver paint and tan fibrous plaster
776-940203-07-08	777	150	Equipment	Chrysotile 15%, Amosite 25%	Insulation of a natural gas generator, tan fibrous plaster
Asbestos Inventory	777	214	Equipment		**At valve 303-777-014 entire array east wall** 1. Condensate steam mult exposed ends and insulation crumbling at valve; 2. heating water supply and return mult sections damaged
Asbestos Inventory	777	480	Equipment		**Dock Area** Col A16 Door 29 heater 777001 exposed ends steam pipes at heater in need of repair
776-980107-01-01	776	107	Floor	ND all layers	Floor material under the carpeting; gray concrete and yellow glue
776-980107-01-06	776	108	Floor	Layer A (mastic): Chrysotile TR, Layer B (tile) Chrysotile 15%	Floor tile; room is a homogenous area; dark tan tile with black mastic
776-980116-01-04	776	231	Floor	ND	Bulk sample of chalky substance on floor; powder from chairs rolling over floor tile.

Reference	Building	Room		Area	Results	Notes
776-980116-01-06	776	231		Floor	Layer A: Chrysotile 3%	White and tan 9 x 9 floor tile; SE corner of room; see map
776-980006-01-07	776	231		Floor	Layer A: Chrysotile 15%	Tan and brown 9 x 9 floor tile, type 1; SE corner of room; see map
776-980116-01-08	776	231		Floor	Layer A: ND Layer B: Chrysotile 8%	Brown 12 x 12 floor tile; north wall; see map
776-980006-01-09	776	231	A	Floor	Layer A: 3% Chrysotile	Tan and brown 9 x9 floor tile, type 2; along west wall; see map
776-980006-01-05	776	232	A	Floor	Layer A: ND layer: Chrysotile 5%	White and tan 12 x 12 floor tile, NW corner of room; see map
776-980006-01-11	776	232		Floor	Layer A: ND Layer B: Chrysotile 2%	Stair landing; white, gray, brown and black 12 x 12 floor tile; see map
776-980006-01-10	776	233		Floor	Layer A - Chrysotile 3%	Tan and brown 9 x 9 floor tile; along east wall; see map
777-930723-01-02	777	125		Floor	> 1% Chrysotile	white floor sheeting by door; memo implies that floor was removed

Reference	Building	Room	Area	Results	Notes
777-970306-01-01	777	205	Floor	Chrysotile 4% in floor tile ND is mastic	floor tile near north wall
777-930723-01-01	777	477	Floor	14.7% Chrysotile	red floor tile by door; memo implies that floor was removed
776-980210-01-03	776	237	Misc	ND all layers	south wall, fire blanket
703-930503-01-01	703		Piping	70% Chrysotile 5% Amosite	Pipe insulation, condenstate return line to 1st union on space heater in B703
710-980210-01-01	710		Piping	ND all layers	Condensation steam line north of valve 710-CNS V315
710-97-05-14-69-01	710		Piping	ND	2nd floor, middle of room; white chalky substance, see map
710-97-05-14-69-02	710		Piping	ND	1st level center, 5ft up, white chalky and light brown insulation, see map
710-97-05-14-69-03	710		Piping	ND	1st level, near ladder, about 4 feet up, see map

Reference	Building	Room	Area	Results	Notes
710-97-05-14-69-04	710		Piping	ND	1st level, south center, about 2 feet up, see map
710-97-05-14-69-05	710		Piping	ND	1st level, south east, about 2 feet up, see map
Asbestos Inventory	776	104	Piping		**2/15/92 Corr from 778 to 776** 1. Heater 776001 Condensate return at base of heater wrapped with yellow tape; 2. Domestic hot water above elect panel LP1A5 domestic hot water recirculate and domestic hot water cracked insulation
77794020307-01	776	114	Piping	Chrysotile 3%	Gray fibrous plaster with orange paint, located inside the restroom door to the right on a hot water pipe; work package implemented to remove the material
77794020307-02	776	114	Piping	Chrysotile 2%	Gray fibrous plaster with orange paint, located inside the restroom door to the right on a hot water pipe; work package implemented to remove the material
Asbestos Inventory	776	131	Piping		Location: **1. Col A13 at inert supply #4 2. Col A14 overhead domestic hot water and recirculate** Description: 1. Exposed ends mult places chilled water supply and return trace all, 2. exposed crumbling elbows both lines
776-9402030701	776	150	Piping	a) Chrysotile TR b) Chrysotile 20%, crocidolite 10%	On lower elbow of exhaust pipe of the natural gas generator a) silver paint, b) tan firbrous plaster, TSI
776-9402030708	776	150	Piping	chrysoltile 15% Amosite 25%	On upper elbow of exhaust pipe of the natural gas generator, tan fibrous plaster, TSI

Reference	Building	Room	Area	Results	Notes
Asbestos Inventory	776	152	Piping		**1. Above Box 502 2. Above Box 500 3. Between Col G2W and Door 151** 1. PCW exposed section 2. PCW broken section exposed 3. CS exposed ends at elbows trace to roof west wall and N of vent unit exposed section
Asbestos Inventory	776	154	Piping		**1. Col B2W Above GB 502** 1. Process Cooling Water Return overhead exposed crumbling ends
Asbestos Inventory	776	158	Piping		**1. Heater 332666 and 332665; 2. size reduction; 3. Col J4 heater 776015** 1. Cond steam exp both heaters stm 30 at elbow/valve. Cond & 30 stm trace entire length N/S mult breaks entire length; 2. Above Col L5 cond steam at valve insul left from prior remo
Asbestos Inventory	776	158	Piping		**02/15/92 Overhead** 1. Cond/ 30 stm above entrance at v. 776004 exposed; 2. Col L4A steam 30 cracked insulation; 3. cond stm running N/S to N wall crack in elbow at bend to west; 4. overhead furnace cond stm at elbow to heater at v. 7760 overhead furnace
Asbestos Inventory	776	161	Piping		**Overhead N/E corner of room** 1. Bag of debris laying on pipes
Asbestos Inventory	776	201	Piping		1. **Plenum S6 333-037 N Wall** 1.CS and steam 30 mult sections exposed. Extensive damage trace all
Asbestos Inventory	776	201	Piping		**1. Col G2 heating system 2. main steam line N/S corridor** 1. Mult exposed ends 2. Crushed elbow insulation exposed and 10 ft south
Asbestos Inventory	776	201	Piping		**1. Supply Fan #1 at plenum 250 2. Overhead in line plenum 250 10ft N** 1. Chilled water return two sections large area exposed crumbling trace all; 2. Steam 30 exposed elbow at duct

Reference	Building	Room		Area	Results	Notes
Asbestos Inventory	776	201		Piping		**1. Col D16 Top of stair; 2. Ovhd Col E14 E/W corr; 3. Col D13 ovhd E/W corr; 4. Col D12 hydr supply units** 1. Exp insul at ceiling supports insul on elect panel below; 2. Brine sup/return exp sect; 3. Steam 30 at elbow; 4. PCW supply and return all units
Asbestos Inventory	776	201		Piping		**Col K16 plenum S7 333040** 1. In plenum exposed ends and elbows sections of pipe damaged trace all
Asbestos Inventory	776	201	A	Piping		**Refrigerator plenum 333043 2. Plenum FU251** 1. S side yellow/black pipe crushed insulation trace all.F4 W/N side steam 30 entire unit broken crushed crumbling trace E wall to door at col C16 2. N wall valve array Col B15 crumbling pipes and exp ends
Asbestos Inventory	776	201		Piping		**Col J16 overhead in corridor** 1. Heating water return two elbows one wrapped with yellow tape
Asbestos Inventory	776	201		Piping		**Col E14 side 206 heat exchanger** 1.Exposed crumbling elbow at valve process cooling water supply 2. exposed end at elbow process cooling water return
Asbestos Inventory	776	201		Piping		**Valve array W wall Col L10** 1. Condensate steam line elbow S of valve 776089 wrapped with yellow tape mult places exposed on line trace all
Asbestos Inventory	776	201		Piping		**Col E2 and P2** 1. Steam 30 exposed at pipe junction to HP vacuum
Asbestos Inventory	776	201		Piping		**Col F14 overhead** 1. Brine supply and return exposed elboes chunks missing

Reference	Building	Room		Area	Results	Notes
Asbestos Inventory	776	201		Piping		**A-Dryer 329008 Col G14** 1. W side plenum valve array cond stm exposed elbows/insulation at v 776042; 2. brine supply overhead N/S exposed section 8ft S of valve 776042 mult spots cuts trace all
Asbestos Inventory	776	201		Piping		**Valve arry N and E wall Col K2** 1. Mult exposed ends trace all
Asbestos Inventory	776	201	A	Piping		**Col C1 N/W corner by door to 214** 1. Condensate steam chunks missing at elbow and on line trace to plenum S2 333056
776-971118-01-01	776	208		Piping	ND all layers	TSI on piping going to super dryer; see map
776-971118-01-02	776	208		Piping	ND all layers	TSI on piping going to K-3 Kathabar; see map
776-971118-01-07	776	208		Piping	Layer A: Amosite 20%	TSI on piping to S-3 reheat, west side; see map
776-971118-01-08	776	208		Piping	Layer A: Amosite 25%	TSI on piping to S-3 reheat, west side; see map
776-971118-01-09	776	208		Piping	A: ND, B:Chrysotile 85%, C: TR Amosite, Chrysotile 15%	TSI on piping from trap 303-776-075; see map

Reference	Building	Room	Area	Results	Notes
776-971118-01-10	776	208	Piping	A: Amosite 25%	TSI on piping from trap 303-776-075; see map
776-971118-01-11	776	208	Piping	A: ND, B: Chrysotile 85%; C: Amosite 15%, Chrysotile 10%	TSI on piping to valve 776-STM-V-S4-85; see map
776-971118-01-12	776	208	Piping	A: ND: B: Amosite 20%	TSI on piping to K-4 makeup water; see map
776-971118-01-13	776	208	Piping	A: ND; B: Amosite 3%, Chrysotile 7%	TSI on piping from abandoned turbine exhaust; see map
776-971118-01-14	776	208	Piping	A: ND; B: Chrysotile 85%; C: Amosite 15%, Chrysotile 10%	TSI on piping to valve 776-STM-V-S5-93; see map
776-9709-22-69-03	776	208	Piping	Chrysotile TR	2nd floor near bridge to 235; gray plaster, see map
Asbestos Inventory	776	210	Piping		**1. Col H11 overhead 2. Col H16 10Ft W overhead** 1. Chilled water supply and return at pipe jct exposed crumbling insulation 2. Chilled WS exposed insulation at valve at door to drum storage and in drum storage 6 ft
Asbestos Inventory	776	210	Piping		**From plenum S7 Col M16, K16 Supply 3 Zone 1; Supply 3 Zone 2** 1. Ventillaton duct tape trace from Col M16, K16 overhead to corridor to Col J16

Reference	Building	Room		Area	Results	Notes
Asbestos Inventory	776	210		Piping		**At door 222 from Plenum S4 Supply 4 Zone 4-2** 1. Ventilation duct tape trace from Col M16,K16 overhead to corridor an plenum S4
Asbestos Inventory	776	210		Piping		**Col C18 to Col F16 Supply 3 Zone 3-4; Supply 3 Zone 3-5 Supply Zone 4-3; Supply 4 Zone 4-4** 1. Ventilation duct tape trace from E. wall Col C18, F16 to overhead and west all ducts in area to Col G13.
Asbestos Inventory	776	210		Piping		**Plenum S3 332-639 and plenum S4 332-638 Col H13 ducts** 1. Ventilation duct tape from Col H13 to Col F13
Asbestos Inventory	776	210	A	Piping		**Plenum S1 333-043 Col A14 Supply 4 Zone 4-30** 1. Ventilation duct tape trace entire from Col A14 to B15 and east wall
Asbestos Inventory	776	210	A	Piping		**Col C11 supply 4. 5, Duct** 1. Ventilation duct tape trace entire from Col C11 to C14
Asbestos Inventory	776	210	A	Piping		**Col B6 Supply 2 Zone 3 Duct** 1. Ventilation duct tape
Asbestos Inventory	776	210	A	Piping		**Plenum S2 333-056 Supply 2 Ducts** 1. Ventilation duct tape
776-970312-01-01	776	227		Piping	ND all layers	By column J1-steam line by PRV (TB056119) 4/10/97 letter

Reference	Building	Room	Area	Results	Notes
776-970312-01-02	776	227	Piping	ND all layers	By column J1-steam line by PRV (TB056119) 4/10/97 letter
776-970312-01-03	776	227	Piping	ND all layers	By column J1- steam line by PRV (TB056119)
776-971118-01-15	776	227	Piping	ND all layers	TSI on piping to Kathabar K-5; see map
776-971118-01-16	776	227	Piping	Layer A: ND Layer B: 80% cyrysolite, Layer C 20% Amosite	TSI on piping from valve 776-STM-V-S6-65; see map
776-971118-01-17	776	227	Piping	A: ND; B: Amosite 15%, Chrysotile 10%	TSI on piping to valve 776-LPS-HV-665; see map
776-971118-01-18	776	227	Piping	Layer A: ND, Layer B: 15 % Amosite, 15% Chrysotile	TSI on piping to valve 776-LPS-HV-665; see map
776-971118-01-19	776	227	Piping	ND all layers	TSI on piping from 30# main steam header; see map
Asbestos Inventory	776	234	Piping		**1. Valve array R side door; 2. regen filter plenum col K7; 3. cond steam pump Col L7** 1. Steam 30 valve insul crumbling; 2. Cond steam at floor crumbling elbow; 3. elbows patched with tape

Reference	Building	Room	Area	Results	Notes
Asbestos Inventory	776	234	Piping		**1. Center room inline Col J6; 2. condensate steam tank 450778; 3. Valve array Col J6** 1. Steam 30 mult places cracks around circumference of pipe trace all; 2. multiple exposed ends trace all; contaminated; 3. mult sections on valves trace all
Asbestos Inventory	776	235	Piping		**1. Col J18 valve array 2. Col K18 valve array** 1. mult places exposed ends crumbling trace all; 2. mult places exposed crumbling trace all
776-980218-01-01	776	235	Piping	ND	steam condensate line inside S8, valve directly east of valve 776-CNS-CV-S8-61
776-980218-01-02	776	235	Piping	ND	steam condensate line inside S8, valve directly west of valve 776-CNS-CV-S8-61
776-971118-01-03	776	235	Piping	ND all layers	TSI on piping from K-8 discharge; see map
776-971118-01-04	776	235	Piping	ND all layers	TSI on piping to Kathabar K-8; see map
776-971118-01-05	776	235	Piping	ND all layers	TSI on piping to Kathabar makeup tank; see map
776-9709-22-69-01	776	236	Piping	ND	2nd floor S-7 steam pipe, white fibrous wrap, yellow insulation

Reference	Building	Room	Area	Results	Notes
776-9709-22-69-02	776	236	Piping	Amosite 20%	2nd floor S-7 steam pipe, white fibrous wrap, gray plaster, see map
Asbestos Inventory	776	237	Piping		**Reg fil plenum valve array Col K2W** 1. Steam 30 p pipes and valves exposed and crumbling. Brine supply at valve exposed; 2. Col J2W at plenum 333046 W wall steam 30 multi exposed places
Asbestos Inventory	776	237	Piping		**N Wall Col L2W** 1. Exposed elbows and valve jacket debris on floor from prior removal of insulation
Asbestos Inventory	776	237	Piping		**Overhead heating unit Col H2** 1. Exposed elbow stem 30 Valve 776126 and N side of duct
776-980210-01-01	776	237	Piping	ND all layers	south wall, steam pipe directly west of steam trap 303-776-122
776-980210-01-02	776	237	Piping	ND all layers	south wall, steam pipe directly west of steam trap 303-776-121
776-971217-01-09	776	Roof	Piping	ND all layers	Building 776 Roof; East steam line located directly over Room 158; see map
776-94-10-26-51-01	776	Cooling Tower	Piping	Chrysotile 10% Amosite 3%	white fibrous insulating material covering the cooling tower pipe elbows Building 776/777

Reference	Building	Room	Area	Results	Notes
776-94-10-26-51-02	776	Cooling Tower	Piping	Chrysotile 10% Amosite 3%	white fibrous insulating material covering the cooling tower pipe elbows Building 776/777
776-971217-01-10	776	Roof	Piping	ND all layers	Building 776 Roof; East steam line located directly over Room 158; see map
776-971217-01-11	776	Roof	Piping	ND all layers	Building 776 Roof; West steam line located directly over Room 158; see map
776-980211-01-01	777	240	Piping	Chrysotile 8% Amosite 2%	Damaged TSI from steam line directly east of plenum S252; cleaned up and encapsulated
Asbestos Inventory	777	241	Piping		**East wall at tank 450-772** 1. tank jacket damaged and exposed
Asbestos Inventory	777	241	Piping		**Fan 332-672** 1. Heating water supply and return mult crumbling elbows and ends
Asbestos Inventory	777	430	Piping		**1. Col H16 over Box 634; 2. Col J16; 3. Box 206434 Col J17; 4. Col L19 overhead** 1. exposed elbow chilled WR; 2. Exposed mud elbow chilled W sup/ret; 3. damaged elbow wrap coming off; 4. Heating water sup/ret exposed ends trace all
Asbestos Inventory	777	445	Piping		**1. Overhead Col F23; 2. Safety shower Col F23 W wall; 3 . Col F22 above glovebox** 1. W wall heating water sup/ret at valves exposed ends; 2. safety shower exposed ends damage to insul trace all; 3. heating water sup/ret exposed ends at valve

Reference	Building	Room	Area	Results	Notes
Asbestos Inventory	777	445	Piping		**1. Overhead Col F23; 2. Safety shower Col F23 W Wall; 3. Col F22 above glove box** 1. W wall heating water sup/ret at valves exposed ends; 2. safety shower exposed wnds damage to insulation trace all; 3. Heating water supply and return exposed ends at valve
Asbestos Inventory	777	463	Piping		**Overhead Col M19 Valve Array** 1. Chilled water supply at valve torn insulation exposed chunk
Asbestos Inventory	777	465	Piping		**Shipping & receiving near JIP23 electrical box overhead** 1. Exposed ends heating water supply and return
Asbestos Inventory	777	465	Piping		**Heating unit zone 2B** 1. Toward W wall heating water supply at valve
Asbestos Inventory	777	481	Piping		**Heating Unit 777002** 1. Elbows at Steam 30 exposed ends insulation cracking
Asbestos Inventory	777	481	Piping		**Dock Area Col P25** 1. Heating water supply exposed end at valve; 2. Heating unit 777002 elbows at steam 30 exposed ends insulation cracking
Asbestos Inventory			Piping		stm 30 pipe array to heater mult places large chunks m missing debris on top of tool crib trace all
Asbestos Inventory	776	201	Plenum		**Refrig. filter plenum 333038** 1. Valve array w wall mult places steam 30 exposed trace to overhead; 2.valve array N wall steam 30 damage entire array and pipes up to plenum trace array and up to overhead and below to plenum; 3. valve array supply to plenum

Reference	Building	Room		Area	Results	Notes
Asbestos Inventory	776	201		Plenum		**Regenerator plenum S3 and S7** 1. N side valve array 776064 broken insulation on valves; 2. W side on wall at valve 776062 mult place; 3. at valve 776061 steam 30 below valve broken insulation; 4. S side valve array at valve 776063 mult places crumbling
Asbestos Inventory	776	201		Plenum		**Plenum S4 333038** 1. Steam 30 valve array mult places entire exposed crumbling trace all; 2. compressor 321079 condensate steam at pump 3 ft west
Asbestos Inventory	776	201	A	Plenum		**1. Regen plenum 333056 2. Blower 332676 ColC2 3. Regen unit 333056 4. Plenum S2 333056** 1. Valve array N side nult exp ends/elbow; 2.entire stem 30 valve array mult crack/crumble; 3. at rear yel/black pipe crushed-lg chunks on floor 4. St 30 broken elbows
Asbestos Inventory	776	211		Plenum		**Plenum S2 333-056 N. Wall** 1. Condensate steam and steam 30 mult sections exposed. Extensive damage. Trace all.
Asbestos Inventory	776	212		Plenum		**Plenum S1 333-043 N. Wall** 1. Condensate steam and steam 30 mult sections exposed. Extensive damage. Trace all.
Asbestos Inventory	776	222		Plenum		**Plenum S4 332-638 N. Wall** 1. Condensate steam and steam 30 mult sections exposed. Extensive damage. Trace all.
Asbestos Inventory	776	223		Plenum		**Plenum S3 332-639 N. Wall** 1. Condensate steam and steam 30 mult sections exposed. Extensive damage. Trace all.
Asbestos Inventory	776	224		Plenum		**Plenum S7 333-040 N. Wall** 1. Condensate steam and steam 30 mult sections exposed. Extensive damage. Trace all.

Reference	Building	Room	Area	Results	Notes
Asbestos Inventory	776	234	Plenum		**Rengen filter plenum 333039** 1. N side valve array/pipes/elbows entire unit exposed crumbling, water damage debris on floor trace all; 2. Valve array Col Le condensate steam lines on wall and overhead
Asbestos Inventory	776	235	Plenum		**Col J18 plenum S8 333045** 1. Exposed elbows and crumbling ends in plenum
Asbestos Inventory	776	237	Plenum		**Plenum S9 332-644** 1. N wall 1st door 2. S. Wall 3rd door 1. Steam 30 and condensate steam mult exposed ends ext. damage trace all; 2. Brine supply exposed ends
Asbestos Inventory	776	237	Plenum		**Regenerator Filter Plenum 333046** 1. All pipes entire unit crumbling exposed extensive damage trace all
776-980107-01-03	776	107	Wall	ND all layers	Wall material from west wall north end; wall board; white/grey fibrous
776-980107-01-05	776	108	Wall	Layer A: Chrysotile 27%, Amosite 3%	Wall material from west wall. Note: a full core sample could not be obtained because corers would not cut through- material appears to be transite; white paint and some grey fibrous material
776-97-03-17-23-03	776	127	Wall	ND	South wall of room; gray powder with white paint
776-97-03-17-23-02	776	134	Wall	ND	Cinderblock and associated paint samples South of Column L5. Brown flaky material

Reference	Building	Room	Area	Results	Notes
776-97-03-17-23-01	776	154	Wall	ND	Cinderblock and associated paint samples: Column G2. Gray powder material
776-97-03-17-23-04	776	430	Wall	ND	Block wall, near column G-13, grey powder
776-97-03-17-23-05	776	430	Wall	ND	Block wall, near column D-15, grey powder/with white paint
776-97-03-17-23-06	776	432	Wall	ND	Block wall, near column H20, blue chip with grey powder
777-94-02-03-07-04	776		Wall	ND	adjacent to door #6, caulking, gray fibrous material
777-94-02-03-07-05	776		Wall	ND	adjacent to door #6, caulking, gray fibrous material
777-93-07-09-28-01	777	2nd floor offices	Wall	70% Chrysotile	wallboard at SE corner of the second floor office area
777-93-07-09-28-02	777	2nd floor offices	Wall	70% Chrysotile	wallboard at SE corner of the second floor office area

Reference	Building	Room	Area	Results	Notes
701-93-11-12-6601	701	107	Walls, ceiling	ND	Samples from material sprayed on walls and ceiling; tan firbrous material; samples taken to support future work in the building that requires drilling through material and roof
701-93-11-12-6602	701	107	Walls, ceiling	ND	Samples from material sprayed on walls and ceiling; tan firbrous material; samples taken to support future work in the building that requires drilling through material and roof
701-93-11-12-6603	701	107	Walls, ceiling	ND	Samples from material sprayed on walls and ceiling; tan firbrous material; samples taken to support future work in the building that requires drilling through material and roof
701-93-11-12-6604	701	107	Walls, ceiling	ND	Samples from material sprayed on walls and ceiling; tan firbrous material; samples taken to support future work in the building that requires drilling through material and roof
776-96-04-15-00-01	776	Pent House		ND	Taken inside Pent House #2; Tan fibrous material and white fibrous plaster
777-96-04-15-00-02	776	Pent House		TR Chrysotile	Taken inside Pent House #2; brown soil
776-96-04-15-00-03	776	Pent House		TR chrysolite	Taken inside Pent House #2; brown soil
776-96-10-15-69-01	776	Roof		65% sample ND, 35% sample 8% Chrysotile	Black tar and dark yellow fibers, see map

Reference	Building	Room	Area	Results	Notes
776-96-10-15-69-02	776	Roof		ND	Black tar and dark yellow fibers, see map
776-96-10-15-69-03	776	Roof		<1% of total	Black tar and dark yellow fibers, see map
776-96-04-10-00-01	776	Roof		ND	Metal roof 776, white fibrous plaster
776-96-04-10-00-02	776	Roof		ND	Metal roof 776, white plaster
777-96-04-10-00-01	777	Roof		Chrysotile 35%	Roof black tar
777-96-04-10-00-02	777	Roof		Chrysotile 45%	Roof black firbrous tar
777-96-04-10-00-03	777	Roof		a) ND b) Chrysotile 5%, trem-act TR, anthophylite TR	Steam line roof a) yellow foam b) white plaster
777-96-04-10-00-04	777	Roof		Chrysotile 3% TermAct TR Anthophy TR	steam line elbow roof, white plaster

Reference	Building	Room	Area	Results	Notes
777-96-04-10-00-05	777	Roof		Amosite 4% Chrysotile TR	steam line elbow roof, white fibrous plaster
777-96-04-10-00-06	777	Roof		Chrysotile 30% Amosite 45%	steam line elbow roof, tan fibrous material
710-94-02-03-07-06	710	Outside Door		ND	White plaster, right of 710 door

Appendix D. Beryllium Sample Results

Sample Number	Room	Location	Result (ug/ft2)	(ug/100cm2)
777-9708159447	205	Northeast corner of room	<0.019	
777-9708159451	205	Center of conference room area, grill plate	<0.019	
777-9708159449	243	Inside cabinet in storage room along west wall	<0.019	
777-9708159450	243	Center of room, grill plate	<0.019	
777-9708159448	247	Northwest corner of room	<0.019	
777-9708159443	401	Corner of room, northeast corner	<0.019	
777-9708159444	401	On top of cabinet along east wall	0.102	
777-9708159445	401	Air vent near door, center of hallway	<0.019	
777-9708159436	405	Floor in corner behind door	<0.019	
777-9708159439	406	Top of pipe (red) northwest side	<0.019	
777-9708159442	411	Corner against lockers	<0.019	
777-9708159437	411	Top of light fixture northwest corner	<0.019	
777-9708159441	411	On top of conduit, southeast corner	<0.019	
777-9708159483	411	Air vent surface, northwest corner	<0.019	
777-9708159440	411	Air vent southeast corner	<0.019	
777-9708149409	416	Bottom left drawer under Neophot 21 near southwest corner of room	0.139	

206

Sample Number	Room	Location	Result (ug/ft2)	(ug/100cm2)
777-9708149408	416	On right side of Neophot 21 near southwest corner of room	0.158	
777-9708149410	416	On large pipe running along west wall near the center of the run	0.214	
777-9708149401	424	In hood near corner (northwest)	186.803	
777-9708149402	424	On electrical box, center of room, west wall	14.777	
777-9708149403	424	Metal cone thing near center of room -gram estimator	1.069	
777-9708149404	424	Electrical box near northwest corner of room on west wall	8.941	
776-980225-01-31	424	Top of chlorine gas cylinder in cabinet under south hood		0.33
776-980225-01-32	424	Sides chlorine gas cylinder in cabinet under south hood		0.53
776-980225-01-33	424	Bottom chlorine gas cylinder in cabinet under south hood		0.82
776-980225-01-34	424	Bottom chlorine gas cylinder in central hood		1.78
776-980225-01-35	424	Sides of chlorine gas cylinder in center hood		0.16
776-980225-01-36	424	Top of chlorine gas cylinder in center hood		1.45
776-980225-01-37	424	Compressed gas manifold, inside center hood, closet to chlorine gas cylinder		2.78
776-980225-01-38	424	Compressed gas manifold, inside center hood, furthest from chlorine gas cylinder		13.07
777-9708149405	427	Left side of hood over first washing machine	0.223	
777-9708149406	427	On pipe above door into room 427A	0.344	

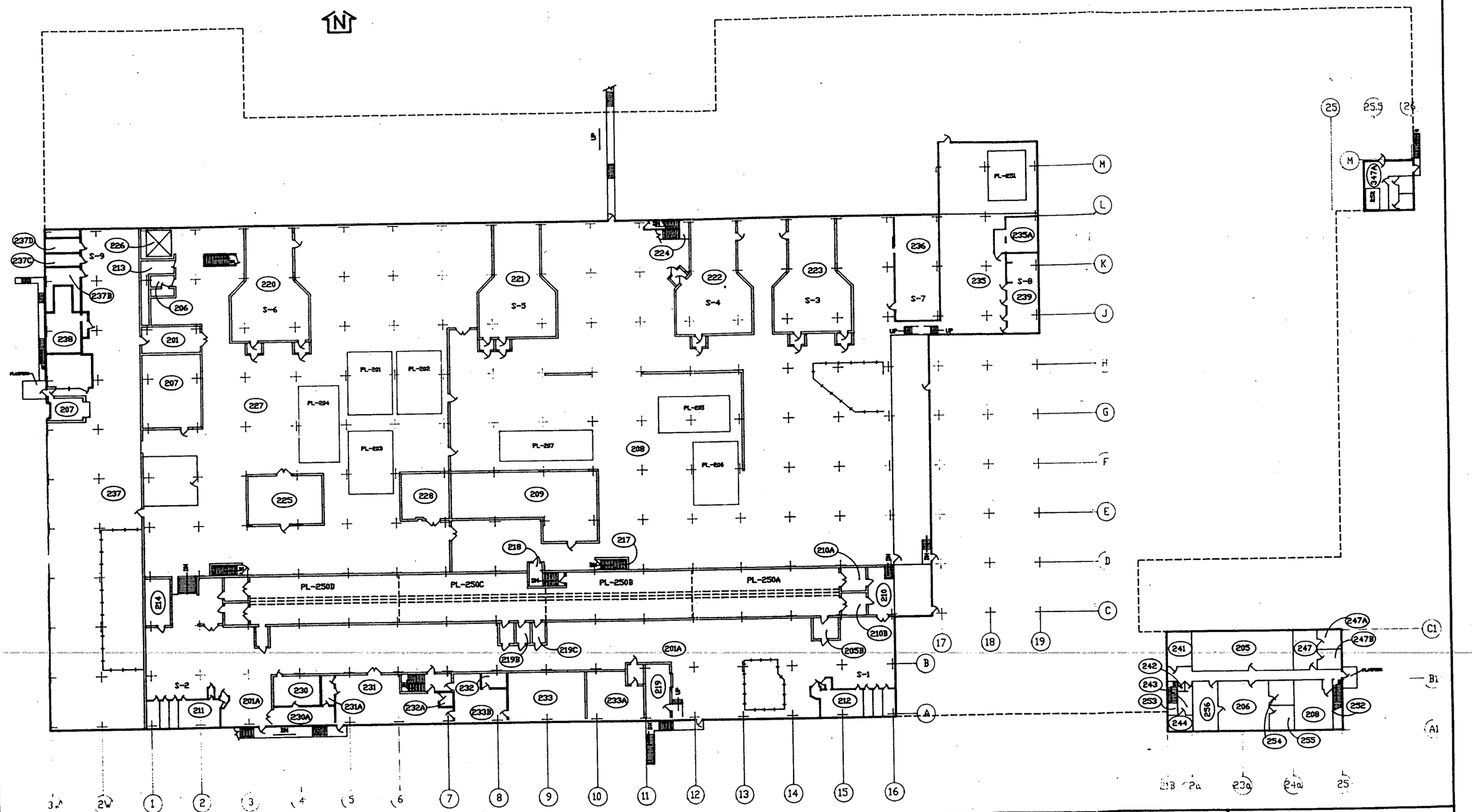
Sample Number	Room	Location	Result (ug/ft2)	(ug/100cm2)
777-9708159425	430	Floor between beryllium lathes next to wall south of column F-21	0.604	
777-9708149415	430	On motor of beryllium lathe	4.842	
777-9708159423	430	In drawer of portable toolbox 15 feet north of southeast lathes	0.186	
777-9708149416	430	Portable leak detector against east wall of column F-2	0.13	
777-9708149420	430	On process waste line running along doors to rooms 429 and 426	0.112	
777-9708159421	430	Near corner of room on electrical conduit	0.483	
777-9708159422	430	On lip of vent section, vent ID#G-21in northeast corner or room	2.407	
777-9708149413	431	On top of gas andycter	0.576	
777-9708149414	431	Edge of glove box	0.102	
777-9708149411	431	Desk drawer	0.632	
777-9708149412	431	Instrument control panel-top	0.437	
777-9708149419	445	Near center of room on top of oven	0.232	
777-9708149417	445	In drawer near southcenter of room	0.455	
777-9708159431	452	On lathe	25.186	
777-9708159435	452	Drill press near entrance to 475	9.089	
777-9708159432	452	In toolbox drawer against west wall near center of wall	10.409	

Sample Number	Room	Location	Result (ug/ft2)	(ug/100cm2)
777-9708159433	452	On red pipe near center of room	1.58	
776-980225-01-11	452	Head stock of lathe 004-327		0.013
776-980225-01-12	452	North controls on Lathe 004-327		0.022
776-980225-01-13	452	Front of base, north end, Lathe 004-327		0.064
776-980225-01-14	452	Chuck areas of Lathe 004-327		0.016
776-980225-01-15	452	South controls on Lathe 004-327		0.092
776-980225-01-16	452	Front of base, south end, Lathe 004-327		0.025
776-980225-01-17	452	Pail stock of Lathe 004-327		0.14
776-980225-01-18	452	Back of base, north end Lathe 004-327		0.094
776-980225-01-19	452	Back of base, south end Lathe 004-327		0.72
776-980225-01-20	452	Table/cabinet directly south of Lathe 004-327		0.061
776-980225-01-21	452	Head stock of Lathe 004-193		0.0068
776-980225-01-22	452	South end of Lathe 004-193		2.67
776-980225-01-23	452	South controls on Lathe 004-193		0.55
776-980225-01-24	452	Chuck area of Lathe 004-193		0.23
776-980225-01-25	452	Middle contols on Lathe 004-193		0.15

Sample Number	Room		Location	Result (ug/ft2)	(ug/100cm2)
776-980225-01-26	452		Axis points on Lathe 004-193		0.15
776-980225-01-27	452		North controls on Lathe 004-193		0.1
776-980225-01-29	452		Back of base, south end Lathe 004-193		1.15
776-980225-01-30	452		"Thoramatic" portable vacuum marked Be		0.15
777-9708149418	459		On power supply on east wall	0.065	
777-9708159430	465		On galvanized pipe next to doors into 445 and 463	0.827	
777-9708159434	475		A pipe near southwest corner of room	1.385	
777-9708149407	416	B	On 2nd shelf right side, bookshelf against north wall near door	1.032	
777-9708159428	Modulab		On northeast corner of blue equipment near center of room	0.019	
777-9708159429	Modulab		On floor center of west wall	<0.019	
777-9708159426	Modulab		In drawer #3 against east wall near northeast corner of room	0.028	
777-9708159427	Modulab		In drawer on east wall south of storage cabinet	<0.019	
776-980406-01-05	430		Box 402, top of hood, outside of hood		0.00934
776-980406-01-06	430		Box 402, filter box on top of hood, outside of hood		0.0213
776-980406-01-07	430		Box 430, pan on lathe head, outside hood on the east end		0.0112
776-980406-01-08	430		Box 402, controls on the east end of the lathe, outside of the hood		0.196

Sample Number	Room	Location	Result (ug/ft2)	(ug/100cm2)
776-980406-01-09	430	Box 402, vacuum pump on the east end of lathes, outside of hood		6.448
776-980406-01-10	430	Box 402, chuck on lathe, inside hood		0.0675
776-980406-01-11	430	Box 402, tail stock and center controls of lathe, inside hood		0.33
776-980406-01-12	430	Box 430, Box 402, west end of lathe, inside hood		0.273
776-980406-01-13	430	Box 402, floor of hood, inside hood		0.0653
776-980406-01-14	430	Box 402 pan underneath the chuck, inside hood		0.0899
776-980406-01-15	430	Box 402, floor underneath the hood, outside hood		2.04
776-980406-01-16	430	Box 401, top of hood, outside of hood		0.0476
776-980406-01-17	430	Box 401, ventilation duck work that went into the hood, outside of hood		0.0487
776-980406-01-18	430	Box 401, controls west end of lathe, outside hood		0.183
776-980406-01-19	430	Box 401, top of chuck cover, inside hood		0.00821
776-980406-01-20	430	Box 401, top of tool holder, gauges and switches, inside hood		0.315
776-980406-01-21	430	Box 401, tail stock and center controls, inside hood		0.0489
776-980406-01-22	430	Box 401, east of lathe, inside hood		0.483
776-980406-01-23	430	Box 401, exhaust filter, inside hood		0.00875
776-980406-01-24	430	Box 401, pan underneath lathe, inside hood		0.502

Sample Number	Room	Location	Result (ug/ft2)	(ug/100cm2)
776-980406-01-25	430	Box 401, floor underneath hood, outside hood		0.0063
776-980406-01-26	430	Box 401, pass through chamber on north side of box, inside chamber		0.136
776-980406-01-27	453	South tool tote, top two drawers		0.0799
776-980406-01-28	453	South tool tote, bottom storage area		0.0268
776-980406-01-29	461	Grinder, channel area on equipment		0.079
776-980406-01-30	461	Grinder, top of equipment, including bellows		0.0456
776-980406-01-31	461	Gloor around and underneath the grinder		0.0194
776-980406-01-32	461	Drill press, controls and part support		0.00724



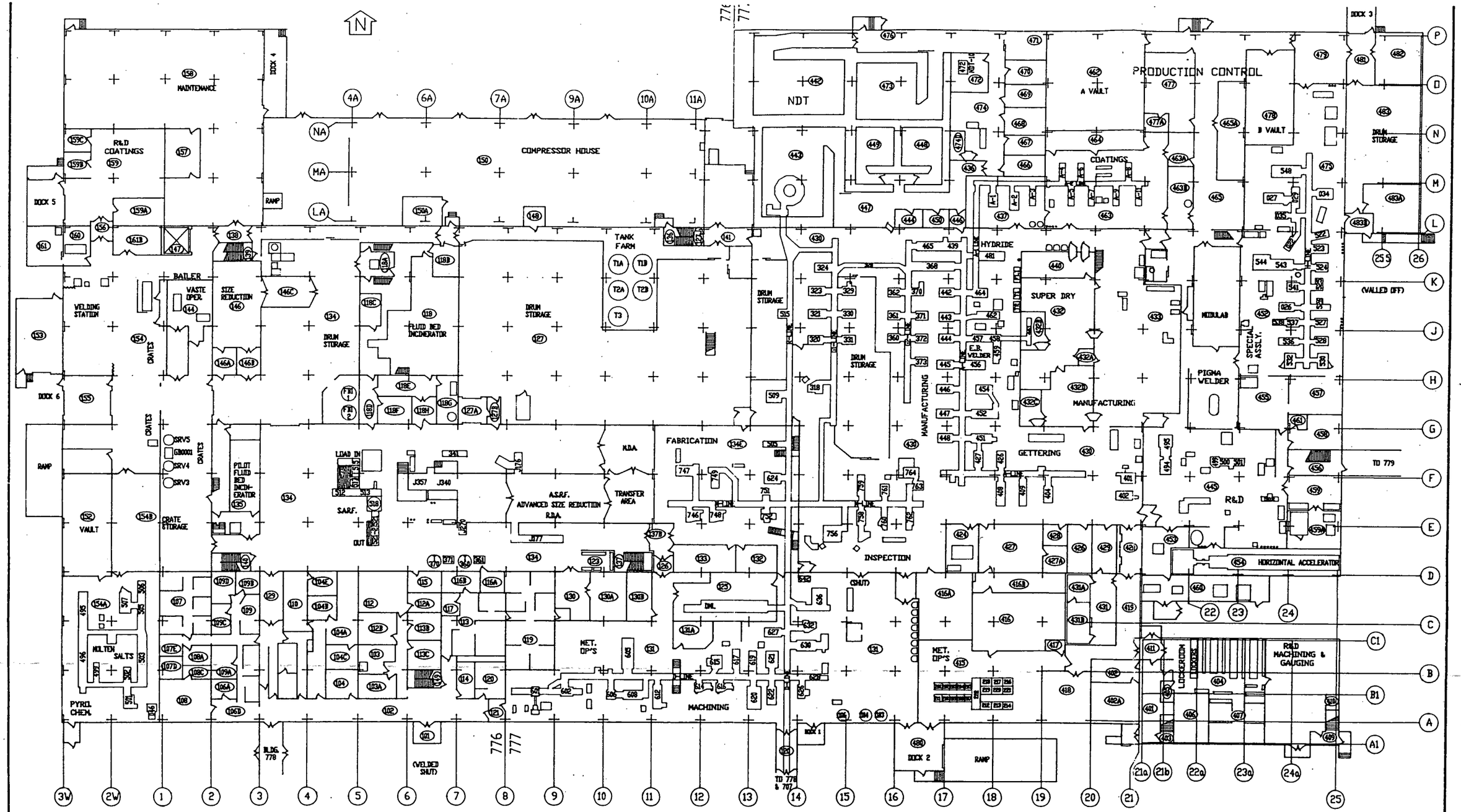
FOR INFORMATION ONLY

NOT FOR PUBLIC DISSEMINATION

BLDG 776-777
2nd FLOOR
LAYOUT

REVISION	
A\1	5/95

Figure 4 Building 776/777 Second Floor Plan



FOR INFORMATION ONLY

[redacted]

BLDG 776-777
1st FLOOR
LAYOUT

REVISION	
A\2	3/95

Figure 3 Building 776/777 First Floor Plan