PUREX Heating, Ventilation, and Air Conditioning Consolidation Document

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Abstract: This document provides a description of the PUREX modified HVAC system and reflects deactivated systems and new equipment to support the system.

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PUREX Heating, Ventilation, and Air Conditioning Consolidation Document

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Key Terms

μg	-	Micro-gram
AMU	-	Aqueous Makeup
ASHRAE	-	American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc.
cfm	-	Cubic Feet per Minute
D&D	-	Decontamination and Decommissioning
DOP	-	Dioctyl-phthalate
DP	-	Differential Pressure
ECMP	-	East Crane Maintenance Platform
ECN	-	Engineering Change Notice
Elev	-	Elevation
ft	-	Foot/Feet
HEPA	-	High Efficiency Particulate Air Filter
hr	-	Hour
HVAC	-	Heating, Ventilation, and Air Conditioning
IEFD	-	Instrument/Electrical Flow Diagram
kW	-	Kilowatt
LSA	-	Low Specific Activity
m	-	Meter
P&O	-	Pipe and Operating
PBS	-	Polymeric Barrier System, Bartlett Services, Inc
PIV	-	Pulse Infinitely Variable
PMP	-	Project Management Plan
PR	-	Product Removal
PUREX	-	Plutonium/Uranium Extraction Facility
RR	-	Railroad
RTV	-	Silicone, Room Temperature Vulcanizing
SCD	-	Steam Condensate
SMACNA	-	Sheetmetal and Air Conditioning Contractors National Association, Inc.
WBS	-	Work Breakdown Structure
WC	-	Water Column

1.0 INTRODUCTION

The Plutonium Uranium Extraction Facility (PUREX) deactivation project includes all of the elements necessary to place the facility in a stable, radiologically and environmentally safe configuration. Changes made to the PUREX Heating, Ventilating and Air Conditioning (HVAC) systems are discussed here.

This document contains a discussion of the consolidation of the existing 11 gaseous effluent streams into one effluent to minimize the risk and surveillance activity during the deactivated facility condition. Section 5.0 provides a general discussion of the criteria used to develop the flowsheet. Section 6.0 provides a detailed discussion of the proposed ventilation flowsheet objectives. This information has been used to control the design of the modified system, and has been updated to reflex the as-built condition.

The goal of the PUREX HVAC Consolidation Team consisted of the removal of all significant accessible sources, redirecting existing ventilation flows, shutting down all non-necessary ventilation equipment, simplifying the ventilation flowsheet to reduce the risk of effluent releases and to minimize the maintenance, surveillance and repairs on the existing effluent equipment. Building ventilation is simplified to three pressure zones, utilizing series flow ventilation, in place of numerous parallel flow schemes. Generally air flows from low contamination areas to high contamination areas with the most negative pressure in the high contamination areas.

2.0 PURPOSE

The purpose of this document is to provide the technical flow sheet for the design of the modified ventilation system. The flow sheet can also serve as an outline of the PUREX HVAC Consolidation task.

3.0 BACKGROUND

3.1 Historical Operation - Previous System

The ventilation system in the 202-A building was designed and operated to keep normal work areas free of radioactive contamination by maintaining airflow from zones with little potential for contamination into zones of progressively greater contamination potential. During normal operations and throughout most of the deactivation years, the 202-A building was serviced by four separate ventilation systems designed to keep normal work areas are kept free of airborne radioactive contamination. This is done by maintaining a differential pressure (DP) to ensure airflows from zones containing no contamination into zones of progressively greater radioactive contamination potential. Air was taken from the environment, passed through roughing filters and spray washers, heated if required, and supplied to the zone to be ventilated. Air was removed from the area at a constant rate, passed through HEPA filters and exhausted to the atmosphere. The supply is modulated to maintain the correct DP within the zone.

Ventilation system 1 served the canyon and the process cells, the area of greatest potential for radioactive contamination. Ventilation air supplied to the main canyon area was drawn over the cover blocks and into the process cells. From the cells, air is drawn through small ports into the air tunnel, then through deep beds fiberglass filters 1, and 2 and the 291-A stack filters, and was exhausted through the stack by the electric fans. The exhaust is monitored and sampled for radionuclides content.

Deep bed filter 1 and 2 were designed to remove 99 percent of the radioactive particles from the exhaust ventilation air, tests in the 1990s showed efficiencies greater that 99.93 percent. The filters were 85 feet long by 52 feet wide and 13 feet deep. In these filters, the air flows sequentially through two glass filters sections. The first unit or pre-filter consists of a 7 foot deep bed of "free packed" type 115 K glass fiber for filter 1 and five separate layers packed with different densities of glass-fiber for filter 2. The second unit, known as the cleanup filter, consisted of 132 American Air Filter, "Deep-Bed" filter units, each of which is packed with 0.5 inch of AA fiberglass (1.2 lb/ft^3 density) and 0.5 inch of B fiberglass (1.4 lb/ft^3 density), each with a total area of 50 feet squared. The design pressure drop was 2.0 inch water gauge (WG) at superficial velocities of 50 feet/minute through the pre-filters and 20 feet/minute through the clean up filters. There is a bypass channel and provisions for the air duct to direct the air through either or both filter units. The air flows downward through the pre-filter bed in filter 1 and upward in the pre-filter of filter 2. Air flow is upward through the cleanup filters in both glass-fiber filter units.

The 291-A stack filters, or #4 filter building, was designed to remove 99.95 percent of the radioactive particles from the exhaust ventilation air. The unit consists of a filter building containing 10 filter assemblies arranged in parallel. The filter building is 114 feet long by 42 feet wide by 17 feet high. An inlet and outlet plenum were installed underground to provide air routing to the facility The filter assemblies were installed across the two plenums. The filter assemblies consist of two banks (stages) of 12 HEPA filters arranged in a 3-filter wide by 4-filter high configuration. Each filter assembly is rated for 12,000 ft^3/min air flow at 1 in. wg differential pressure drop. Each filter assembly can be valved out at the inlet and at the outlet. Each filter assembly is provided with instrumentation to monitor the filter bank deferential pressure, and the first stage front face radiation level. The filter assembly flow rate was displayed on an instrument panel located in the facility supply blower room. Additional instrumentation indicated plenum differential pressure and air lock-to-filter room differential pressure. The facility is equipped with a supply fan that was exhausted through a single-stage HEPA filter assembly to the outlet plenum.

Air from the 202-A building had to pass through Deep Beds filters 1 and 2 in parallel. All air then passed through the 291-A stack filters before being released to the environment through the main stack.

Ventilation system 2 serviced the area of the building that had a potential for contamination, and that were routinely occupied or entered by the work force. Air was supplied to the Sample Gallery, the Hot Shop (or regulated shop), N-cell, Q-cell, R-cell, U-cell, the PR Room, and the canyon lobby. There were 6 exhaust fans for these areas. Eleven distinct HEPA filters units refine the effluent air prior to release. Exhaust was continuously sampled and monitored for radionuclides content.

Ventilation System 3, serviced the Piping and Operating Gallery (P&O), Storage Gallery, Aqueous Makeup unit (AMU) areas, and the shop and office areas, all of which have the lowest potential for becoming contaminated. A portion of the P&O Gallery was ventilated through the East Crane Maintenance Platform (ECMP) and into the main canyon. The West end of the P&O Gallery was known as the White Room and had a potential for contamination from suck-back and line rupture. A separate ventilation system filtered the air from this area. The exhaust was continuously sampled and monitored for radionuclides content.

Ventilation System 4, services the PUREX Plant laboratory and was largely independent of the systems in the rest of the 202-A Building. This regulated area includes the decontamination room, laboratory rooms, and the sample storage room. Exhaust air was discharged from the laboratory hoods and rooms through two local stacks. Two exhaust fans are provided. Exhaust air is monitored and sampled prior to discharge.

3.2 Deactivation - Modified System

After the decision to close the PUREX facility was announced, the most important HVAC deactivation issues was whether to attempt a static containment of the plant's contamination or provide a low level ventilation system. After numerous discussions it was determined that a low level ventilation system would provide the greatest margin of safety. The 202-A building was not designed as a containment structure, but relied on differential pressure zones to control the radionuclides content. The building contains numerous openings, pass-through, pipe chases and expansion joints. To provide more than a temporary seal would represent significant investment of manpower and resources. Early in pre-deactivation planning, the "Red Team" recommended a low level ventilation system.

The chief HVAC deactivation task then became simplifying the existing ventilation system. It was determined that the work could be done by opening ducts at key location in the plant and allowing the air flow from "clean" areas to areas with more potential for contamination. By using the rooms, hallways and stairways essentially as ducting (or in place of ducting) the friction losses of the system would be greatly reduced, allowing a reduction of operating equipment. Areas with no potential or extremely small potential of contamination could simply remain stagnate.

Plans were formulated to reduce the four separate ventilation systems to one cascaded flow scheme. The 11 effluent points of the PUREX plant would be reduced to the one main exhaust stack. The number of miscellaneous artificial air movers would be greatly reduced. Of the 177 fans at PUREX only the three main exhaust fans would continue to function. One fan would ventilate the building, while two would remain on standby. Out of the 89 air filters, only two main exhaust filters would remain in service. The total air flow through the plant would be reduced from about 85,000 cfm to about 30,000 cfm. Engineering studies were performed to estimate the system feasibility and performance.

Engineering documentation was prepared for these modifications and a series of reviews where performed in order to validate the design. A value engineering review was performed to explore different options for the cascaded system. Hanford site nuclear safety groups approved the engineering documentation, and also preformed a hazardous operations review and a safety analysis, checking potential failure modes and estimating theoretical releases. A study was performed to determine if the supply air to the plant after shut-down should be heated. Options for the ventilation of the PUREX railroad tunnel were explored and reviewed by DOE. A private engineering firm evaluated the potential of building air in-leakage under normal and high wind conditions, with and without active ventilation. Because the 202-A Building is so large and the HVAC issues so crucial, other reviews were performed by other consultants as an overview of the whole PUREX utilities system (HVAC, electrical and controls). Finally facility walk-downs and job-scoping exercises were performed by the craft, for each task to be performed, to ensure that the deactivation HVAC modifications were constructable and that they used workers efficiently.

After identifying the required modifications to the systems, the tasks were divided into three groups; 1) Pre-switchover, 2) Swichover, and 3) Shutdown. All of the HVAC modification activities were scheduled to take place toward the end of the deactivation project, after the completion of other key activities had cleared the 202-A Building of nearly all other workers.

Pre-switchover activities include task that could be performed without a major impact on the existing plant ventilation. These task included opening duct at key locations, closing off the ventilation to U-Cell and R-Cell, staging and preparing for major tasks to be performed later in the project. Pre-switchover activities were completed in September 1996.

The Switchover activities reconfigure the plant ventilation system, to a cascades type flows. Flow paths were diverted or created, while others have been blanked. Each level within the building had the flows rerouted, balanced and stabilized to match the new flow scheme. These tasks include modification of air handlers, blanking N-Cell exhaust, and removing elbows in the Hot Shop. Switchover activities were completed in January 1997, several months ahead of schedule.

Shutdown tasks adjusted the final configuration of the system. Flows within the building have been reduced, the final main HEPA filters were configured, stacks have been capped and documentation has been completed. Shutdown activities were completed in February 1997. The end of the PUREX HVAC Consolidation project was scheduled for May 28, 1997.

4.0 SCHEDULES

All of the deactivation work is discussed in the project management plan (PMP) and in the Work Breakdown Structure (WBS) file. Initial schedules were entered into "Quicknet" software and have been transferred to "PX" schedule software.

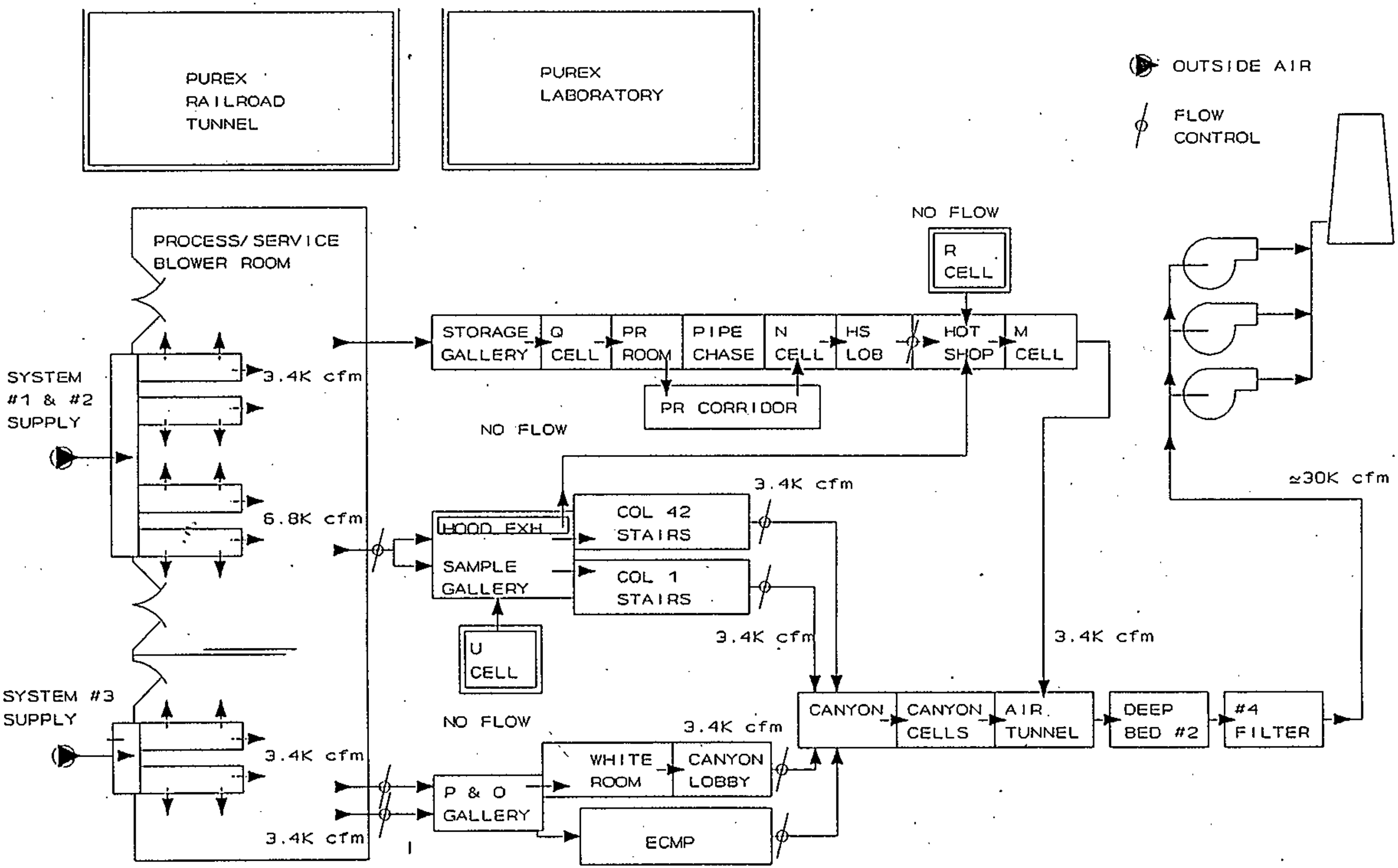


Figure 1. PUREX Consolidated System Flow Diagram

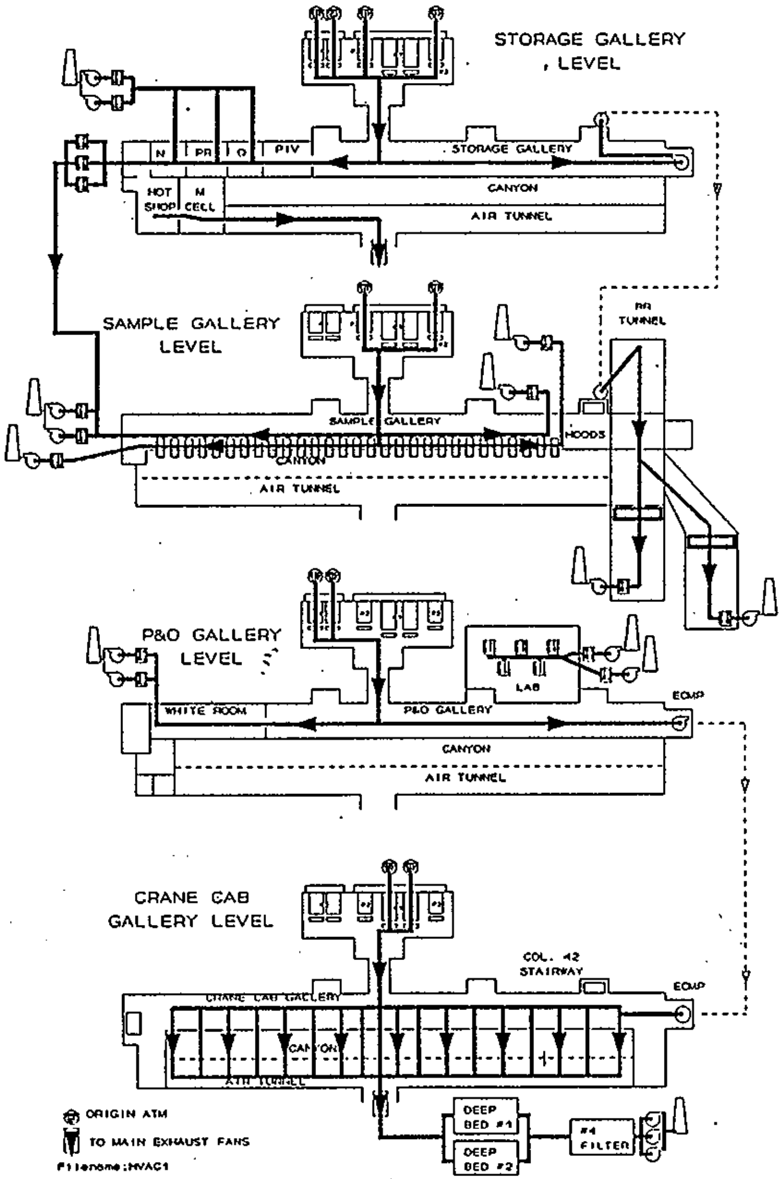


Figure 2, Pre-Consolidation Flow Schematic

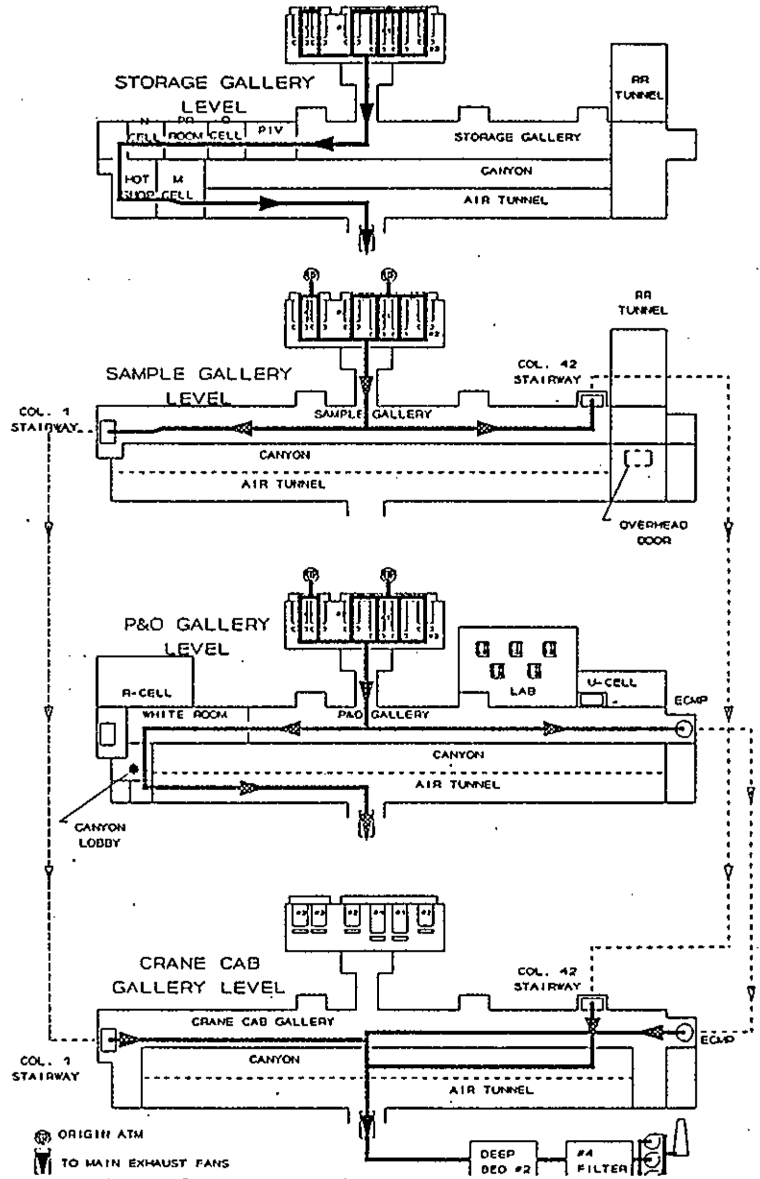


Figure 3, Consolidation Flow Schematic

5.0 TECHNICAL GUIDANCE USED TO ESTABLISH THE CONSOLIDATED FLOW SHEET

This section provides a discussion of the primary technical guidance used for the develop of the modified HVAC system design. These primary guidance include confinement, equipment design, etc..

5.1 Confinement

The principal consideration, in setting up the deactivated ventilation conditions, is to acknowledge the known source areas and maintain the position of the sources. In general, migration of source material with time is an unacceptable solution in the long term especially if the zones is to be subsequently decontaminated to a releasable condition. In some cases the possibility of radionuclide migration is recognized and allowed to occur. This represents a financial decision wherein the cost of confinement is weighed against the consequences of radionuclide movement.

5.2 Equipment Design

The equipment selection shall be consistent with ASHRAE handbook standards (where applicable). Sheetmetal work is per SMACNA standards.

5.3 Air Pressure

Figure 4, shows the method used for controlling zone pressures through out the building. Air was exhausted from the area at a constant rate. The supply to the areas was modulated over the desired pressure range.

The existing zone air pressures provide acceptable contamination control. This has been demonstrated over 42 yrs of operation. For consolidation design, the same air pressures are being used with minor adjustments. Total flow rates are being scaled down to correspond to the limits of the air handling equipment.

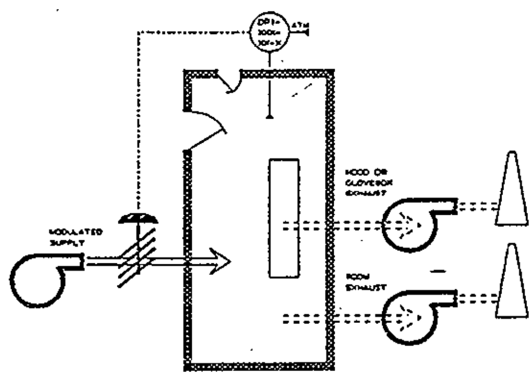


Figure 4, Typical Control System

Air pressure determines the air leakage velocities in the orifices between zones. The higher the pressure difference between the two zones the higher the orifice velocity in the leakage flow passing between the two zones. This is the principal factor in contamination control between static zones. If personnel movement occurs then air turnover, portal velocities, etc. become important. Air reversal was considered.

5.4 Openings-Flow Paths

To limit the extent of new ducts and new openings cut in the concrete, the existing openings (doors, equipment hatches, etc.) are used to carry the air from one area to another. Concrete cutting or duct installation in controlled areas is much more costly than installations in comparable non-radiation work zones. This has been minimized.

5.5 Three Zones-Simplified

The original ventilation flowsheet routes air flow to many rooms or air zones within the plant in parallel flow. Comparable parallel exhaust flow ducting collects air from each of the rooms and/or air spaces and routes it to separate exhaust systems throughout the plant. The simplified design has reduced the numerous air spaces (pressure zones) to three pressure zones corresponding to the three levels of the plant. The least amount of sources or contamination is found at the P & O level. The sources or contamination found at the Sample Gallery level are significantly higher but are contained in shielded confinements or ducts. Sample Gallery sources are both fission product type and high alpha sources corresponding to product material. The lowest level in the building has lower level fission product sources but much higher levels of alpha emitter sources. They are primarily contained within hoods.

5.6 Reduce the Overall System Air Flow to Approximately 30K CFM

The total ventilation flow is reduced to the capacity of one main exhaust fan. One fan has the capacity of approximately 40,000 cfm. Conceivably less flow could be used. However total canyon air in-leakage is an unknown and some buffer must be retained for control. Efforts have been made to reduce the in-leakage to a minimal value, by sealing outside openings.

If the online fan trips, then one of the off line units would be automatically start, maintaining the canyon negative pressure. The control system has been based on at least two electric exhaust fans being available for use. If exhaust fan problems are sensed by the instrumentation, an automatic fan transfer would take place to prevent more damage to the unit.

5.7 Supply and Exhaust Fans

To simplify the control of the overall ventilation system, only one exhaust fan is to be used. No supply fans are operational. This approach makes the overall system simple and safe from the standpoint of malfunctions and potential pressurization. As an initial design concept, all of the controls have been manually set except the modulation and isolation dampers on the exhaust fans. The exhaust fan maintains a constant negative pressure on the canyon air space based on control feedback from two differential pressure cells reading the canyon to atmospheric pressure. Canyon negative is sampled by dual transmitters to assure valid signals to the acquisition system.

The air inlet is designed to assure that no snow or debris accumulation occurs, given reasonable maintenance.

5.8 Service Areas of the Plant

Service areas including process and canyon blower rooms, compressor room, office areas, and aqueous makeup are not ventilated.

5.8.1 Supply Modules

The air is drawn into the zones through the Service and Process Blower Rooms. There are six air supply modules by Buffalo Forge. Each incorporates a steam preheat coil, a filter bank consisting of a 2" roughing filter and a 4"-- 80% pleated air filter, air washing chamber and reheat coil in some cases. The total supply is normally approx 240,000 cfm including the service areas. Thus the deactivated flow is approx 15% of the normal capacity.

5.8.2 Air Supply Systems

The P&O Gallery is supplied at the center and exhausted at the east and west ends to the canyon. The blower supply rooms are treated as plenums. Air travels from the supply system via existing ducts to the P&O Gallery. The supply friction has been minimized by dropping the inlet elbows on the P&O supply headers in the P&O Gallery. Air travels a short distance from the blower room to the gallery.

The Sample Gallery is supplied at the center and exhausted at the east and west ends to the canyon via the Col 1 and Col 42 stairwells. System #2 supplies the Sample Gallery via branch #1 which splits off from the main feeder in the blower room, passes into a caisson adjacent to the North gallery wall, splits to two ducts and enters the Sample Gallery at about 707' elev (5 ft below the blower room floor). Inlet air ducts penetrate the north Sample Gallery wall and feed two air supply headers; one passes east and one passes west of the inlet lines. Modifications include dropping the elbows of the duct at the header feed points. This minimizes the friction drop of the inlet air to the Sample Gallery. Air is drawn into the Sample Gallery by the negative pressure.

The 673' elev (bottom) level is supplied at the Storage Gallery column 20. Ventilation air flows toward the west end, exhausting into the air tunnel in M-Cell. Air is drawn into the Storage Gallery by natural induction. System #3 currently supplies the Storage Gallery via a duct that passes through the blower room south wall, the P&O floor, the Sample Gallery, and the Storage Gallery ceiling at col 20. Ventilation modifications consist of dropping the elbow where the supply air enters the Storage Gallery (about 20 feet above the floor). This minimizes the friction losses in the supply line to the Storage Gallery. The east end of the Storage Gallery remains a stagnant air space.

Preliminary design included heating the supply air to above freezing during the winter months. This topic was considered in the Value Engineering study (ref. 3), but was not resolved. A thermal analysis of the PUREX facility by Dr. W.W. Chan indicated that pre-heating the air in the facility would not be necessary. (Ref. 2)

5.9 Minor Stack Recycle/Effluent Shutdown

Minor stacks including East Sample Gallery Hood, West Sample Gallery Hood, East Sample Gallery room, West Sample Gallery room, East and West Laboratory stacks, White Room, 293A and storage tunnel #2 have been shut down. The effluent streams are recycled and/or terminated. The PR stack is major and is discussed as a separate case, later in the text. In all cases the effluent has been recycled to the canyon air space except for 293A, the storage tunnel, and the lab stacks. The lab stacks have been shutdown and the sources either removed or fixed. The 293A and storage tunnel stack systems are shutdown, (see railroad tunnel section later in text). Minor stack equipment has been blanked to isolate it from the environment. Only the main stack remains as the facility effluent.

5.10 Decontamination, Fixation and Ventilation of Known Source Areas.

To control activity migration, sources in the Sample Gallery, White Room, PR Room, N-Cell, Q-Cell, U-Cell and R-Cell have been removed and/or fixed. U-Cell and R-Cell equipment have been flushed and emptied. Q-Cell has been empty and dormant for several years.

5.11 In-leakage to Canyon Building

There are numerous doors and openings in the main canyon envelope. Most of these have been sealed to limit the air in-leakage. A few are to remain operable as emergency exit points. For a description of the action taken on each door in the facility, see appendix 2 of this document. The three major in-leakage points were, the overhead door in the railroad tunnel, the north vacuum breaker, and the south vacuum breaker. The overhead door, and the south vacuum breaker, have been sealed. The north vacuum breaker remains operable and represents a major source of in-leakage to the canyon.

5.12 Secure the Outside Openings

Action was taken to prevention of unauthorized intrusion of people and/or animals into the facility. The primary concern is to minimize the spread of contamination within the building and/or to the environment.

5.13 Main Ventilation Filter #1 and #2 Isolation/Final Filtration

Preliminary design included heating the supply air to above freezing during the winter months. This topic was considered in a March 95 Value Engineering Study (ref. 3), but was not resolved. A thermal analysis of the PUREX facility by Dr. W.W. Chan indicated that pre-heating the air in the facility would not be necessary. (Ref. 2) The source term in Deep Bed Filter #1 has been isolated by blanking the filter outlet. Deep Bed Filter #2 is not blanked, but act as a pre-filter for the 291-AE, #4 filter.

5.14 <u>Direct the Air Flow to Address the Existing Sources and their probability of Migration</u>

5.14.1 673' Elevation (basement)

The 673 elevation (basement) is configured to move the air from a low level contamination zone toward the air tunnel which is a high contamination zone. The major sources on this level are the PR Room and the N-Cell hoods. Air flow travels on the following path: PIV room, Q-Cell rooms, PR north east corridor, PR corridor, N-Cell, overhead crane rail doors on the upper N-Cell level, Hot Shop lobby, Hot Shop, M-Cell, and finally through the ports at the end of the air tunnel. See Figure 1, 3 and 5. This path is based on the value engineering seminar and is discussed in the following. If the Q-Cell or the PR Room has a release, the resulting contamination spread would be limited to the PR corridor, N-Cell and Hot Shop Lobby. Hot Shop and M-Cell are already contaminated. From this point the air travels to M-Cell and into the ports at the end of the air tunnel. To limit the migration of Hot Shop activity to the Hot Shop Lobby, a damper and flow straightener have been placed in the Hot Shop door.

5.14.2 Column 5 Pipe Chase (contains transfer piping and plutonium tanks)

The original HVAC plan involved routing the air flow at the 673' elev through two cuts in the column 5 pipe chase between the PR Room and N-Cell. The intent of the path was to restrict any activity release to the processing rooms of the 673' elev. The PR corridor would be retained as an access to these areas and would remain free of contamination. It was also intended that the Column 5 and PR doors be closed and sealed since they are single door entry ways to process areas. The additional advantage of directing the air flow through the column 5 walls would be the complete ventilation of both the PR Room and the N-Cell room areas. No stagnant areas would result.

A Value Engineering study done in March'95 proposed that the air flow be directed from the PR Room to the PR corridor to N-Cell as a pathway. This approach uses the PR corridor as a duct and would certainly contaminate the corridor if a Q or PR release occurred. The approach also does not ventilate the PR Room and the east end of N-Cell. These would be stagnant air areas, see Figure 5. The recommendation of the value engineering seminar were implemented on the basis of cost savings. Some additional recommendations were done in order to implement this approach. These are:

1. Certain wall and floor areas, of the PR corridor have been sealed with paint to prevent any further penetration of activity.

2. Installation of surveillance lighting in the well ventilated areas of the PR Room and east N-Cell.

5.14.3 700' Elevation (Sample Gallery)

The Sample Gallery supply enters at the center of the gallery and flows to the east and to the west. Activity sources within the gallery include the sample station spaces and exhaust ducts. The Sample Gallery Hoods and sample pits with internal contamination have been sealed. The Sample Gallery exhaust duct also has significant activity internally with the possibility of hygroscopic salts on the duct floor. There are 125 joints along the duct which have original gasket rubber that has leaked in the past (with negative pressure inside). To minimize the probability of contamination spread, the Sample Gallery exhaust duct is connected to the Hot Shop. The flow is approx 20% of normal and has resulted in correspondingly higher radon levels. This area is discussed further in section 6, 700' elev. (See Figure 29).

5.14.4 712' Elevation (P&O Gallery)

The P&O Gallery supply air enters at the center and flows east and west from the midpoint input. The White Room is the only significant sources in the gallery. Connections to the canyon have been blanked or valved off. (See Figure 39). The east end of the gallery is exhausted through existing duct work into the ECMP.

5.15 <u>PUREX Laboratory</u>

There are approximately 50 open face hoods in the laboratory serviced by seven filter hood assemblies. The hoods and associated exhaust ducting are contaminated by fission product nuclides and plutonium that will not decay away significantly with time. Rather than remove the source materials and discard them as packaged waste the intent of the deactivation is to stabilize and fix the activities to prevent their migration during the deactivated period. Source removal was considered however the volume of waste material would be enormous as would be the disposal costs. Several methods are used to fix the contamination. During 1995 most of the hoods were emptied and cleaned. Then PBS fixant was applied to the interior surfaces. In the second stage of deactivation the ventilation surfaces and volumes have been "potted" or filled, with polyurethane foam to fix the activity and prevent subsequent migration of the activity during the dormant deactivation period. All ventilation in the lab has been shutdown after the fixation work. The lab ventilated spaces have assumed ambient temperatures and humidities.

5.16 <u>Documentation</u>

Each task or action taken to place the ventilation system into the consolidated configuration has been documented in a Work Control Package. These packages provide a clear picture of exactly what modifications where completed. In Section 6.0 of this document the package numbers are identified. Appendix 1 and 3 contains a listing of all tasks and package numbers.

Other documentation of value would include all CVI files on the main exhaust blowers and the new SAMCONS unit.

5.17 Value Engineering Studies

Value Engineering Studies have been compiled and documented for specific topics within this document. (Ref. 3)

5.18 End Point Criteria

Appendix 1, of this document, identifies the Work Control Packages used to perform the tasks required to modify the PUREX ventilation into the consolidated system. The Work Control Package also related additional information required to perform the work ie., Engineering Change Notices (ECN), Job Hazard Analysis (JHA), Craft Logs, Radiation Work Permits (RWP), Bills of Materials (BOM), Safety Forms (core permits, confined space, etc...), and Lock and Tag requirements. Section 6.0 of this document outlines the work performed and includes reference to these package numbers. These outlines can be used as an index to effectively document the closer of the End Points.

6.0 FLOW SHEET OBJECTIVES

This section provides a detailed description of the modified HVAC system flow sheet.

6.1 HVAC Modification, Basement Level 673' Elevation

AREAS:
Storage Gallery, Q-Cell, PR Room, N-Cell, Hot Shop Lobby, Hot Shop, M-Cell, To Air Tunnel

DESCRIPTION:
Air from the environment is pulled into the Process/Service Blower Rooms through the existing supply air handlers for systems #1, #2, and #3. The supply duct running from system #3 to the Storage Gallery has been opened, at both ends, to pull air from the blower room into the Storage Gallery. The air path for this level is outlined in Figure 5. Air flows from the Storage Gallery, to the PIV Room, through Q-Cell, into the north-east corner of the PR Room, down the PR Corridor, into the lower part of N-Cell, up the sides of the gloveboxes into the upper N-Cell room, out the crane-way door and into the Hot Shop Lobby. A damper/flow straightener device has been installed in the door of the Hot Shop to regulate the flow along this pathway. From the Hot Shop air flows into the M-Cell and then into the air tunnel. From the air tunnel, the air is filtered through Deep Bed Filter #2 and the #4 HEPA Filters and released through the main stack into the environment. Exhaust Fan EF-V34-1, located in the east end of the gallery, previously exhausted air into the Rail Road Tunnel. This fan has been blanked. This leaves the east end of the Storage Gallery without any direct ventilation. Supply and exhaust duct work from the Q-Cell, PR Room, N-Cell, and Hot Shop areas have been blanked. R-Cell has been cross-tied to the Hot Shop via the R-Cell exhaust line to plenum #2.

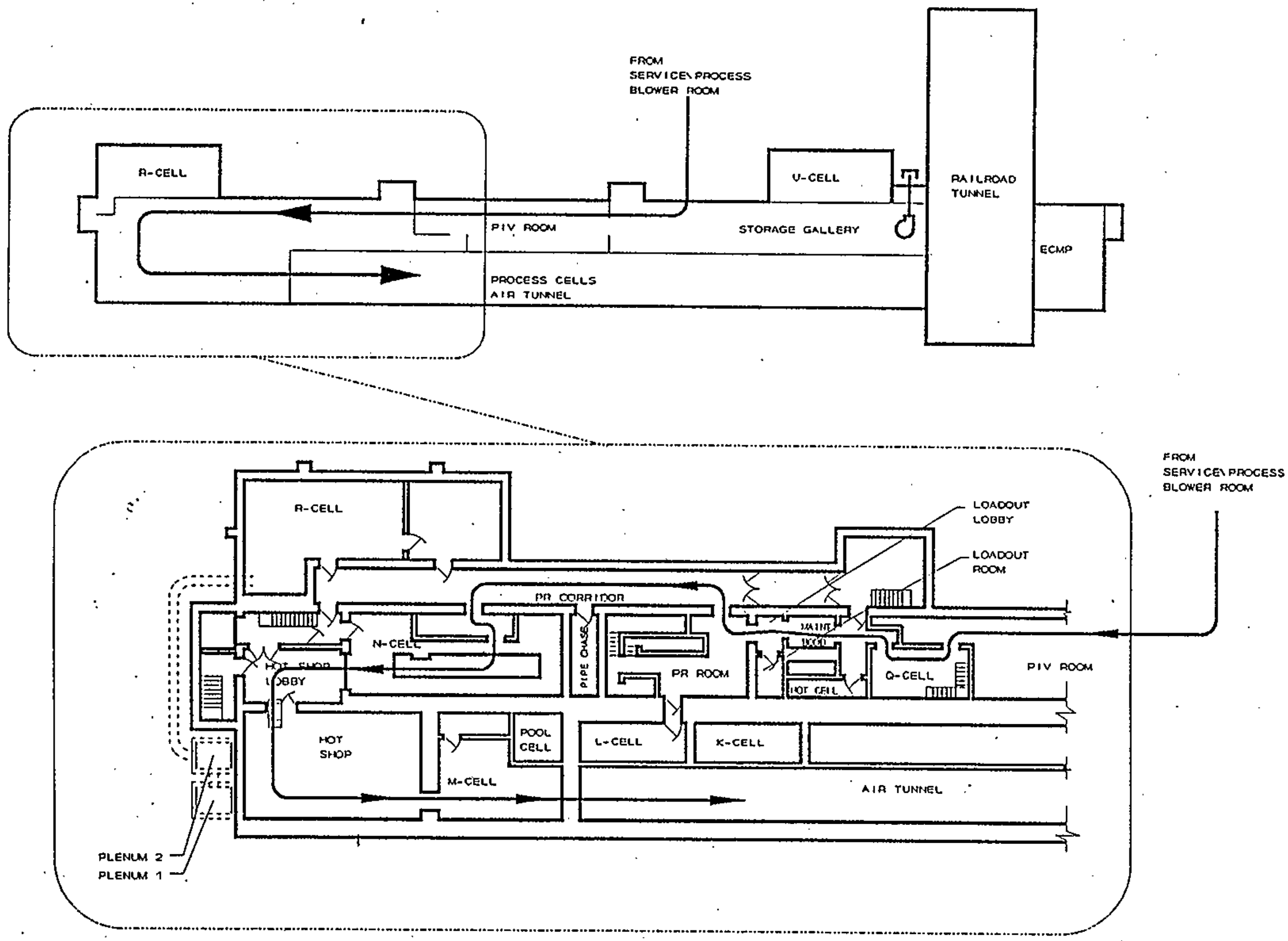


Figure 5, General Flow Path 673' Elevation

6.1.1 Air Handling units

Located in the Service and Process Blower Rooms are six large air handling units. In the past, air has been pulled into these units through horizontal openings, at roof level. The air was then heated by steam coils, filtered, washed and humidified in the spray washers, reheated and passed through a fan into the required system. For the Air Handling Units there were two major concerns: 1) There has been a history of snow buildup on the bird screen covering the horizontal opening. 2) The affect on the ventilation system, should the flow be restricted due to frost or dust loading on the filters. The entire system would be affected should either of these concerns be realized. To prevent snow build up, the bird screen over the horizontal opening has been removed. The steam coil in the lowest position has been removed and replaced with bird screen. See Figure 6. In this configuration, it is estimated that ten feet of snow must accumulate, before a significant reduction in the inlet would occur. To offset the effects of the inlet filters the Process and Service Blower Rooms are used as an inlet plenum to normalize all filter banks. If any one bank of filters has more loading, the others would provide the flow.

The HAZARD AND OPERABILITY study, (done in March 95 see ref. 4), made a significant point of monitoring the inlet DP of the blower room to provide online data for any type of inlet air restriction. Any such restriction would bias the negative pressures throughout the entire ventilation system. A restriction could be due to insect, dirt, debris, snow or frost accumulations on the inlet filters. Doors leading to the outside are being left operable as an alternate path should extreme condition occur. Removal of the filter would result in a buildup of dust and dirt within the building, greatly increasing the cost of decommissioning the plant. Differential pressure between the Service and Process Blower Rooms and the atmosphere is monitored by the SAMCONS unit. See Work Control Package Number 2A-96-00121.

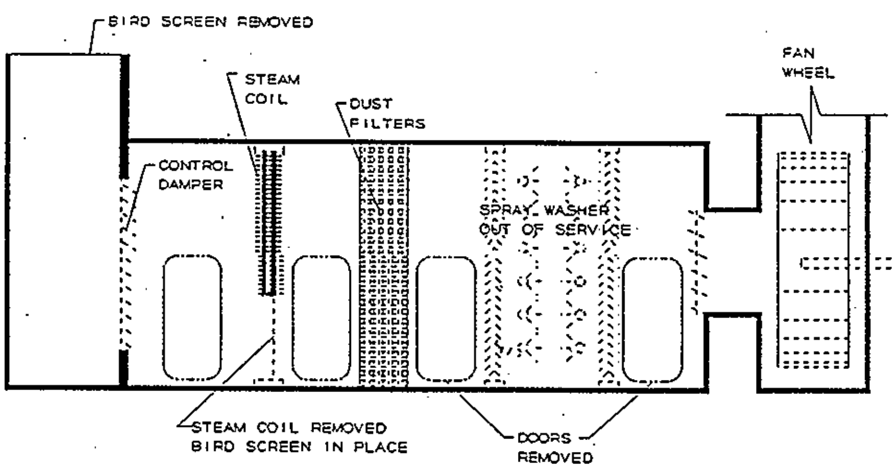


Figure 6, Air Handler Inlet Configuration

6.1.2 Supply Duct Modification, 673' Elevation

A pathway, for air to be drawn form the Service Blower Room to the Storage Gallery, has been opened. A schematic of the Supply #3 system is shown in Figure 7. Openings have been made in the duct in the south-west corner of the Service Blower Room, approximately Column 20, see Figure 8. A section of the same duct has been removed in the Storage Gallery just as it passes through the ceiling into the gallery, see Figure 9. This provided a flow path for the Service Blower Room to the middle of the storage gallery. See Work Control Packages 2A-96-00044 and 2A-95-00342.

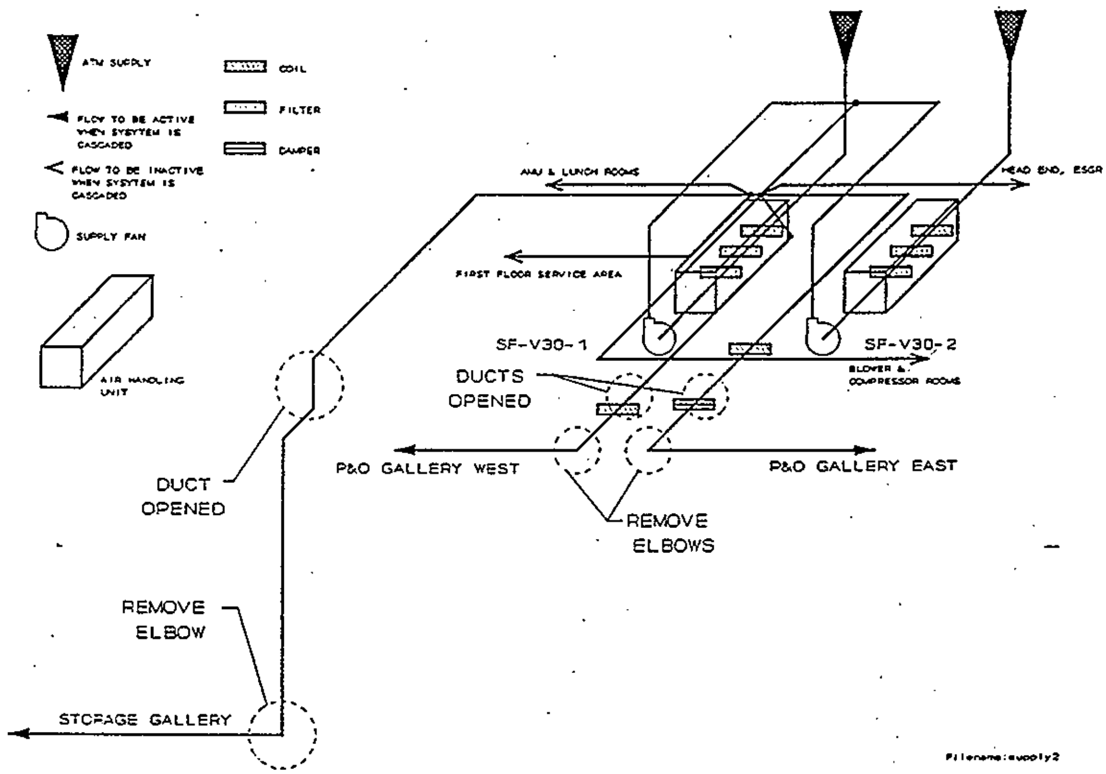


Figure 7, Supply System #3, Ducting Schematic

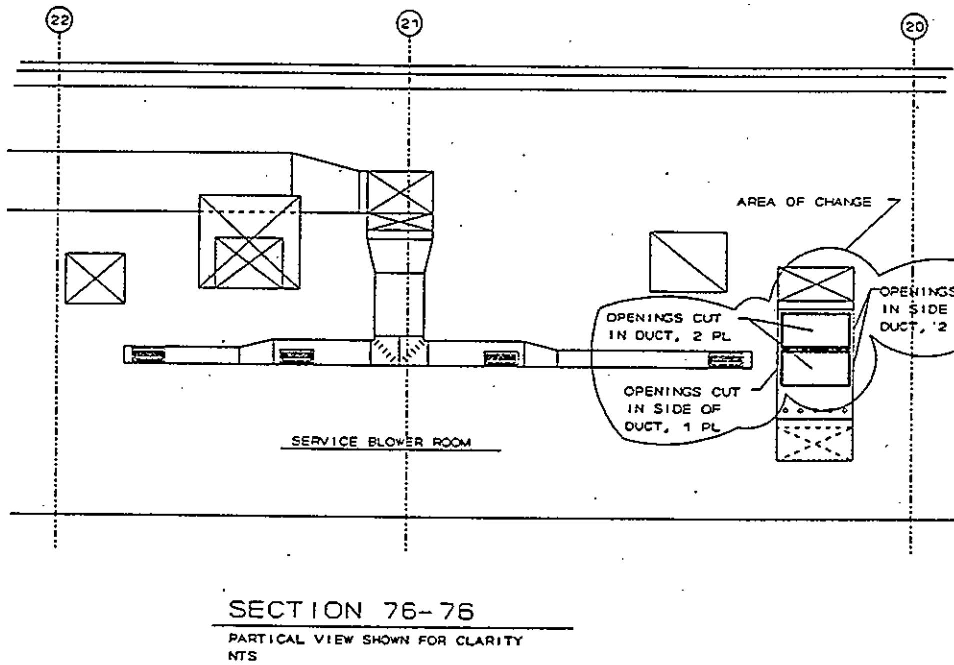


Figure 8, Blower Room Duct Modification 673' Elevation

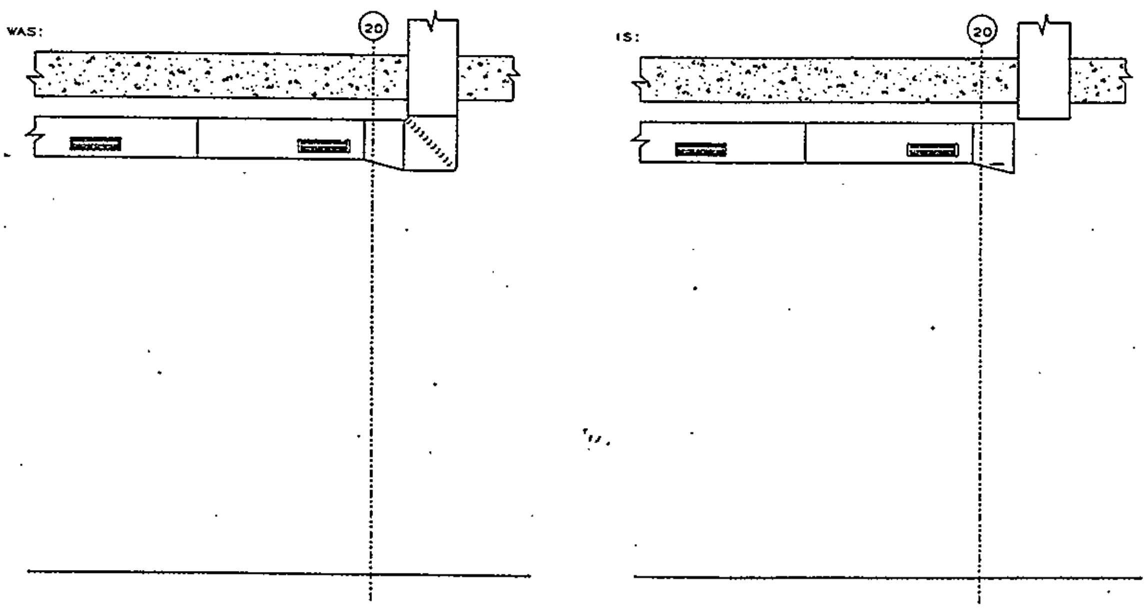


Figure 9, Supply Duct Modification 673' Elevation

6.1.3 Storage Gallery Exhaust Fan Modification

Exhaust Fan EF-V34-1 is located in the east end of the Storage Gallery. The fan provided tempered air into the tunnel, see Figure 10. The duct has been blanked at grade level, just as the duct leaves the building at the north-east corner of 202A, see Figure 11. This work has left the east end of the Storage Gallery without any direct ventilation. See Work Control Package 2A-95-00479.

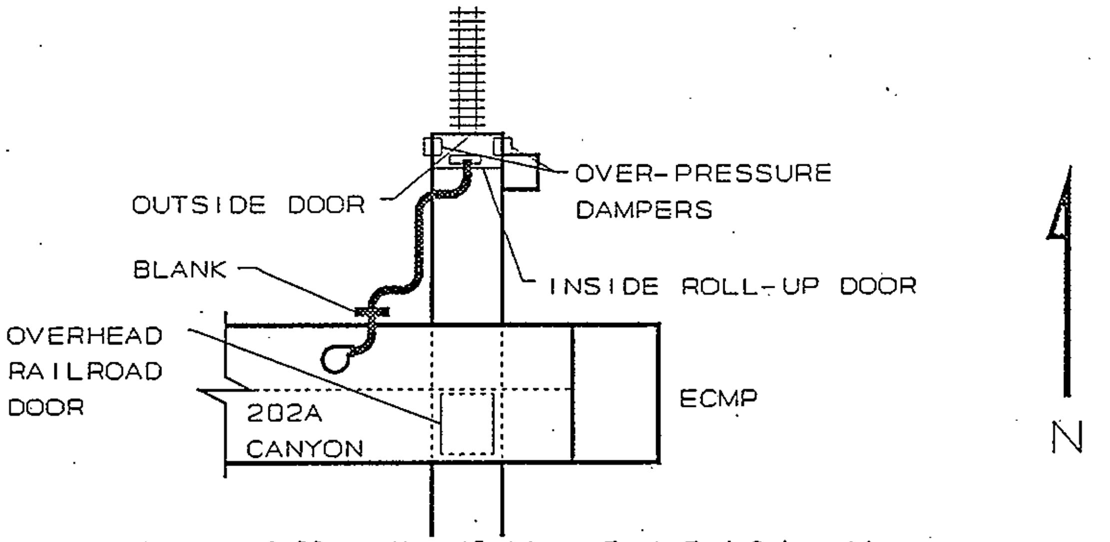


Figure 10, Storage Gallery Ventilation, East End Schematic

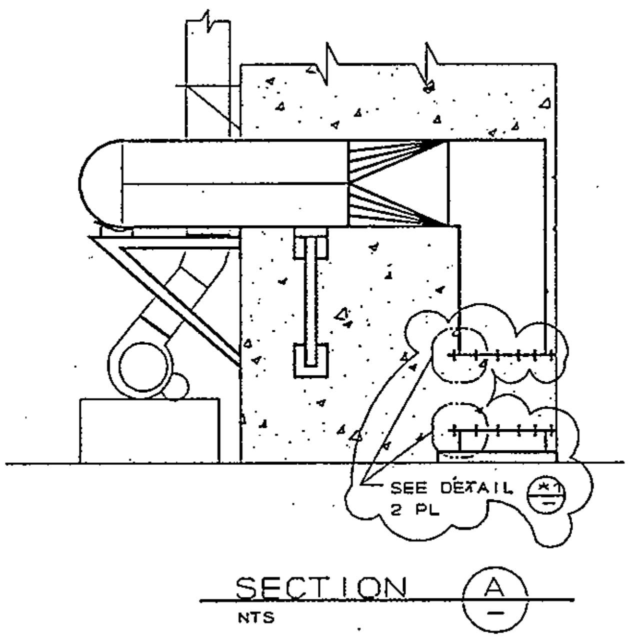


Figure 11, Storage Gallery Ventilation, East End, Duct Blank

6.1.4 Q-Cell Modifications

Figure 12, shows the general concept for ventilation in the Q-Cell area. Air flows from the PIV Room through Q-Cell area via open doorways. The doors have been removed or secured open to ensure uninterrupted flow. Flow paths to the Hot Cell, Maintenance Hood and the Load-Out Hood are sealed. Connections to the Q-Cell HEPA Filter remain. The exhaust side of this filter, going into the PR Room, has been blanked. After being surveyed the filter was found to have an acceptable source term and was left in place. Inlet to the Maintenance glove box, and the load-out hood have been blanked.

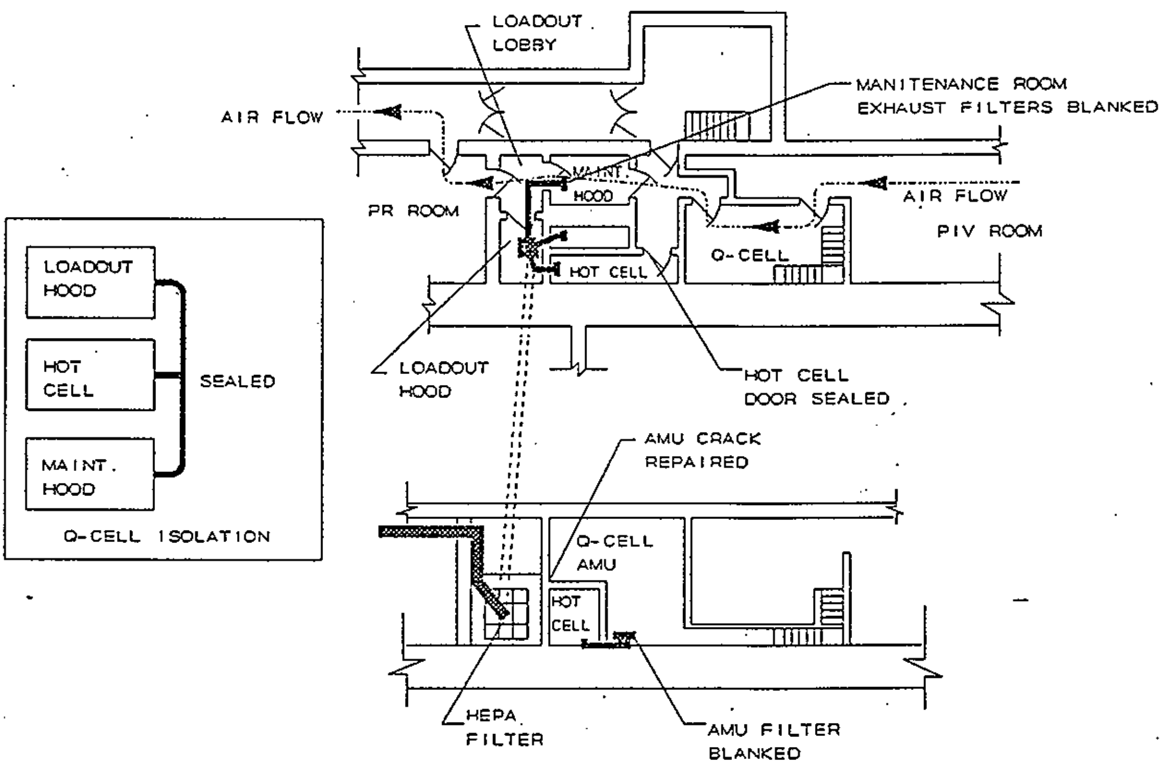


Figure 12, Q-Cell Flow Details

6.1.4.1 Blank Q-Cell Supply (Sample Gallery)

A branch from the Sample Gallery supply header previously served as the supply into the Q-Cell control room and the Q-Cell Maintenance Hood Room. This branch has been blanked in the Sample Gallery. See Figure 13. Blanking the supply duct isolates the Sample Gallery level from the Storage Gallery level. See Figure 14 for System #2 supply ducting and blank location. See Work Control Package 2A-95-00355.

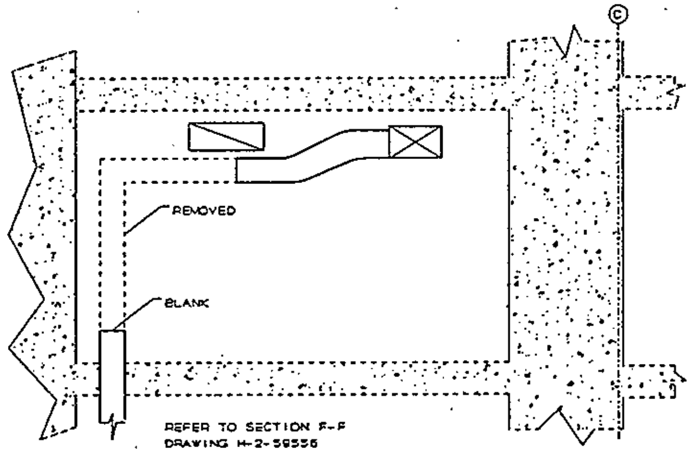


Figure 13, Blank Q-Cell, Supply

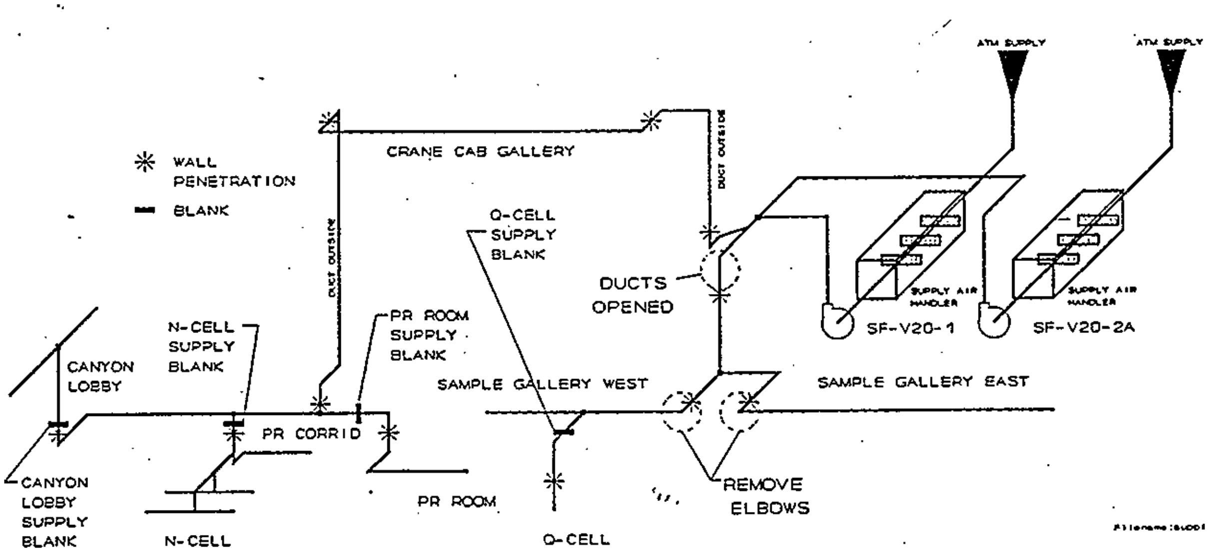


Figure 14, System #2 Supply Ducting Schematic

6.1.4.2 Blank Q-Cell Maintenance Room Exhaust Filter

The Q-Cell maintenance Hood room was ventilated into the Q-Cell HEPA filter. Two small HEPA filters were mounted on the entrance of a duct that connects to the large Q-Cell HEPA filter above the Load-out room. The small HEPAs have been removed and the entrance to the duct blanked. See Figure 15. See Work Control Package 2A-95-00354.

6.1.4.3 Blank Q-Cell AMU Duct to Hot Cell

The Q-Cell AMU room is located over the Q-Cell control room. Air from the AMU was drawn into the Hot Cell, through a wall mounted HEPA filter. This filter has been blanked. See Figure 12 for location. See Work Control Package 2A-95-00365.

6.1.4.4 Q-Cell Filter System

The Q-Cell filter system is located above the Loadout Room. The filters were surveyed and left in place. See Work Control Package 2A-95-00341 and Figure 15.

6.1.4.5 Blank Q-Cell Exhaust Duct to PR Room and Plenum #4

An existing exhaust line runs from the Q-Cell filter, high in the Load-out lobby, through the wall into the PR Room. The line eventually terminates in Plenum #4. This duct has been blanked at a flange joint on the outlet of the filter. See Figure 15. See Work Control Package 2A-95-00340.

6.1.4.6 Q-Cell AMU Crack Repair

In the South-West corner of the Q-Cell AMU room a vertical crack in the corner allowed air to be drawn into the hot cell corridor. The crack has been sealed in order to maintain contamination in the Hot Cell. See Figure 12 for location. This work was done on a J3 work package.

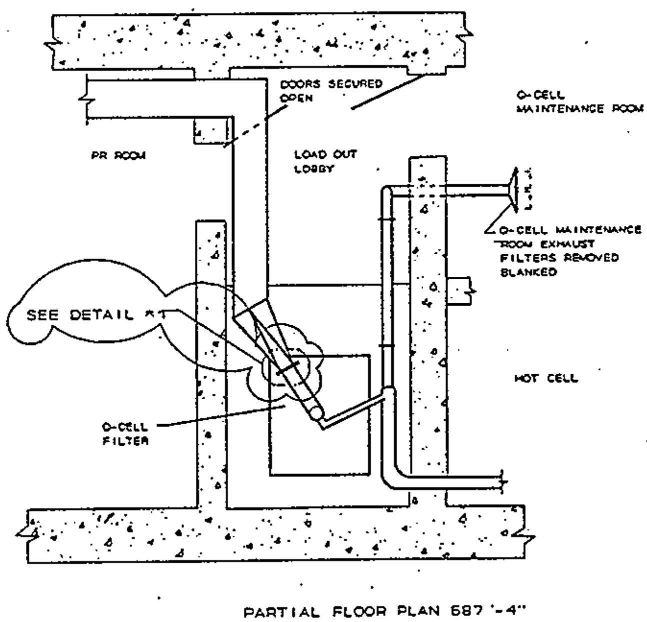


Figure 15. Q-Cell Filter Blank

6.1.4.7 Q-Cell Hot Cell Door Seal

The Hot Cell door has been sealed, in order to maintain contamination control. See Figure 12. This work was done on a J3 work package.

6.1.4.8 Q-Cell Maintenance Hood and Load-Out Hood Seal

The Q-Cell Maintenance hood and the Load-out room hoods were both exhausted through the main Q-Cell HEPA filter. Supply air inlets to these two hoods have been sealed. This work was done on a J3 work package.

6.1.5 PR Room Modifications

Air for the PR Room was provided by system #2 supply, see to Figure 14. The exhaust system for the PR Room is represented in Figure 16. Ventilation for the Gloveboxes and hoods were provided via plenum #4. The Room exhaust was filter and jointed by the air form plenum #4, passed onto filter housing #1 and #2 and released to the atmosphere through the final PR exhaust system.

Figure 17 represents the cascade concept for ventilation in the PR Room. Air flows from the Q-Cell through the corner of the PR Room and into the PR Corridor. Both doors have been secure open or removed. Only a portion of the room is actively ventilated. The PR Room exhaust has been valved out at the filter housing in the Sample Gallery. After being surveyed the filters for the PR Room exhaust were found to have an acceptable source term and were left in place. Inlets to the gloveboxes, and hoods have been sealed. The PR Room exhaust system continues into the Sample Gallery where it passes through multiple filters and is then exhausted to the atmosphere via the PR exhaust fans. There is also a tie-in into the Sample Gallery Hood exhaust system.

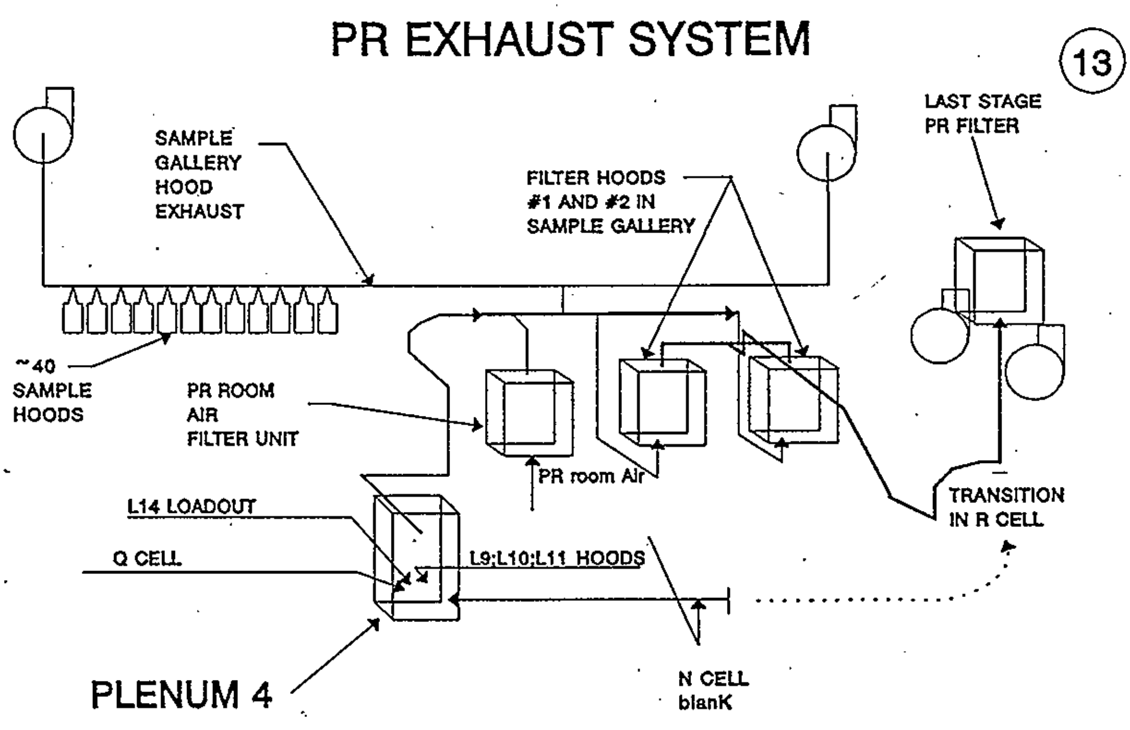


Figure 16, PR Exhaust System

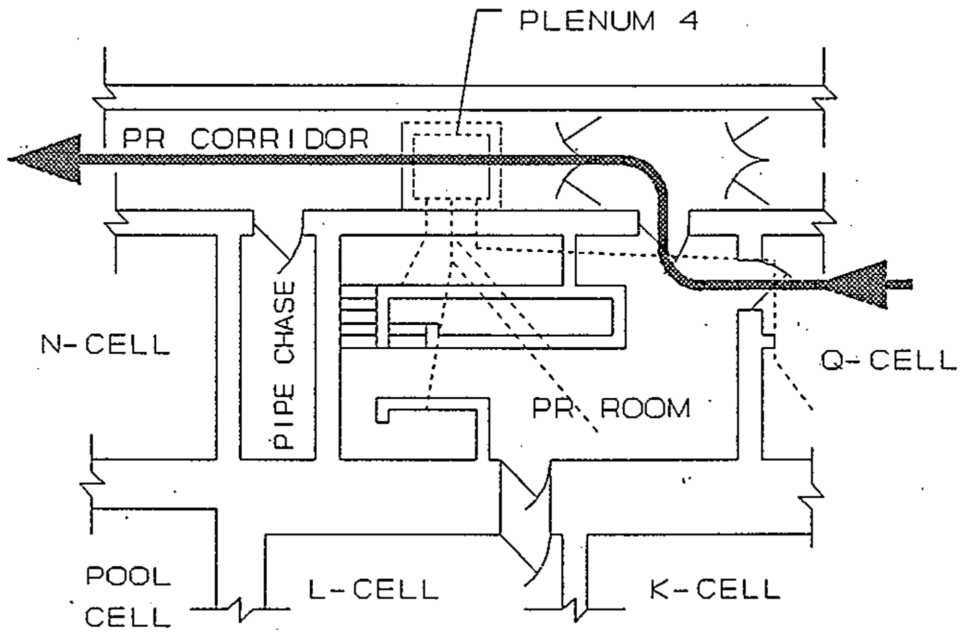


Figure 17, General PR Room Cascade Flow Path

6.1.5.1 Blank PR Supply (Sample Gallery)

The PR Room supply duct originated in the Process Blower Room and passes through the Sample Gallery into the PR Room. See Figure 14. The PR supply duct has been blanked in the Sample Gallery north wall near column 5. See Figure 18. See Work Control Package 2A-95-00364.

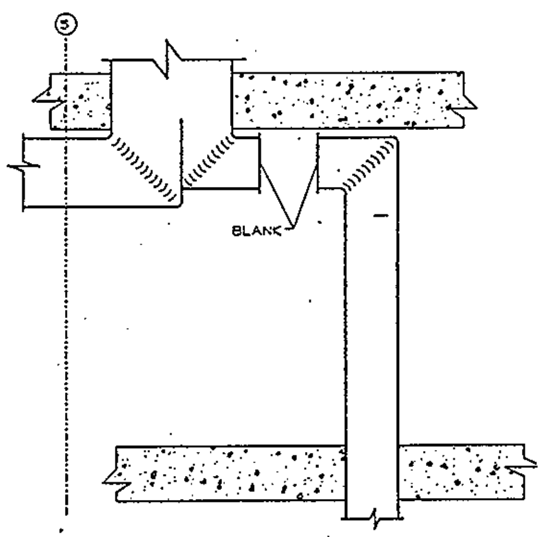


Figure 18, Blank PR Room Supply

6.1.5.2 BLANK PR DUCTS ENTERING PLENUM 4

Exhaust ducts from the L9, L10, L11, L14, Load-out hoods and Q-Cell room enter Plenum 4, in the PR Room (refer to Figure 16 and 17). Valves leading into Plenum #4 have been closed and secured in place. In addition a "pancake" like blank was installed to help control pressure the N-Cell and PR Room glove boxes. See Work Control Package 2A-95-00480.

6.1.5.3 PLENUM 4

Plenum #4 is a concrete box on the outside of the building just below the maintenance annex. See Figure 17. Sources entering the Plenum have been Blanked or secured. The cross-tie between the PR system and the Sample Gallery Hood Exhaust has been opened. As the air within the system expands and contracts with the temperature cycles, the air movement is to and from the Sample Gallery Hood Exhaust duct.

6.1.5.4 PR FAN DEACTIVATION/DECONTAMINATION (OUTSIDE)

The PR fan is located outside of the 202A structure, next to the R-Cell cover blocks. Valves MV-V21-6-3 and MV-V21-6-3A have been closed. Filters within FH-V21-1 and FH-V21-1A have been removed. Flexible joints in the system have been removed and blanks installed on both sides. A cap has been placed on the top of the stack and secured. See Work Control Package 2A-95-00478.

6.1.5.5 Foam PR Duct to Filter Box 1 & 2 and line to R-Cell

Opening the inter-tie between the PR exhaust duct and the Sample Gallery Hood exhaust duct eliminates the need for this task.

6.1.5.6 Stabilize Sample Gallery Filter Box 1 & 2

Opening the inter-tie between the PR exhaust duct and the Sample Gallery Hood exhaust duct eliminates the need for this task.

6.1.6 N-Cell Modifications

Air was provided to N-cell through supply system #2, refer to Figure 14. The hoods and gloveboxes where exhausted by a link to the PR Room Exhaust system passing through R-Cell, see Figure 16. The room exhaust consisted of a series of ducts throughout both levels of the N-Cell with a HEPA filter unit on the catwalk in the Hot Shop Lobby. Eventual the room exhaust was spend through the West Sample Gallery Room Exhaust Fan (EGW).

In the cascaded system, air is drawn out of the PR Corridor and through the lower level control room, and move up along the Gloveboxes. The craneway door between the upper level of N-Cell and the Hot Shop Lobby have been opened, providing a path into the Hot Shop Lobby. The cascade flow path for the N-Cell is shown in Figure 22.

The hoods and gloveboxes have been decontaminated and sealed. Values and blanks were used to isolate the glovebox ventilation system. The vessel vent, and criticality drain systems have been configured to connect the gloveboxes and hood with the pressure in L-Cell and the air tunnel. This allows the gloveboxes and hoods to maintain a slightly lower pressure that the N-Cell Room. The N-Cell Room Exhaust is depicted in Figure 19 and has been sealed as shown.

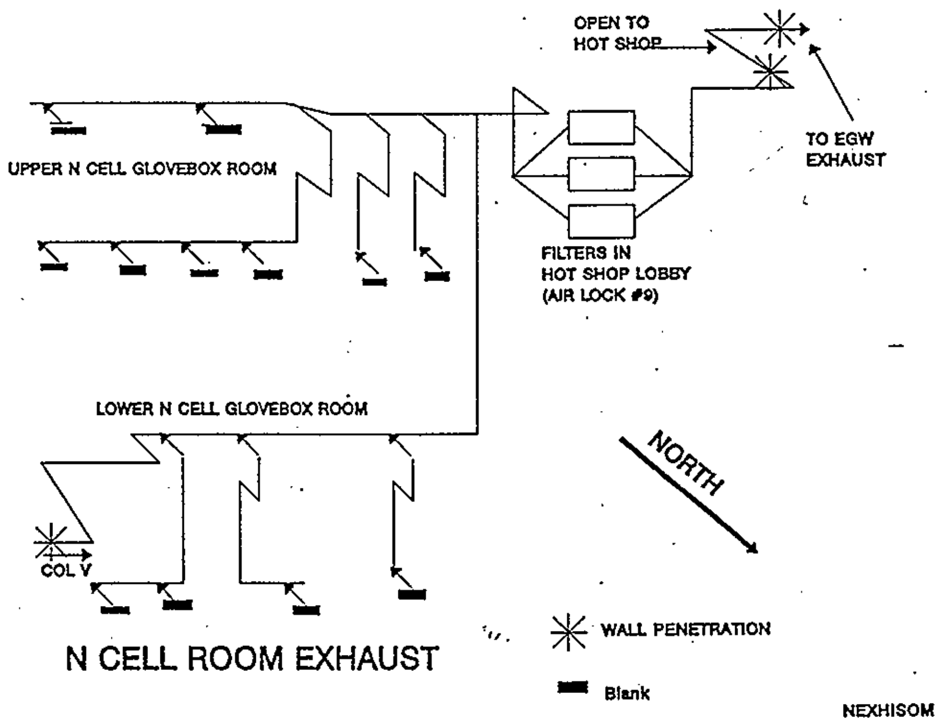


Figure 19, N-Cell Room Exhaust

6.1.6.1 BLANK N SUPPLY (SAMPLE GALLERY)

Supply System #2 provided air to the N-Cell. The duct passed through the Sample Gallery, see Figure 14. This duct has been blanked in the Sample Gallery. A section of duct was removed and both ends blanked, as shown in Figure 20. By blanking both sides the layers of the building can be isolated. See Work Control Package 2A-95-363 and 2A-95-00367.

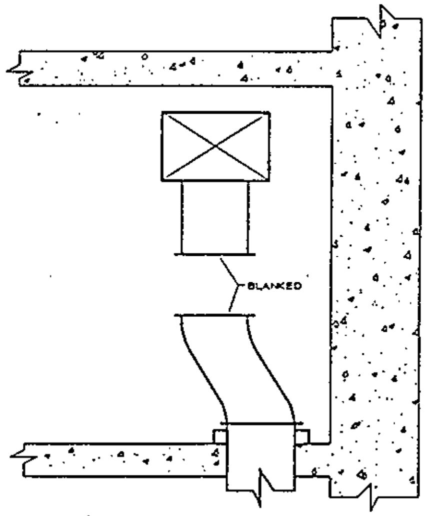


Figure 20, N-Cell Supply Duct

6.1.6.2 BLANK N HOOD EXHAUST IN R-Cell

The exhaust from the N-Cell hoods passes through the north 202A wall and into R-Cell and from there routed into the bottom of Plenum #4. Valves have been configured to seal off the ventilation at each hood and glovebox.

6.1.6.3 BLANK N ROOM EXHAUST/CLEAN-OUT

The N-Cell room exhaust system is presented in Figure 19. Exhaust air was collected from an array of duct work ranging throughout the N-Cell room, ending up in the filter housings (FH-V21-10,11,12) located in the Hot Shop Lobby catwalk. Test ports at or around the inlet side of the filters have been sealed. The filters were surveyed and left in place. The air within the system will expand and contract, due to temperature changes, through these filters. See Work Control Package 2A-95-00369 and 2A-95-00432.

6.1.6.4 ISOLATE N ROOM EXHAUST PORTS

There are numerous grills and test ports on the upper and lower N-Cell room exhaust ducting. The large volume of air within the ducting breaths as the temperature cycles. All inlet port and grills to the room exhaust ducting, have been blanked and/or sealed. This allows the volume of air in the system to breath through the HEPA filter. See Work Control Package 2A-95-00369.

6.1.7 Hot Shop Lobby Modifications (Airlock #9)

Figure 22, illustrates the flow path for the Hot Shop Lobby, Hot Shop and M-Cell areas. The over head crane way between the upper level of N-Cell and the Hot Shop Lobby that has been secured. A control damper and flow straightening device has been installed in the door between the Hot Shop Lobby and the Hot Shop. See Figure 21. This device controls the volume of air flow through the 673' level. By restricting the volume at this point, the pressure difference between this level and the atmosphere can be controlled. An air lock has also been installed in the door to the Hot Shop. See Work Control Package 2A-96-00007.

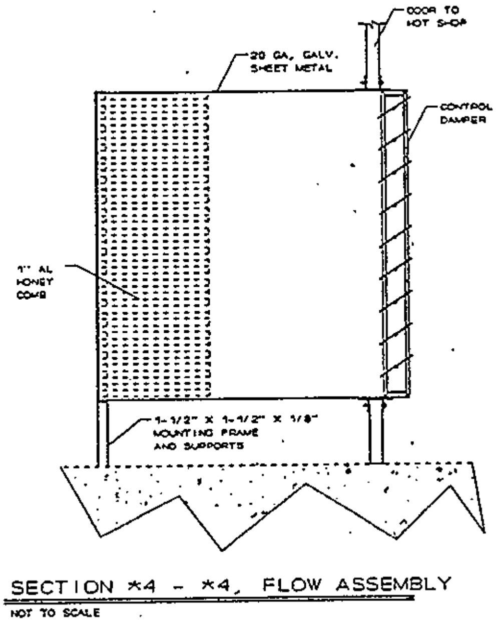


Figure 21, Flow Control Device

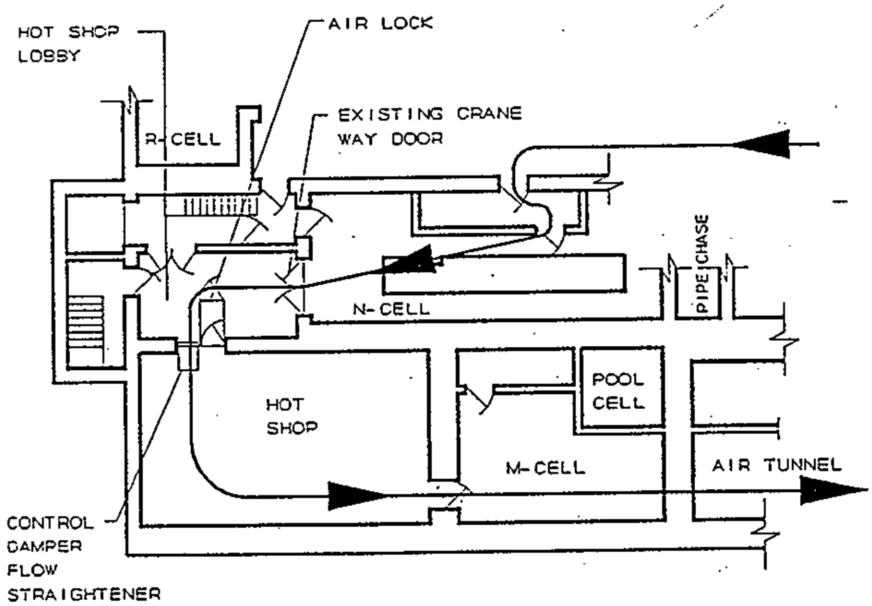


Figure 22, Ventilation Flow Path, East end 673' Elevation

6.1.8 Hot Shop Modification, Remove Elbow

6.1.8.1 Hot Shop Supply

Air supplied to the Hot Shop was part of Supply System #1, as shown in Figure 24. A large duct exits the Process Blower Room through the ceiling, and extends to the 202A structure roof. The duct then divides, reenters the building and runs east and west along the Crane Cab Gallery. At the west end of the building the duct traverses the West Crane Maintenance Platform and passes through the floor into a storage room off the Canyon Lobby, into the Sample Gallery, and finally into the Hot Shop. To maintain the pressure zones within the building these levels have been isolated. The duct has been blanked in two places as shown in Figure 23. See Work Control Package 2A-95-00420 and 2A-96-00135.

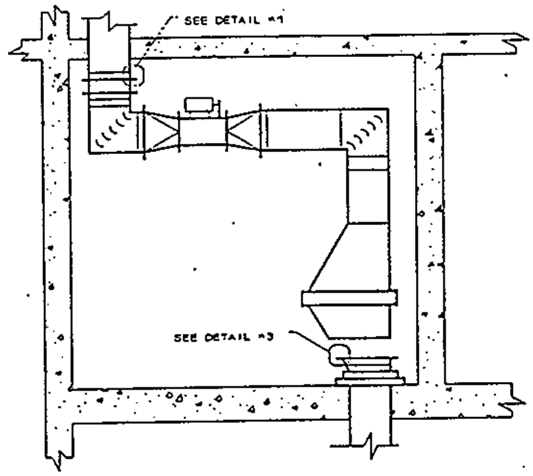


Figure 23, Hot Shop Supply Blank

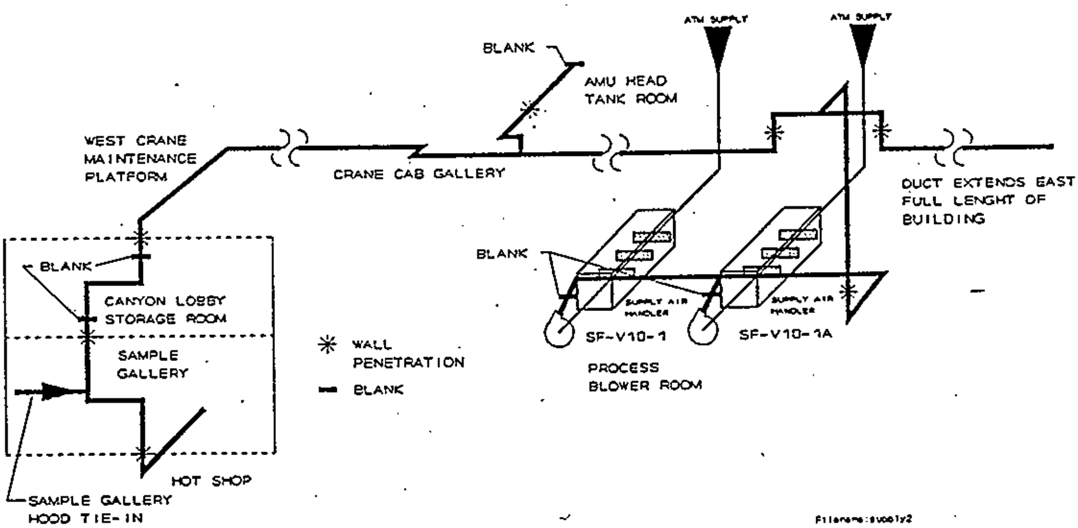


Figure 24, System #1, Supply Ducting Schematic

6.1.8.2 Remove Elbow

The N-Cell room exhaust header passes through filter housing FH-V21-10,11,12 located on the catwalk in the Hot Shop Lobby. The duct continues through the wall between the Hot Shop Lobby and the Hot Shop, and then made a 90 degree turn into Plenum #2. See Figure 25. This Elbow has been removed, indirectly connecting the air space within R-Cell to the space within the Hot Shop. This maintains a pressure in R-Cell slightly lower than atmospheric pressure. For a discussion of the R-Cell modification, see later section. Figure 26 shows the duct modifications. See Work Control Package 2A-95-00363.

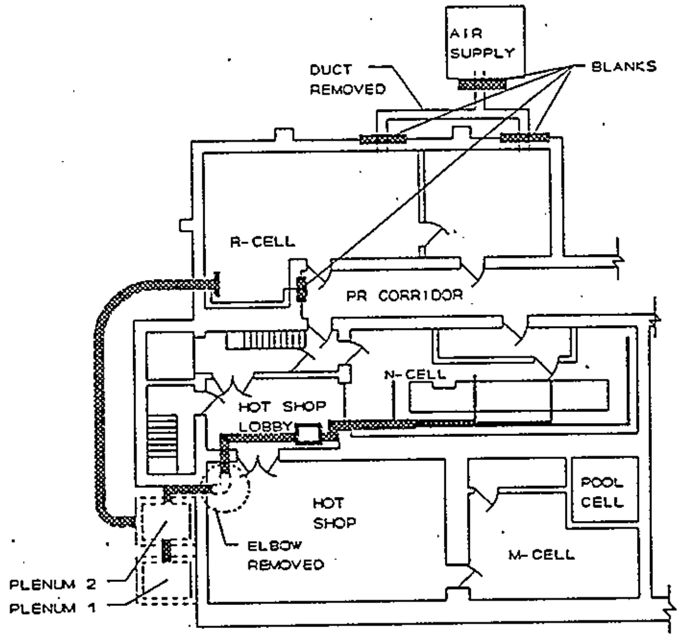


Figure 25, Remove Elbow in Hot Shop

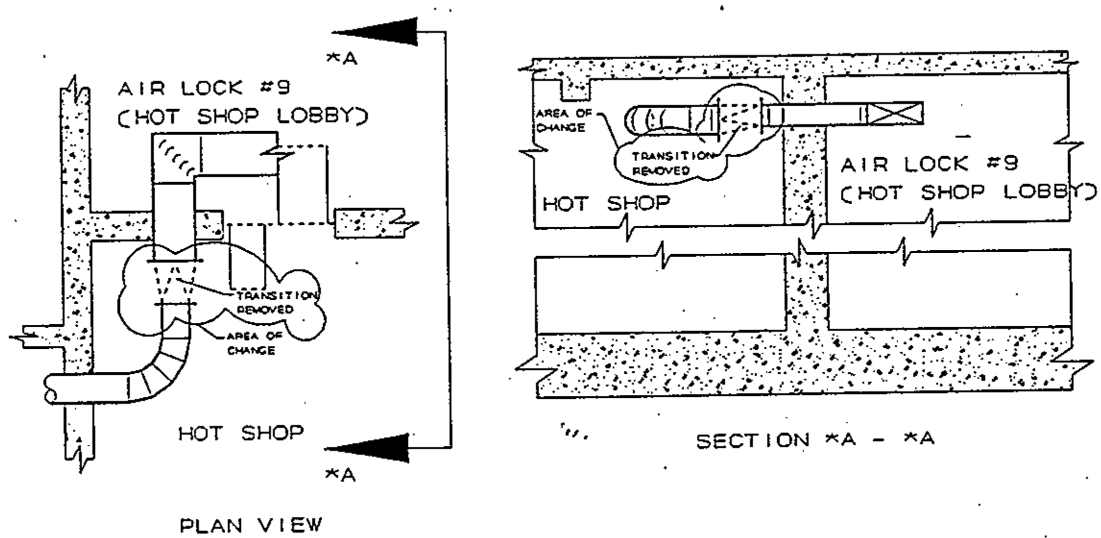


Figure 26, Hot Shop Elbow Modifications

6.1.9 M-Cell Cover Block, Install and Seal

The ceiling in M-Cell is a series of cover blocks that open to the canyon. If there were significant leakage around these blocks, the pressure in the M-Cell and Hot Shop areas would closely follow the Canyon. The pressure within the air tunnel is lower than that of the Canyon. There were concerns as to weather canyon pressure would be enough motive force to ventilate the complete 673' level. Measurements made after the switch-over of the 673' level to the cascade ventilation system, show that the leaks around the cover blocks are acceptable, no further action is required.

6.1.10 Canyon Lobby Supply/Exhaust Blank

Exhaust air from the Canyon Lobby connects to plenum #2 at the west end of the 202A canyon building, see Figure 27. Supply air to the Canyon Lobby was provided by supply system #2, see Figure 14. By adding blanks as shown in Figure 28, the pressure zones within the building are maintained. Other input to plenum #2 include the West Sample Gallery Room Exhaust, R-Cell Exhaust, and the N-Cell Room Exhaust. The pathways from the Canyon Lobby and the Sample Gallery into the Hot Shop has been blanked. Figure 28 displays the blank placement for both the supply and exhaust to the Canyon Lobby. The West Sample Gallery Room exhaust has been blanked at the wall of the Sample Gallery. See Work Control Package 2A-95-00420 and 2A-96-00135.

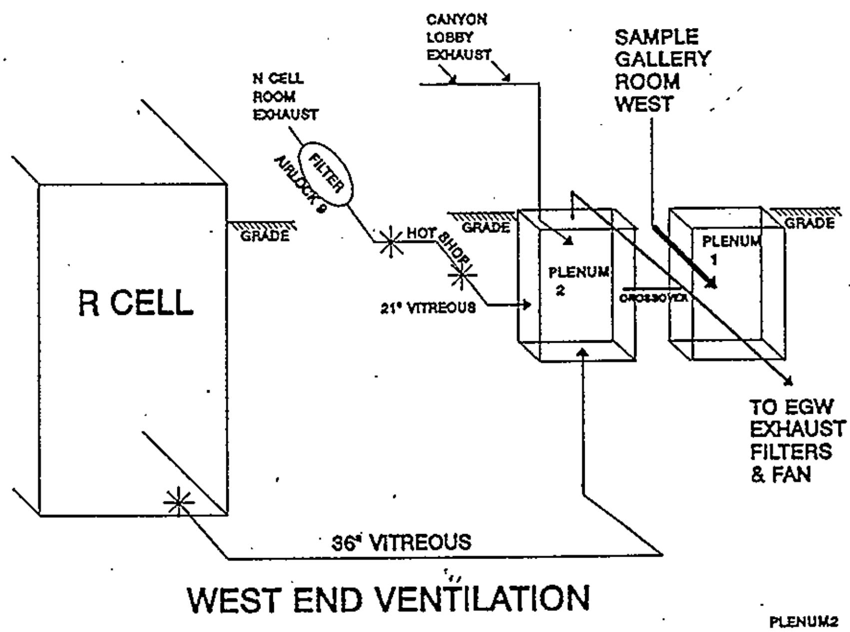


Figure 27, West End Ventilation

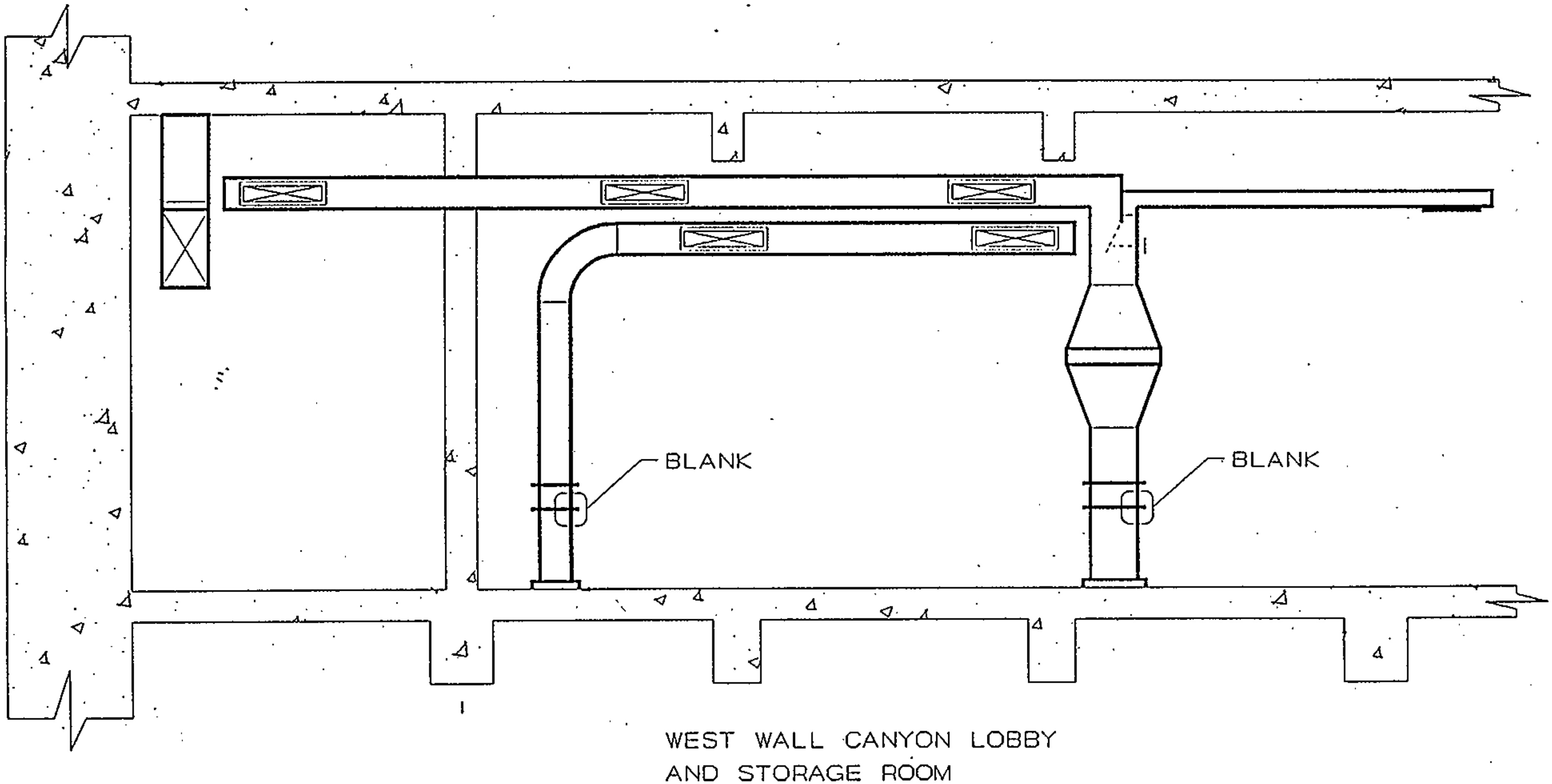


Figure 28. Canyon Lobby Ventilation Blanks

6.2 HVAC Modification, Sample Gallery Level, 700' Elevation

AREAS:
Sample Gallery level, Stairway at Column 1 and 42, Sample Gallery Hood Exhaust Duct.

DESCRIPTION:
Air from the environment is pulled into the Process/Service Blower Rooms through the existing supply air handlers for systems #1, #2, and #3. Within the blower room a supply ducts has been opened to provide a flow path to the Sample Gallery. The ducting within the Sample Gallery have been opened near the entry point (≈ column 22, 23), releasing air into the room. See Figure 14. Air flows east and west from this point. On the west end, the stairway at Column 1 has been used to move the air into the Crane Cab Gallery. On the east end, the stairway at column 42 has been used. Doors at the top of each stairway are used to regulate flow. From the Crane Cab Gallery the air moves through the canyon and into the air tunnel, and be exhausted to the environment through the final canyon filtration system. Figure 29, below represents the general flow path for the Sample Gallery level. Four fans were taken out of service on this level, the West and East Sample Gallery Room exhausts and the West and East Sample Gallery Hood exhausts.

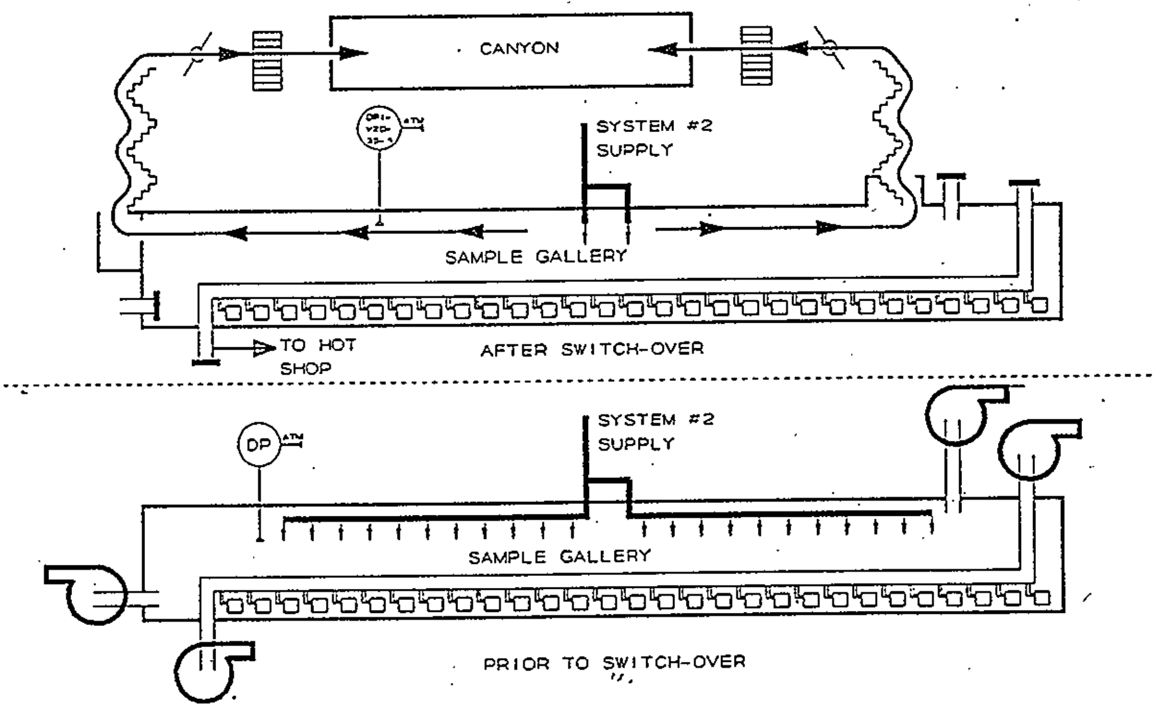


Figure 29, Sample Gallery Level Ventilation

6.2.1 Supply Duct Modification, 700' Level

Air is pulled through the supply fans air handlers for systems #1, #2 and #3, into the Process/Service Blower Rooms. Existing supply ducting has been opened in the south west corner of the Process Blower Room to open a path way to the Sample Gallery, see Figure 30. Ducting within the Sample Gallery has been opened, near the entry point, releasing air into the room, at approximately column 22. See Figure 14, for the system #2 supply ducting schematic and opening locations. See Work Control Package 2A-95-00421.

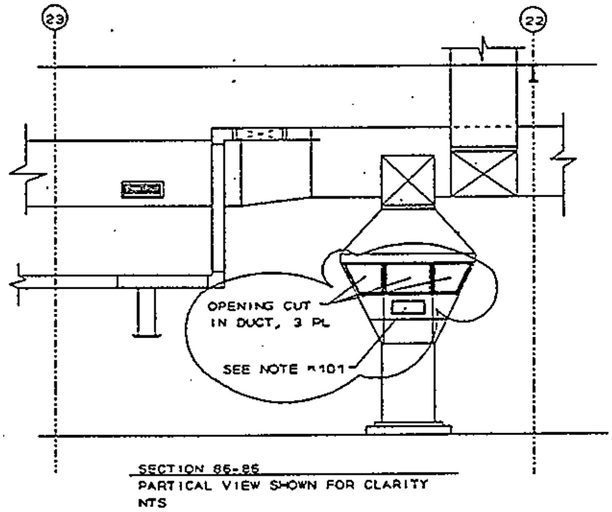


Figure 30, Duct Openings, Process Blower Room to Sample Gallery.

6.2.2 Column 1 : Column 42 Stairwell Modifications

Stairways at Column 1 and Column 42 are used as ducts to provide a pathway for ventilation air from the Sample Gallery into the Crane Cab Gallery. For typical configuration, see Figure 31. A door at the top of each stairway has been modified to be used as a flow control device, see Figure 32. At the interface between the Canyon and the top of each stairwell a flow straightener has been installed, a block of aluminum honey comb. The purpose of this flow straightener is to promote laminar flow into the canyon, see Figure 33. A coating of PBS has been placed within a ten foot radius of the interface to allow any contamination spread to be monitored. See Work Control Package 2A-96-00008.

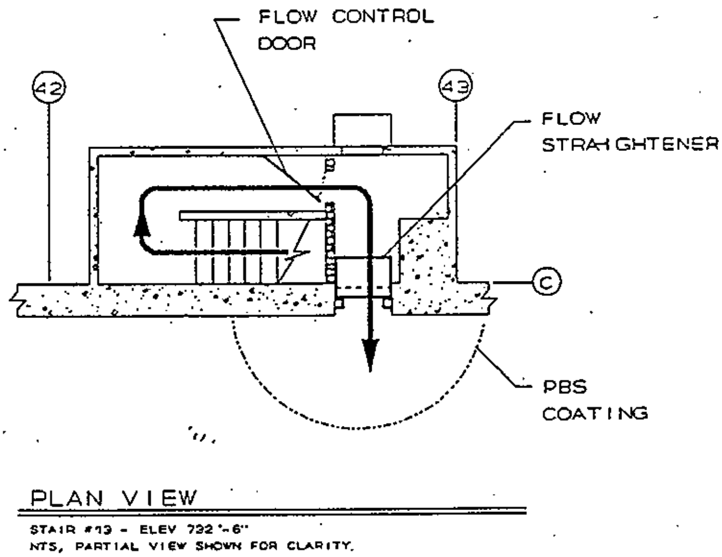


Figure 31, General Configuration Stairways Column 1 and 42

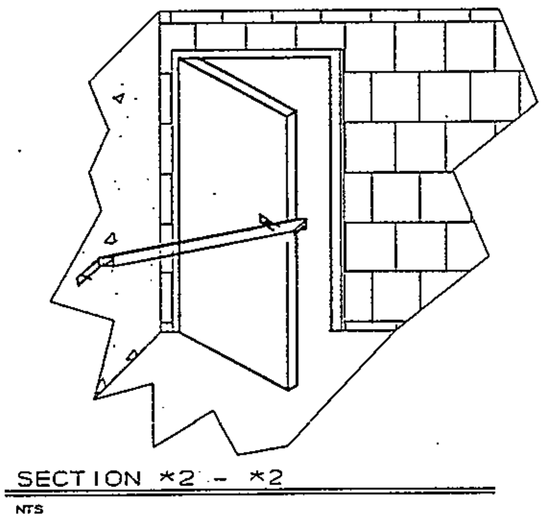


Figure 32, Control Door Detail Typical

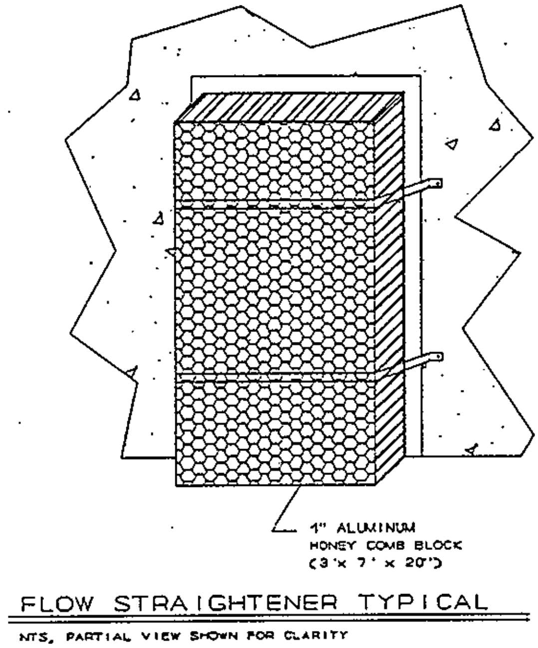


Figure 33, Typical Flow Straightener

6.2.3 Isolate Sample Gallery

The Sample Gallery has several openings that have been sealed to reduce ventilation communication between levels. Some of these connections or openings include, the Dumb Waiter to the Labs, The doorway to R-Cell and U-Cell, the Doorway to the AMU basement, elevator shafts, etc... See Work Control Package 2A-95-00431.

6.2.4 Fix Sample Gallery Hood Exhaust Duct

The Sample Gallery Hood exhaust duct runs the full length of the Sample Gallery. The duct is mounted close to the ceiling and exhausts all sampling hoods in the gallery. Both ends of the duct were filtered and exhausted. A simplified version is shown in, Figure 29. The West and East Sample Gallery Hood Exhaust Fan systems have been blanked outside the building. The duct within the Sample Gallery is known to be contaminated. Each joint in the duct has been coated with PBS. All known cracks and openings in the samplers and ducts has been sealed with RTV and/or tape. The cross tie between the Sample Gallery Hood duct and the PR Exhaust system has been opened, see Figure 16. A small duct has been installed connecting the west end of the Hood exhaust to the Hot Shop Supply duct, see Figure 34. The Hot Shop has a sightly lower pressure than the Sample Gallery. This allows air within the samplers, to communicate with the Hot Shop. See Work Control Package 2A-96-00128.

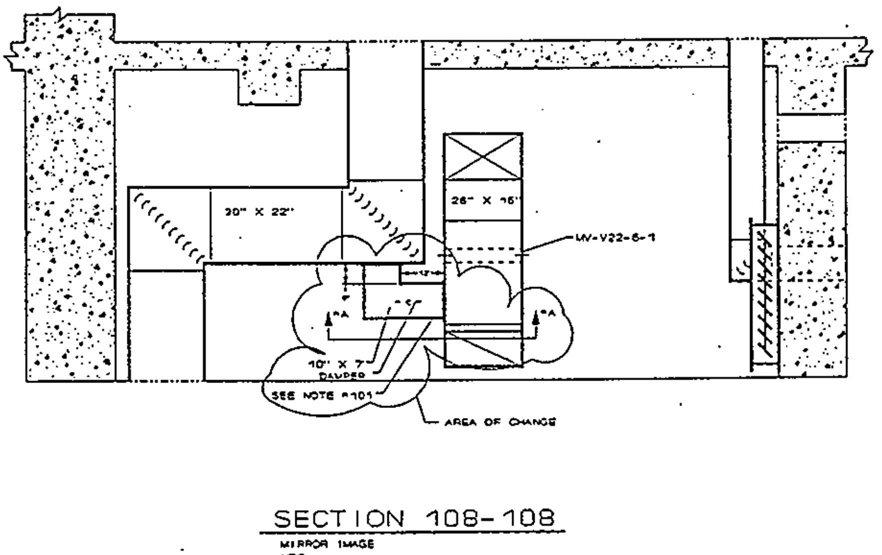
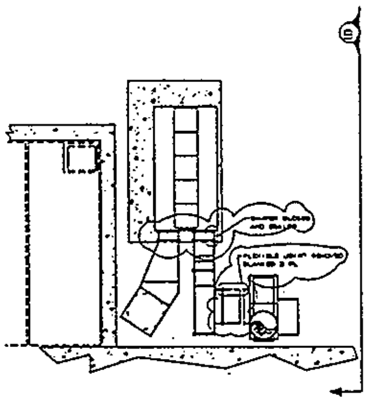


Figure 34, Sample Gallery Hood Exhaust to Hot Shop Tie.

6.2.5 East Sample Gallery Room Exhaust

The fan has been taken out of service. The motor has been electrically isolated. The filters have been left in place. The flexible joints have been removed. Blanks have been inserted in the system at the exit of the filter, and the inlet and outlet of the fan. The dampers have been closed and left in place. A cap has been placed on the stack. Refer to Figure 35, work control packages 2A-95-00426 and 2A-97-00001 for details.



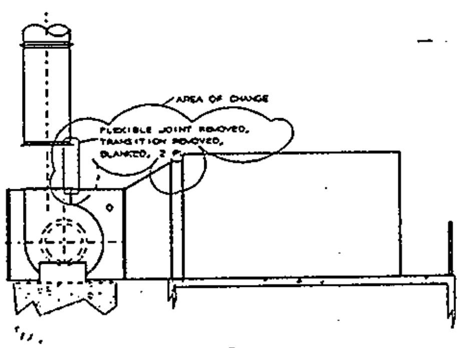


Figure 35, East Sample Gallery Room Exhaust, Fan Deactivation

6.2.6 West Sample Gallery Room Exhaust

The fan has been taken out of service. The motor has been electrically isolated. The duct exiting the building has been blanked inside the Sample Gallery. The filters have been left in place. The flexible joints have been removed. Blanks have also been inserted in the system at the outlet of the filter, and the inlet and outlet of the fan. The dampers have been closed and left in place. A cap has been placed on the stack. Refer to Figure 36 and 37, Work Control Packages 2A-95-00428 and 2A-97-00001.

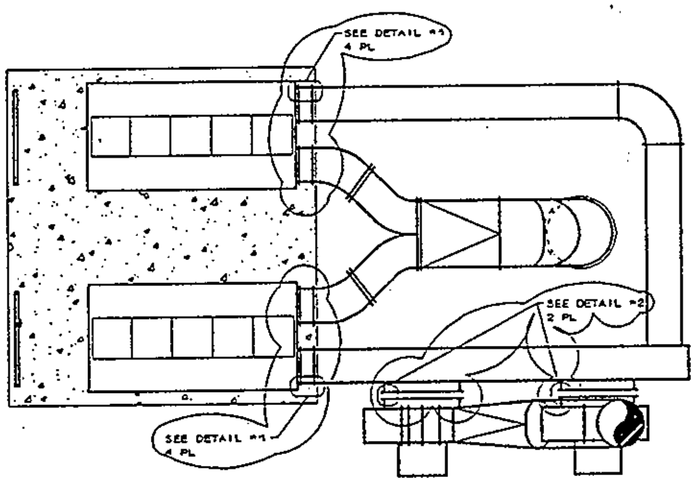


Figure 36, West Sample Gallery Room Exhaust

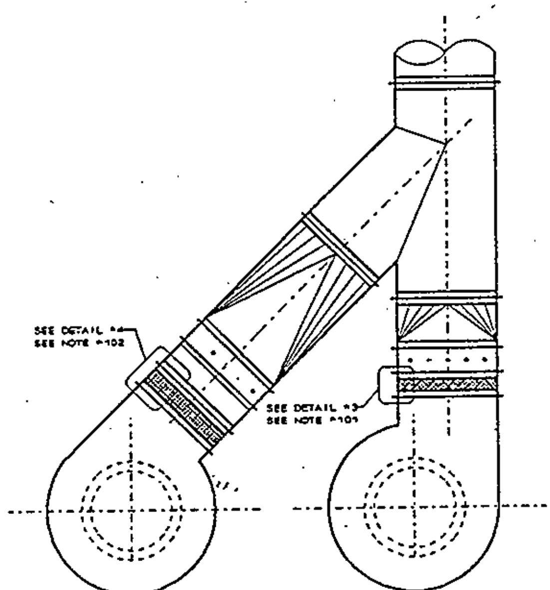


Figure 37, West Sample Gallery Room Exhaust

6.2.7 East Sample Gallery Hood Exhaust

The fan has been taken out of service, the motor has been electrically isolated. The filters have been left in place. The flexible joints have been removed. Blanks have been inserted in the system at the outlet of the filter, and the inlet and outlet of the fan. The dampers have been closed and left in place. The stack is badly corroded. The sections above roof level has been removed and a cap has been installed, see Figure 38. See Work Control Package 2A-95-00427 and 2A-97-00001.

6.2.8 West Sample Gallery Hood Exhaust

The fan has been taken out of service, the motor has been electrically isolated. The filter was surveyed and left in place. The flexible joints have been removed. Blanks have been inserted in the system at the exit of the filter, and the inlet and outlet of the fan. The dampers have been closed and left in place. The stack has been capped. See Work Control Package 2A-95-00429 and 2A-97-00001.

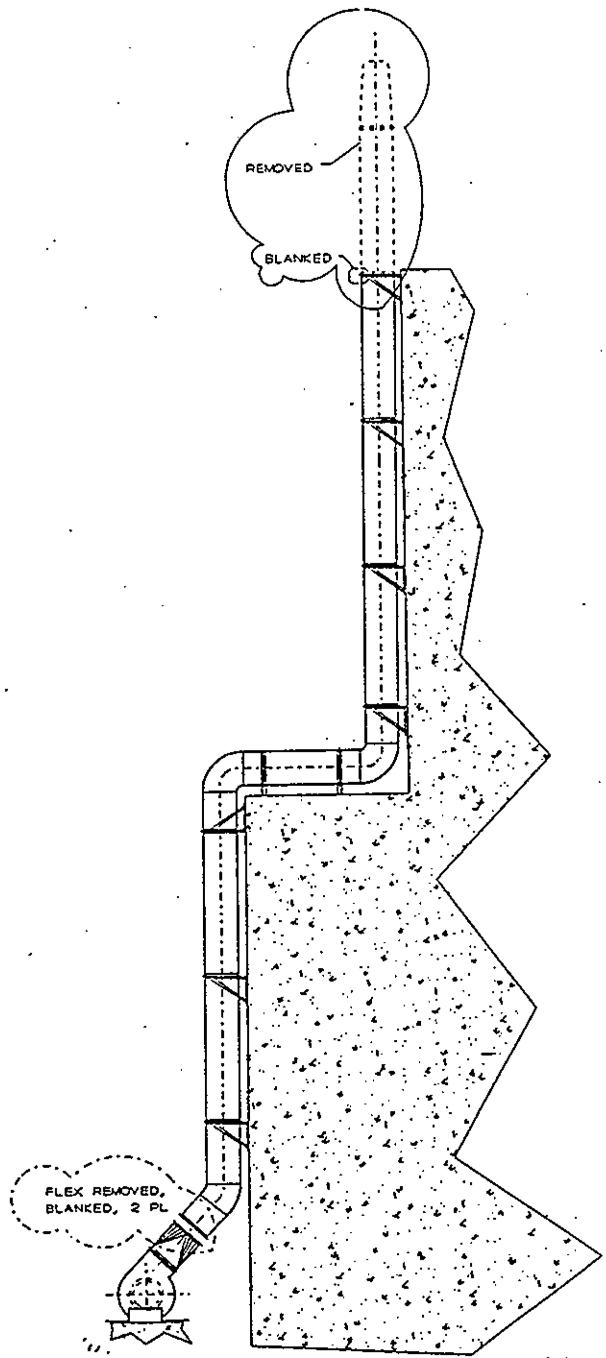


Figure 38, East Sample Gallery Hood Exhaust

6.3 HVAC Modification P&O Gallery, 712' Elevation

AREAS:
P&O Gallery, White Room, Canyon Lobby, ECMP

DESCRIPTION:
Air is drawn into the Service\Process Blower Room through the existing supply air handling units for systems #1, #2, and #3. Openings have been made in existing duct work to provide a flow path from the blower room into the P&O Gallery. Air is dumped into the room and drawn east and west. The west end of the P&O Gallery is ventilated by drawing air through the White Room across the Canyon Lobby, through the air lock and into the PUREX main Canyon. The east end of the P&O Gallery is ventilated through existing ECMP duct work. Supply ducting to the ECMP have been opened to provide a pathway. The three shield doors between the Canyon and the ECMP remain open. Figure 39 shows the P&O Level ventilation schematic. The White Room Exhaust system has been taken out of service along with the ECMP supply unit.

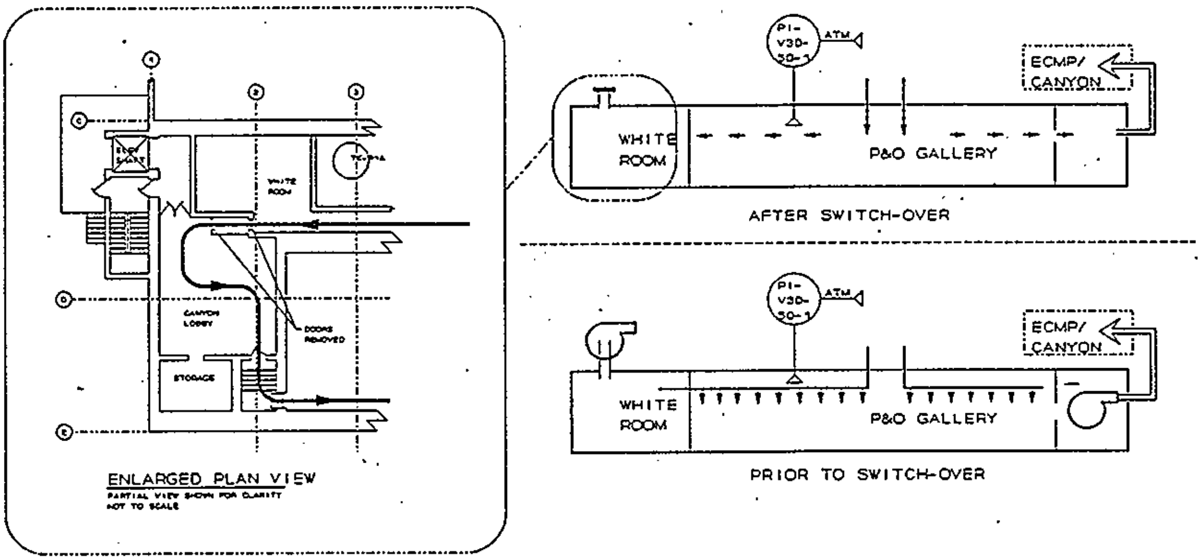


Figure 39, General Flow Path P&O Gallery, 712' level.

6.3.1 Supply Duct Modification, 712' Level

Air is being pulled through the supply fans air handlers into the Service/Process Blower Rooms. Openings have been made in existing supply duct to provide a path into the P&O Gallery, see Figure 40. The ducting within the Gallery has been opened near the entry point, releasing air into the room. Figure 7 and 40, display the locations of the duct openings. Air is simply dumped into the middle of the P&O Gallery and makes it way to each end. See Work Control Package 2A-95-00422 and 2A-96-00044.

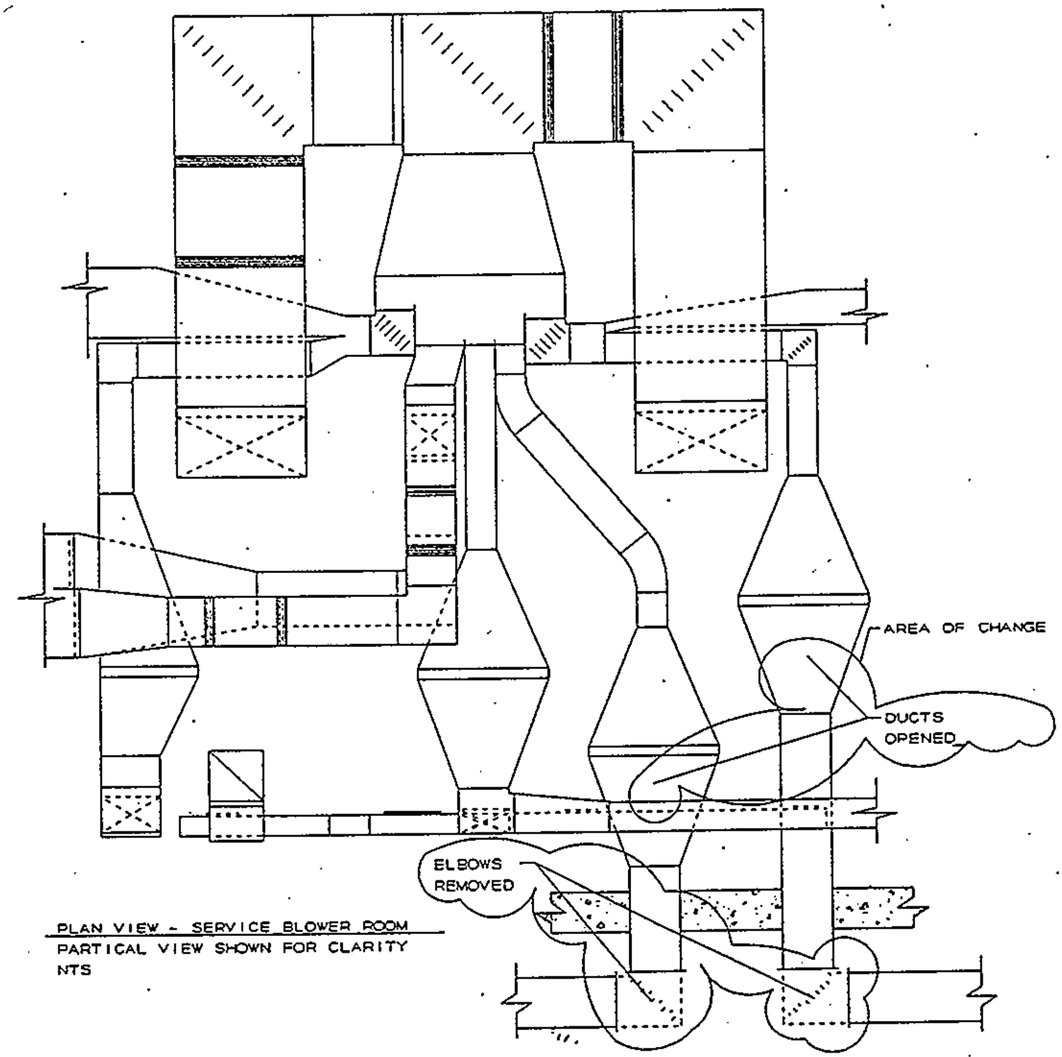


Figure 40, P&O Supply Duct Modifications

6.3.2 White Room Flow Diversion

The west end of the P&O Gallery is being ventilated by drawing air into the White Room across the Canyon Lobby, through the air lock and into the PUREX main Canyon, see Figure 41. The door to the air lock has been replaced with a flow control device, see Figure 32. The door to the canyon has been replaced with a flow straightening device, see Figure 33. The White Room Exhaust train has been taken out of service and is discussed in a later section. See Work Control Package 2A-96-00005 and 2A-95-00430.

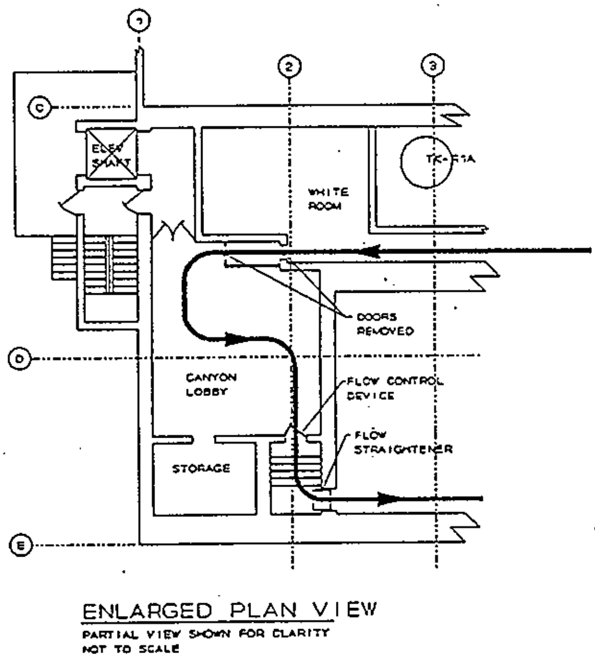


Figure 41, White Room Flow Diversion.

6.3.3 ECMP Flow Regulation

Figure 42, shows the ECMP ventilation schematic. Figure 43, presents the physical duct in relation to the building. In order to provide a flow path for the east end of the P&O Gallery into the PUREX canyon, the existing supply ducts has been modified at both levels. The supply duct has been opened at the P&O level, and the tee-section of the supply duct in the ECMP has been removed, see Figure 44. Air is drawn into the canyon from the east end of the P&O

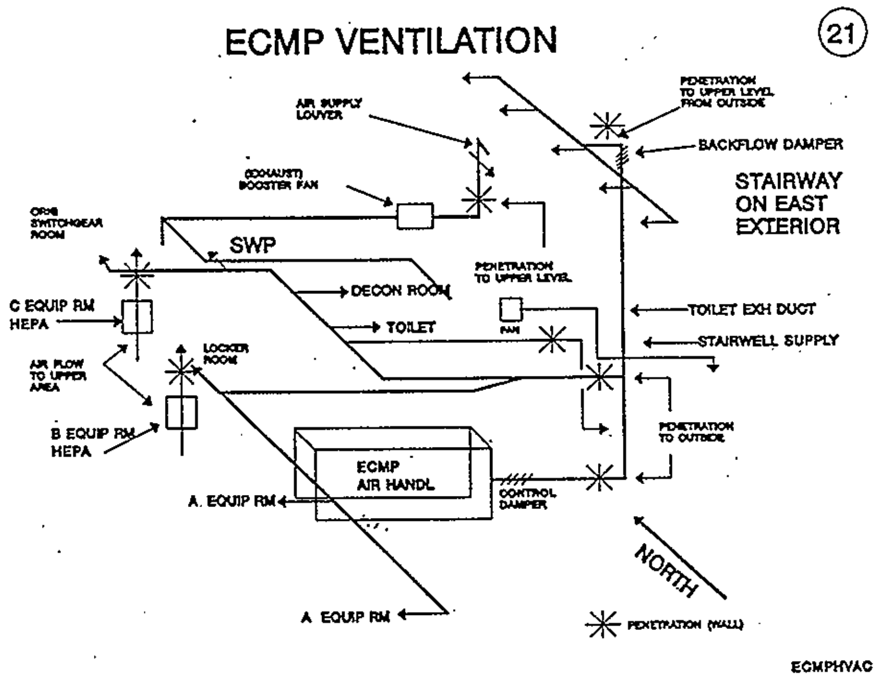


Figure 42, ECMP Ventilation Schematic

Gallery and into the ECMP. See Work Control Package 2A-95-00482 and 2A-96-00063.

6.3.4 ECMP Zone Isolation

There were discussions on weather the shield door "A", "B", and "C" ,in the ECMP, should be placed in the "closed" position. It was decided that the door would remain in the "open" position as shown in Figure 43.

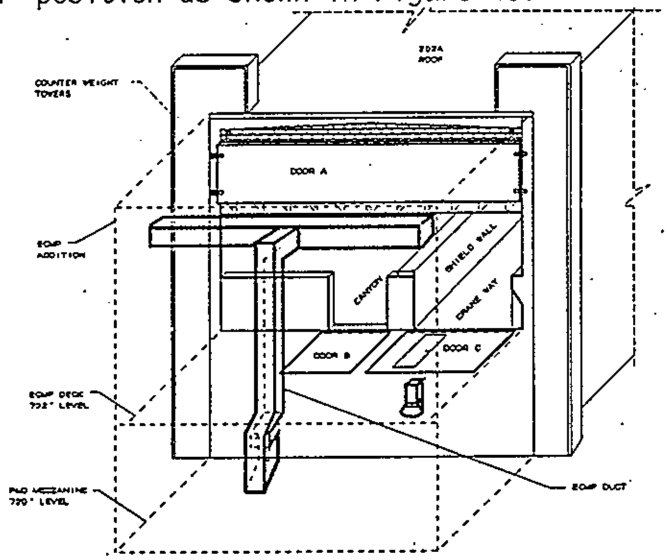


Figure 43, ECMP Duct Work

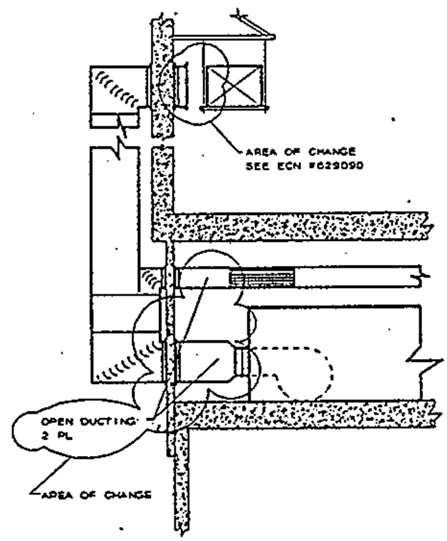


Figure 44, ECMP Duct Work Modifications

6.3.5 White Room Exhaust Fan

The White Room exhaust system has been taken out of service. A blank has been placed at the entrance of the exhaust duct within the White Room. Manual control valves MV-V31-5-3, MV-V31-5-4, MV-V31-5-5, MV-V31-5-6 and MV-V31-7-1 have been closed. The HEPA filter units FH-V31-3 and FH-V31-4 have been surveyed and the filters left in place. The flexible joints have been removed and blanked on both sides. The stack has been capped and the instrument lines have been taken out of service. Figure 45, is a schematic diagram of the changes made to this system.

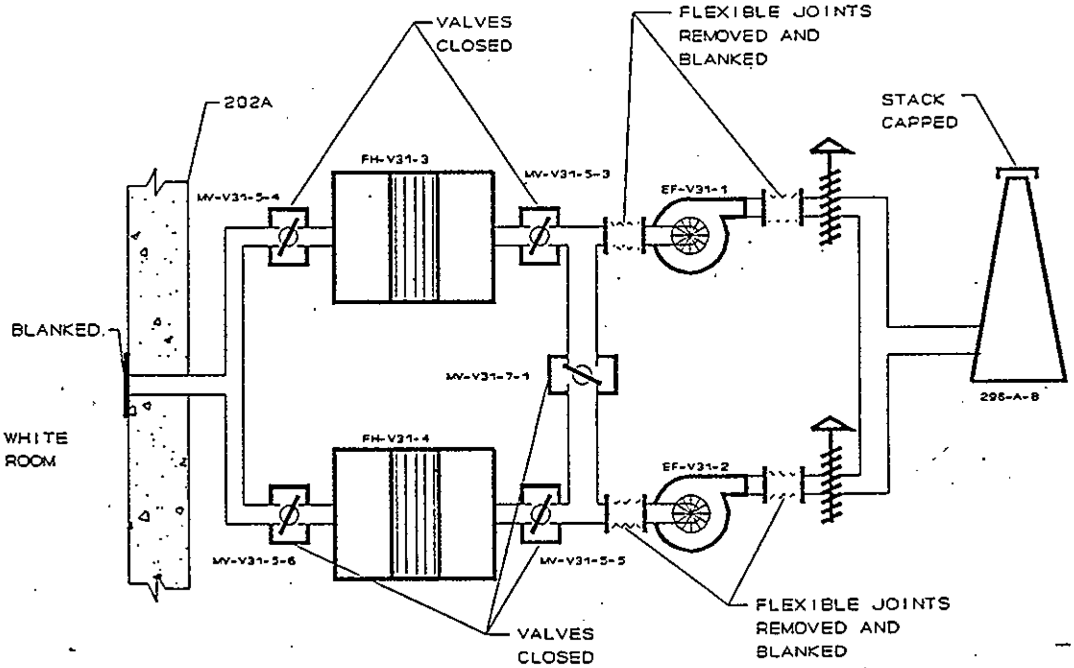


Figure 45, Schematic of White-Room Exhaust System

6.4 HVAC Modifications, R-Cell

AREA:
R-Cell, and PR Corridor

DESCRIPTION:
R-Cell is a concrete vault enclosure at the northwest corner of the building. The Ceiling of R-Cell is made up of cover blocks at approximately 5 feet above grade level. See Figure 46.

6.4.1 Seal Cover Blocks, R-Cell

This task is to ensure the seal of the R-Cell cover blocks, to guard against water and air intrusion. See Work Control Package 2A-95-00339.

6.4.2 Seal Off R-Cell Ventilation Supply

R-cell ventilation supply and has been sealed. The supply air handlers are blanked and currently out of service. Two large duct connect the supply air to the R-Cell as shown in the Figure 46 have been removed and the openings blanked. See Work Control Package 2A-95-00338.

6.4.3 Remove R-Cell Internal HVAC Filters

R-Cell exhaust ventilation connects to plenum 2, as shown in Figure 46, via an underground vitreous clay line. Potential pressure drops across this duct has been eliminated. Inside R-Cell the "rock stopper" filters have been removed. The small duct that exhausts the PR Corridor has been blanked. See Work Control Package 2A-95-00337.

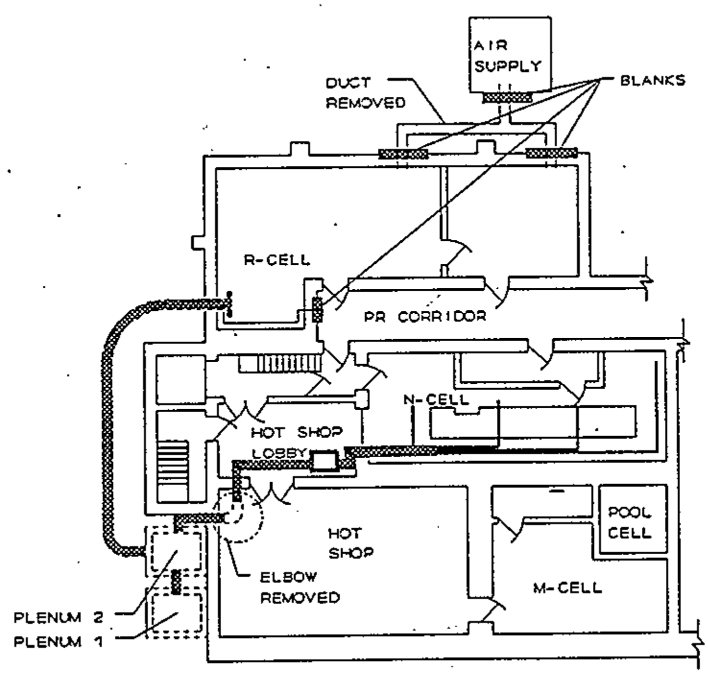


Figure 46, R-Cell VENTILATION

6.5 HVAC Modifications, U-Cell

AREA:
U-Cell, Fractionator

DESCRIPTION:
U-Cell is a concrete vault enclosure at the northeast corner of the building and is connected to the Fractionator Facility and the 202A structure. . The Ceiling of U-Cell is make up of cover blocks at approximately 1 feet above grade level.

6.5.1 Seal Cover Blocks, U-Cell

This task is to ensure the seal of the U-Cell cover blocks, to guard against water and air intrusion. See Work Control Package 2A-95-00419.

6.5.2 Seal Off U-Cell Ventilation Supply

A small air handling unit provided air into the Fractionator. Air was then drawn into the U-Cell through a hole in the wall. From the U-Cell, air was drawn into plenum #3 and out the East Sample Gallery Room Exhaust system. See Figure 48.

The supply air handling unit has been blanked. The inlet to the Fractionator has had a section of duct removed and both ends blanked, see Figure 47. This creates a stagnate condition within the Fractionator and U-Cell. See Work Control Package 2A-95-00336.

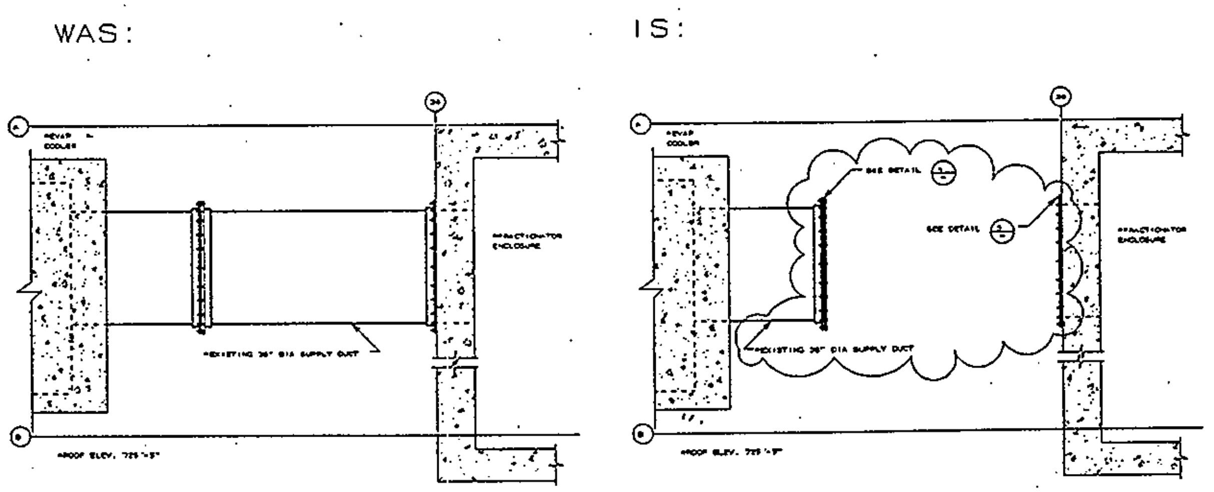


Figure 47, U-Cell Ventilation.

6.5.3 Remove U-Cell Internal Filters

U-Cell exhaust ventilation connects to plenum #3, as shown in the Figure 48. To ensure that the negative pressure in the Sample Gallery communicates with the pressure in the U-Cell and fractionator, the internal filters between the cell and the plenum have been removed. See Work Control Package 2A-95-00335.

6.5.4 Fractionator Ventilation

The supply duct to the Fractionator and U-Cell have been sealed. There is an opening between the U-Cell vault and the Fractionator. U-Cell is tied to the Sample Gallery through plenum #3. The pressure in the Sample Gallery is slightly less than that of the environment, and communicates with the pressure in the U-Cell and Fractionator. Due to small leaks in the structure, there is a slight amount of flow from the U-Cell and Fractionator area into the Sample Gallery. Within the Fractionator there are several sources of asbestos. To minimize the spread, a HEPA filter has been placed between the Sample Gallery and plenum #3. See Figure 48. See Work Control Package 2A-95-00483.

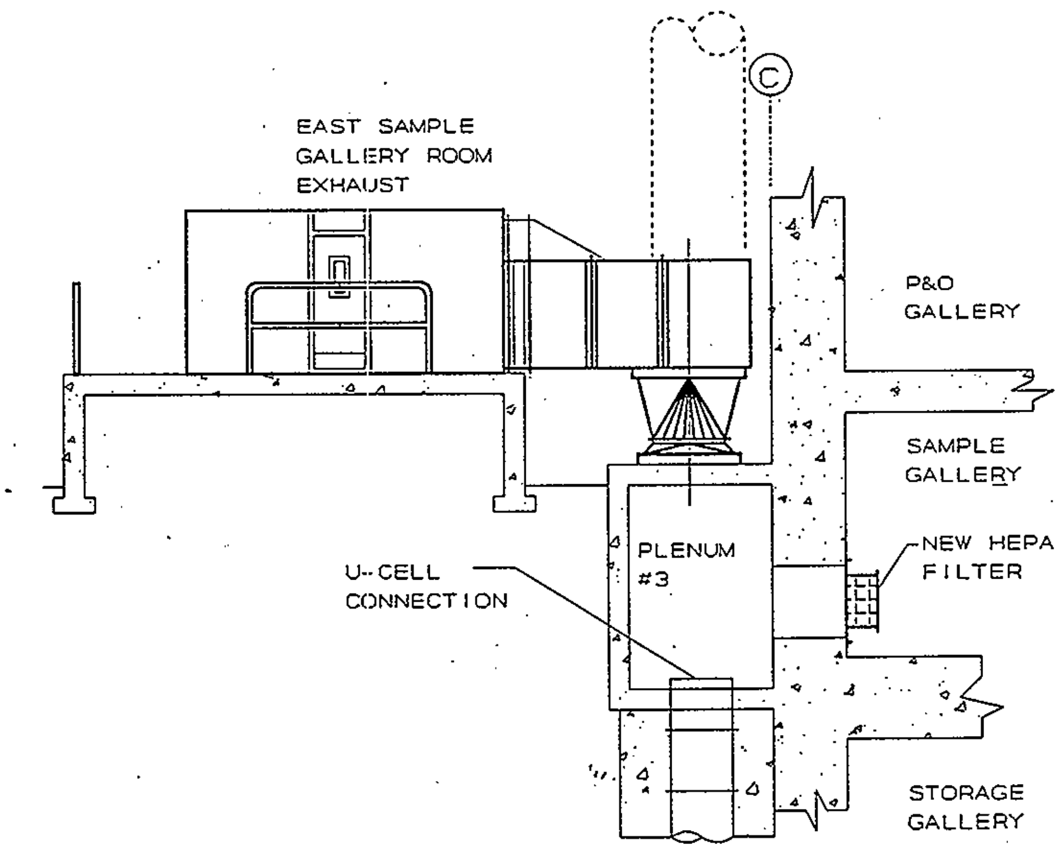


Figure 48, Fractionator Ventilation

6.6 HVAC Modifications Main Filters

AREA:
Deep Bed filter #1, #2, and #3, HEPA Filter #4.

DESCRIPTION:
Deep Bed filter #1 and #2 have a significant quantity of radioactive contamination deposited with in the filter depth. This potentially releasable contamination along with canyon inventory is the main basis behind a requirement for a very costly and complicated continuous air monitoring system. If the Deep Bed filters #1 can be removed from service, the potential for releases would be significantly reduced, and may reduce the requirement for a continuous air monitor. The final filter configuration for PUREX is shown in Figure 49.

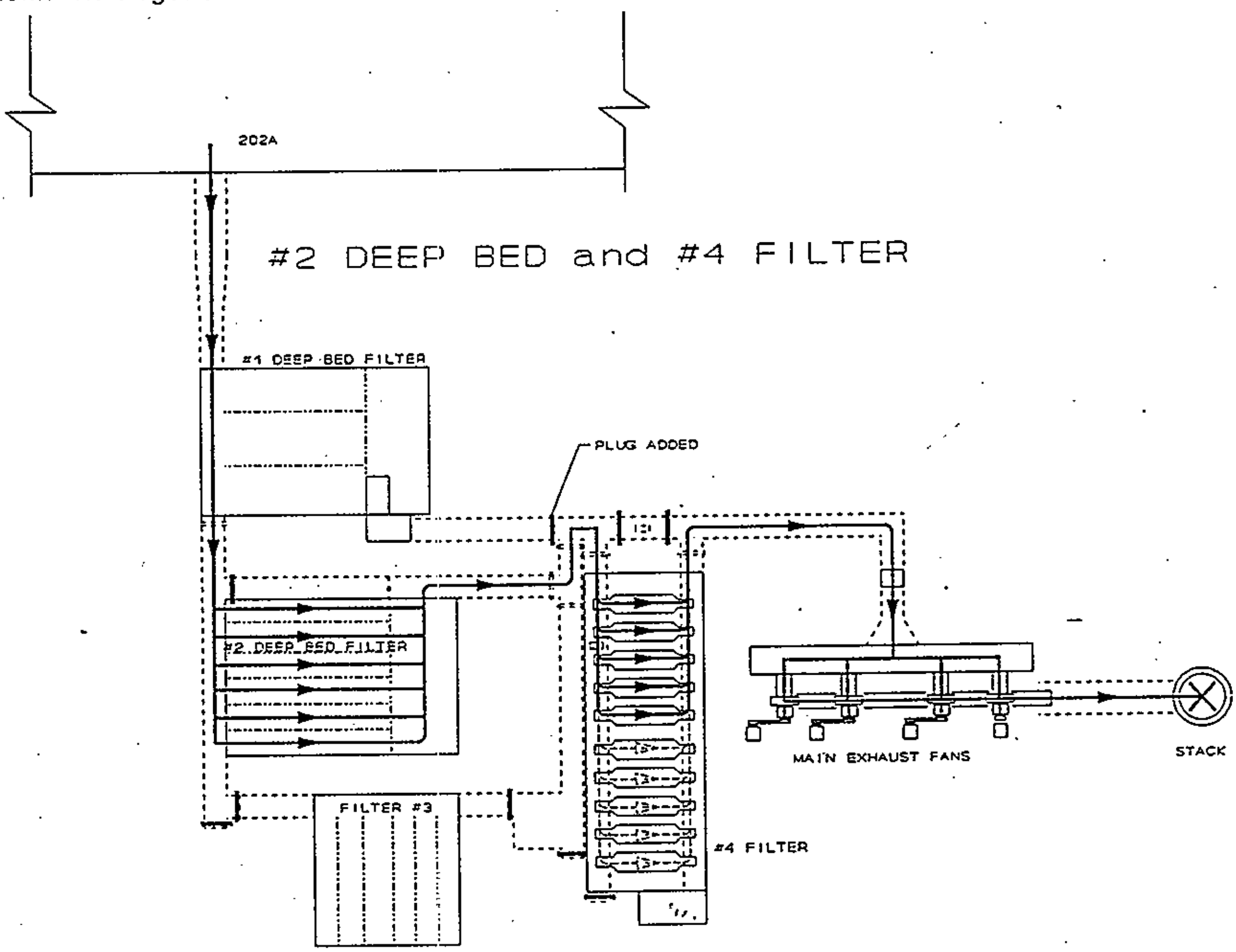


Figure 49, PUREX Final Filter Configuration

6.6.1 Provide Shutdown Air/Preheat Electrical Case

It was determined that no heat was required in the cascaded ventilation system, see reference 2.

6.6.2 Engineering Support Deactivation of #1 & #2, Design effort

The exact configuration of the final filtering system is shown in Figure 49. Deep Bed Filer #1 has been taken out of service, by placing a blank at the outlet of the filter. Deep Bed Filter #2 continues to act as a pre-filter for the 291-AE building or #4 HEPA Filter. Five of the ten HEPA filter unit within the #4 Filter System are in service. The remaining five units are in a standby condition, should moisture or dust loading be an issue. See Work Control Package 2A-96-00006.

6.6.3 Engineering Support, Convert #3 Filter, Design Effort

It was decided not to convert Filter #3 to a deep bed type design. The current design has never been in service and there are no filters loaded. There are no plans, at this time, to bring this filter on line.

6.7 HVAC Modification, Railroad Tunnel

AREAS:
Rail Road Tunnel, East End Storage Gallery, Storage Tunnel #1 and Storage Tunnel#2

DESCRIPTION:
In the past the Rail Road Tunnel has been supplied with tempered air from the East End Storage Gallery Exhaust Fan. (Refer drawing H-2-76952,53,54 and H-2-52305,326). The main railroad tunnel was exhausted by the leaks around the overhead railroad door into the canyon, approximately 13,000 cfm. Back-draft dampers in the tunnel would protect the tunnel from becoming over-pressurized should the exhaust to the canyon be interrupted. The supply, from the Storage Gallery, was introduced, into the rail road tunnel, between the two outside rail road tunnel doors. (See flow diagram H-2-76952) Storage Tunnel Door #1 has been sealed for some time. The Exhaust fan for tunnel #1 has also been out of service. The exhaust fan for Storage Tunnel #2 has been operational.

It was originally felt that a small amount of air would be bleed into the canyon through the overhead door, providing some ventilation to the main railroad tunnel. However should storage activity in the tunnels resume, the entire 202A ventilation would be affected. It was decided to separate the 202A structure from the railroad tunnels.

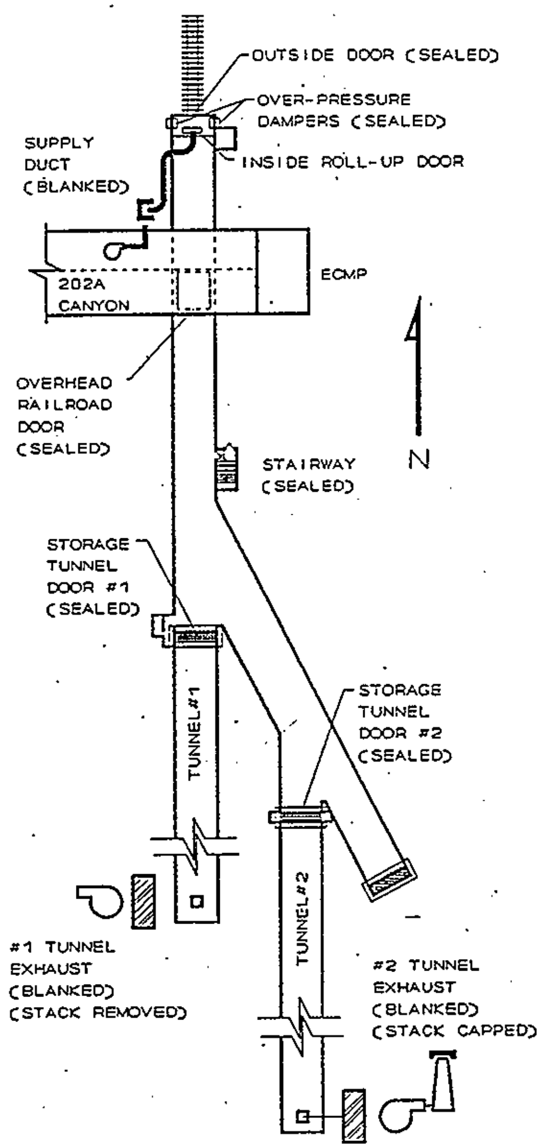


Figure 50. PUREX Railroad Tunnel Configuration.

The supply air from the Storage Gallery has been blanked. The outside railroad tunnel door has been sealed. The over-pressure dampers have been blanked. The overhead railroad door has been sealed. The door and assorted accesses to the tunnels have been sealed. Both storage tunnel doors have been sealed and the water drained. Both storage tunnel fans have been deactivated. Storage tunnel #1 exhaust fan has had blanks installed at the inlet and outlet of both the filter and fan, the stack has also been removed. Storage tunnel #2 exhaust fan has had blanks installed, but no irreversible actions taken. All water and steam lines in the Rail Road tunnel have been drained. See Figure 50.

6.7.1 Storage Gallery Exhaust Fan Modification

Exhaust Fan EF-V34-1 is located in the east end of the Storage Gallery. The fan provided tempered air into the tunnel, see Figure 10 and 50. The duct has been blanked at grade level, just as the duct leaves the building, see Figure 11. This work has left the east end of the Storage Gallery and the Railroad Tunnel without any direct ventilation. See Work Control Package 2A-95-00479.

6.7.2 Modify Duct-work and Install Back-Draft Damper

It was determined that this task was not required.

6.7.3 Seal Railroad Tunnel Doors

The outside door to the railroad tunnel has been sealed. This door is a four segmented door held in place by channels. This work was done to a J3 work package.

6.7.4 Seal Railroad Tunnel Over-Pressure Dampers.

There are two Back-draft dampers mounted in the wall of the Rail Road Tunnel. These dampers were protection against over-pressurizing the RR Tunnel. Both dampers have been blanked. See Work Control Package 2A-95-00484.

6.7.5 Overhead Railroad Door Seal

It was estimated that ≈13,000 cfm of air enters the canyon through the railroad tunnel overhead door. The Door has been sealed with foam to separate the ventilation of the 202A structure from the Railroad tunnel. This work was done to a J3 work package.

6.7.6 Burial Tunnel Shield Doors #1

Shield Door #1 has not had water in it for some time. The door has been sealed, and surveys have shown that, as of this date, the water is not needed for shielding.

6.7.7 Burial Tunnel Shield Doors #2

Shield Door #2 has been sealed. Because of projected utilization of the tunnel, this door has been secured, so that the seal can be easily removed. There is no water currently in this door.

6.7.8 Tunnel #1 Exhaust Blank

There is an exhaust fan at the far end of the #1 railroad tunnel. This fan has been out of service for some time. Blanks were installed at both the inlet and outlet of the Fan and HEPA filter unit. The stack was removed and disposed of. See Work Control Package 2A-95-00423.

6.7.9 Tunnel #2 Exhaust Blank

There is an exhaust fan at the far end of the #2 railroad tunnel. While adding or removing tunnel inventory this fan could be operated to provide ventilation for the tunnel. It was assumed that there would be a large possibility for additions to the tunnels inventory. The fan was taken out of service and stabilized with no irreversible action taken. The stack was capped, the inlet of the fan was blanked, and the outlet of the filter was blanked. The inlet of the filter was banded, and the instruments were left in place. There a multiple alternative of reactivating the fan. See Work Control Package 2A-97-00002.

6.7.10 Fix Contamination, Railroad Tunnel

There is contamination within the Railroad Tunnel. Due to the reduced flow after consolidation, it was prudent to fix the contamination within the tunnel.

6.7.11 Install Plugs in Tunnel Entry Drains

There are a number of drains in the floor of the railroad tunnel. These drains have been plugged to guard against the possibility of contamination spread through the drain system. See Work Control Package 2A-95-00424.

6.7.12 Deactivate Instrument and Controls

The Surveillance and Monitoring group deactivated the instruments and controls in the Railroad Tunnel.

6.8 PUREX Laboratory

AREAS:
PUREX Laboratory, Laboratory Ventilation Room

DESCRIPTION:
The PUREX Laboratory is a two story building attached to the main 202-A structure similar to the 202-A Maintenance and office areas. The ground floor was used as the main laboratory to provide the analytical support to the facility. The second floor housed and independent ventilation system for the Laboratory facility.

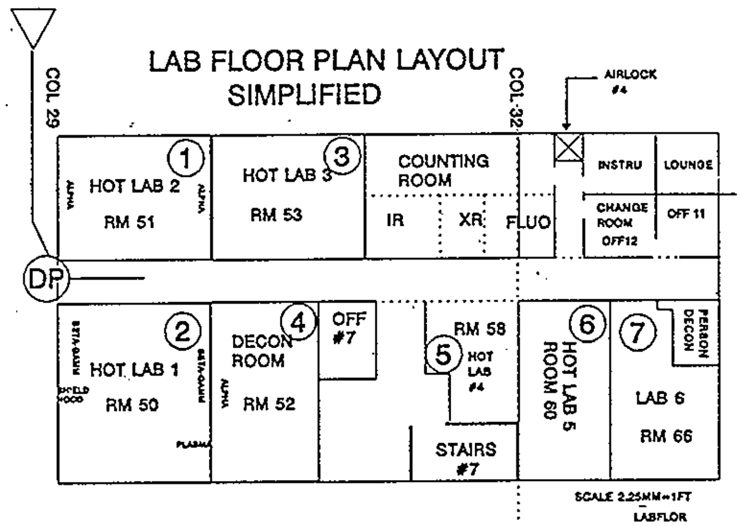


Figure 51, Laboratory Simplified Floor Plan

6.8.1 Ventilation System

The work was performed pursuant to work plan WP-96-P-002. Figure 51 shows a simplified floor plan of the laboratory area. Figure 52 displays the ventilation system typical to the lab. Air was pulled form the environment washed and filter and distributed to the individual labs with the majority going to the main lab corridor. This supply was regulated to maintain a specific differential pressure in the corridor. Air was constantly flowing for the corridor into the individual labs.

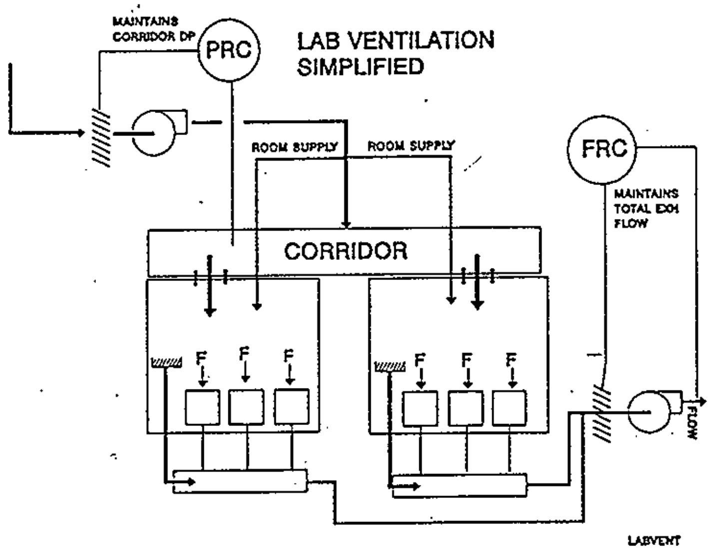


Figure 52, Simplified Lab Ventilation

Exhaust was generally taken from the each of the Hood at a rate fixed to protect the workers. Some air was removed directly from the room by means of a exhaust register. Exhaust from each hood and register fed into a common header, into one of seven different filter assemblies. The filters were drawn on by two large exhaust fan released the air to the environment. The exhaust was controlled to maintain a constant flow rate.

6.8.2 Ventilation System Blanking

The duct supplying air to each individual room was blanked. The supply to the main corridor was left open, to allow for air movement due to temperature changes. The outlet side of each filter was blanked. The exhaust fans were left in place and the stacks capped.

6.8.3 Foam Installation

Sealed Air Corporations Instapak polyurethane foam (MSDS # 27102A & 27101) was installed in various spaces within the PUREX lab to fill the voids of the contaminated equipment and to fix the activity within. The foam was chosen because of its chemical stability, adhesion, and favorable record in industry. Various areas within the laboratory have substantial i.e. >100,000 dpm contamination which has been immobilized prior to ventilation shutdown. These consist of the open face hood internal exhaust chamber, the hood riser, the exhaust header, and utility chambers behind the hoods. All hood interiors were previously coated with Bartlett Services Inc. Polymeric Barrier System, (PBS) MSDS #32197. Labs 4, 5 and 6 did not have much contamination within the hood exhaust chambers and ducting. In these areas only limited foam was applied. Within lab 4 and 6 only the lower exhaust plenum chamber of the hood was filled based on survey data. One or two hoods in these rooms were completely filled, based on survey results. Lab 5 was used as a training area, thus the hood exhaust plenums and exhaust riser ducts were filled.

In labs 1, 2, 3 and decon lab the activity levels were sufficient to justify void filling throughout. Labs 1, 2, and 3 were given a comprehensive treatment. Foam was injected into the lower hood cabinet, hood exhaust plenum, exhaust riser, exhaust header and utility chase. Because of the activity processed, the ICP and 3A shielded hood in lab 1 were completely filled. The ICP primary filter was foamed on the inlet and outlet lines.

The decon lab was a separate case. Activity levels under the hoods, in the exhaust chambers were greater than other areas. In the decon lab the hood interior and under hood space was foam filled. Under hood spaces are closed by a stainless panel on the front side. All open face hood front panels are closed.

Ventilation air passes via an exhaust header elbow to the upper level filter assembly. Air enters a "hot" plenum at the base of the filter box. An intermediate floor in the filter box has two risers on it with four HEPA filters mounted on a frame assembly above each riser. To minimize activity movement from the filter plenums, foam has been added to the "hot" plenum chamber and entry elbow coming from below.

In all labs, the utility chase areas behind the hoods were filled because of leakages that occurred over the past 40 years. Exceptions to this are in parts of lab 4 and 6 where utilities are connected with swagelok fittings, are accessible and have no leakage history.

6.8.4 Fixation of Lab Drain System and Lab Vacuum System

Hood drains originate in the right rear of the hood interior. On the rear face of the hood a 3/4" screwed elbow which leads to a 3/4" stainless steel drain header on the bottom level of the utility pipe array. Various fittings inside of the hood were screwed into this elbow. The most common was a special reducing bushing that was screwed into the elbow from the hood interior. Various fittings were then screwed into the reducing bushing such as a tubing stub with adaptor etc. In all cases (with a couple of exceptions) the old fittings were removed from the bushing and a plug substituted.

The laboratory vacuum system contains substantial levels of contamination. i.e. >> 100,000 dpm. Laterals to each hood have processed uranium, plutonium and fission product solutions for many years. Each hood lateral inlet to the vacuum header points downward at a 45 degree angle and thus forms a crud trap.

To contain the internal contamination the approach was to pot with epoxy each tubing line that attaches to the vacuum header. Additional epoxy was added to seal off the tubing adapter fitting. 3M DP-270 (MSDS #53977 & 53976) resin was used to do the sealing operations.

Several labs have either center lab bench tops or wall bench tops with utility header chambers. These were inspected and when vacuum and/or drain headers were found, the lateral connections were sealed with fittings plus epoxy. The utility headers were also potted with foam and the cover replaced.

The highly contaminated vacuum system filter module was removed and disposed of as transuranic waste. At the same time the main vacuum headers leading to the vacuum accumulator were sealed with 4" 150 lb blanks. One substandard lateral root connection leading to hood 32 in the decon room was disconnected and potted in resin because of the direct nipple tap into the schedule 40, 1-1/2" vacuum pipe.

Lab floor drains leading to the hot drain system were sealed with DP-270 resin. Lab sink drains were treated similarly. All drains including sanitary, CSL, and the Tk U3, F10 hot drains were sealed to prevent any reverse migration of isotopes on both the laboratory level and on the ventilation level. Roof vents that serve these drains were capped.

6.8.5 Counting Room Fixation

The under side of the computer deck was foamed rather than expend many man hours of surveying time. Vacuum connections were capped off with fittings and epoxy sealant. Drains were plugged.

6.8.6 PUREX Fire Hazards Analysis

A PUREX plant fire hazards analysis was drafted during and prior to July 1996 (ref 7). Initial comments on this document included questions about the type, location, and application of the foam in the lab. Subsequent discussions with the Bechtel fire engineer clarified the questions with the result that an explanatory paragraph would be written in the Fire Hazards section of the FHA. The paragraph would include a brief write up of the foam properties, and locations used in the lab.

The nature of fire initiation and propagation in the lab is strongly effected by the design of the laboratory. Ventilation equipment is split into two subsystems in each room. Hood enclosures are separated by approximately 15 ft. Exhaust ducting traverses north-south above the hoods, passes to the center of the room and exits the ceiling to the second level filter. Each half-system is separate from the other. The rooms are separated by hollow metal walls.

The foam is contained within sheet metal or metal plate enclosures. There are a few exceptions where the foam is exposed to the room air directly. Most of these are exposed hand openings that have been foam filled and trimmed flush with the closed hood front face panel.

The deactivated laboratory has no energized electrical equipment. All of the original equipment has been electrically isolated when the building services are cut off. Surveillance lights that were installed during 1996, light the lab lunch room, change rooms, and lab central corridor. This equipment is based on 300W quartz lamps fed by EMT conduit and is energized by new outside circuits that are energized only when quarterly surveillances are done.

6.8.7 Justification for Not Sealing the Hood Faces

The original lab fixation decontamination concept included disconnecting each hood at the utility chase and at the ventilation exhaust riser. This included fixing the activity inside and outside of the hood along with wrapping the hood with plastic film. Later as the lab deactivation concept changed to avoid the extensive equipment disconnecting and moving, the plastic film wrapping was dropped. The hood deactivation has consisted of equipment and chemical removal, cursory decontamination, PBS fixation inside the hood, fixation of the vacuum laterals in place, plugging the drain connections in place, and finally foaming those portions of the hood exhaust system that have any significant contamination. i.e. labs 1, 2, 3 and decon. In labs 4, 5, 6 only spotty contamination was found during surveys. When activity was located that zone was foamed. This usually was the exhaust plenum at the rear of the hood. In a few cases there are hoods with exposed foam. These amount to the hoods with the hand holes left in place. The foam was cut off at the plane of the hand hole.

6.9 Miscellaneous HVAC Modification

AREAS:
Multiple areas

DESCRIPTION:
Several miscellaneous, yet important task required for HVAC consolidation are listed here.

6.9.1 Inspect 202A Roof

With no heat provided in the building after consolidation the walls and joints would be under added stress. A formal inspection of the 202A building roof and expansion joints to ensure good repair and function was performed. A expert roof evaluator has been asked to inspect, evaluate, and document the roofs condition. This task, as of this writing, has yet to be completed.

6.9.2 Air In-leakage to 202A, Include Vacuum Breaker

This task focusses specifically on the canyon in-leakage to: Generally seal up and patch all points of entry into the buildings. To prevent intrusion of: 1) rodents, birds, etc... 2) unauthorized personnel. 3) uncontrolled air flow. All known opening in the 202A structure have been sealed. With the exception of the North Vacuum Breaker. The existing vacuum breakers are a significant in-leakage point, and have been reduced to achieve the low ventilation flows. The south vacuum breaker, located by C-cell on the south side of the building has been sealed as shown in Figure 53.

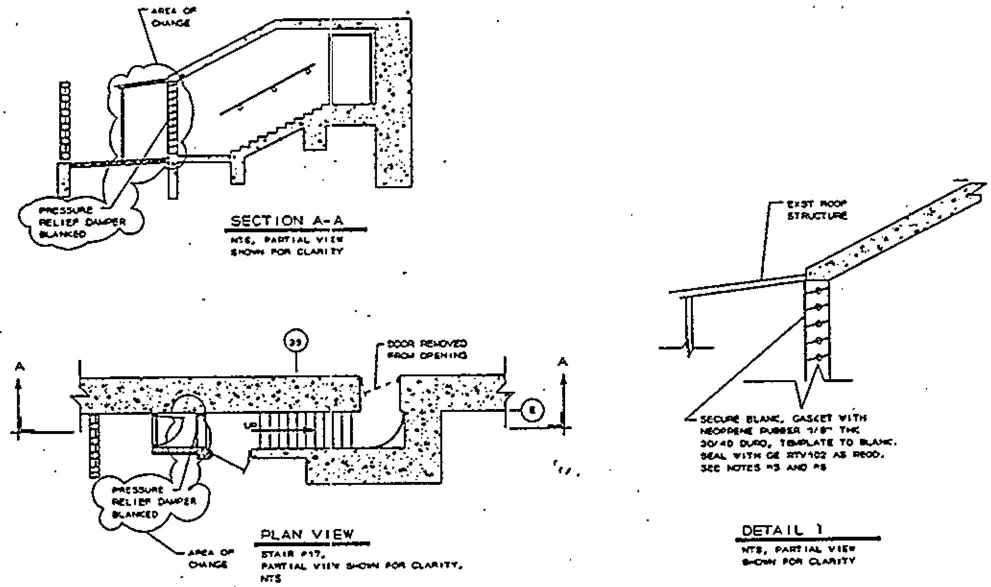


Figure 53, South Vacuum Breakers.

6.9.3 Electrical Damper Modifications

The dampers controls for the main exhaust fans are currently driven by the instrument air system. After shutdown, this air supply would not be available. New electric actuators, instruments and controls have been installed, for use after shutdown. This task was handled by the Surveillance and Monitoring group.

6.9.4 202A Outside Doors/Openings/Secure

Eliminate all outside openings to the building. The review of all outside building openings has the following purposes.

1. Exclusion of all rodents and birds entering the building.
2. Restriction of all unauthorized personnel from the building.
3. Regulation of air flows entering the building from all sources.
4. Ensure compliance with the building fire plan.

Actions taken to secure each door in the plant were documented in appendix 2.

6.9.5 Alteration/Blank Extraneous Supply Ducts

This task includes alterations to all supply systems to blank extraneous duct, to ensure that there are no unwanted pathways, and/or cross-ties. See Work Control Package 2A-96-00044. Also include is the blank in the AMU Head tank room, as seen in Figure 54.

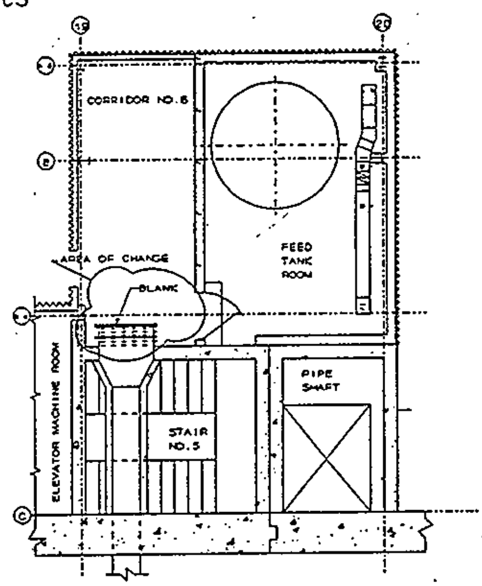


Figure 54, Blank in AMU Head Tank Room.

6.9.6 Duct Hole Cutting (FB1 & FB2) (PR Duct, Sample Gallery)

An alternate method of fixing the contamination in the PR and Sample Gallery Exhaust Duct was used. The development of a hole cutting device, was not required.

6.9.7 Signs & Chains Around Filters

Signs and barriers have been placed around the underground filters, reducing the likelihood of accidently breaching the containment.

6.9.8 Building/Air Switch-over

Changing the HVAC system over from the current configuration to the consolidated flow, was accomplished through work plans WP-P-96-027.

6.9.9 IEFD Update

Modifications to the HVAC system has been performed, via ECNs written against specific affected drawings. These ECNs, most likely, will not be incorporated into the drawings. In order to maintain configuration control, IEFD H-2-825908, Rev.2, has been produced to reflect the consolidated airflow paths. Pre-Consolidation IEFD are to be down graded.

7.0 REFERENCES

1. Westinghouse Hanford Co., HNF-SP-1011, Rev. 0, PUREX Project Management Plan, dated August 1994.

2. Westinghouse Hanford Co., Hazard and Operability Analysis of the Modified PUREX Ventilation System, dated March 15, 1995.

3. Westinghouse Hanford Co., HVAC Modified Value Engineering Study, dated June 1995, by KCM Inc.

4. Westinghouse Hanford Co., HNF-SD-WM-TPP-053, Rev. 1, PUREX Deactivation End Points, dated August 23, 1995.

5. Westinghouse Hanford Co., Letter 9552170, PUREX Deactivation Engineer to DOE/RL, dated May 19, 1995.

Appendix 1 - Endpoint matrix

202-A Facility Exterior

S/S	Case	Task	End Point	Closed	Comment	Page#	Team
202-A Facility Exterior	3	5	Isolate vent lines to the atmosphere		FCO 2A-97-06 See Note 1	112	Field Work Team
202-A Facility Exterior	3	5	Isolate HVAC and building potential pathways to the environment		FCO 2A-97-06 Task MISC.97 Door Disposition list 2A-95-00485 2A-97-00001 2A-95-00425 2A-95-00426 2A-95-00427 2A-95-00428 2A-95-00429 2A-95-00430 2A-95-00479 2A-95-00338 2A-95-00336 2A-95-00485 See Note 1	112	Field Work Team
202-A Facility Exterior	3	5	Seal entrance to the facility except the ones identified for use by surveillance and maintenance activities		Door Disposition list See Note 2	112	Field Work Team

Note 1. Refer to the PUREX Heating, Ventilation, and Air Conditioning (HVAC) System Consolidation Document. WHC-SD-CP-CR-037, Rev 1.

Note 2. A copy of the Door Disposition list has been given to the End Point Team Leader (Barger). This list has been given to the Surveillance people (Ethington) and has been discussed with Lloyd Zinsli. An operator for the End Point team is currently walking down the door to verify that they have been sealed.

AMU (Aqueous Make-up)

S/S	Case	Task	End Point	Closed	Comment	Page#	Team
AMU	1	5	Seal exterior doors and isolate potential pathways to the environment		FCO 2A-97-06 Task MISC.97 Door Disposition list See Note 2	387	Field Work Team
AMU	3	5	Isolate interfaces with the sample gallery		Work Package 2A-95-00431 FCO 2A-97-06 Task MISC.97 Door Disposition list See Note 2	387	Field Work Team

Canyon

S/S	Case	Task	End Point	Closed	Comment	Page#	Team
Canyon	2	5	Isolate potential pathways to the environment		FCO 2A-97-06 Task MISC.97 Door Disposition list See Note 2	425	Field Work Team
Canyon	2	5	Isolate/seal doorways and other access points		Work Package 2A-95-00431 FCO 2A-97-06 Task MISC.97 Door Disposition list See Note 2	425	Field Work Team
Canyon	2	6	Vacuum breakers operational		Work Package 2A-95-00485 See Note 3	425	Field Work Team

Note 3 The North vacuum breaker is currently in service and has been in service for 40 years. No test of performance measurement was made. The South breaker has been sealed.

Canyon Lobby

S/S	Case	Task	End Point	Closed	Comment	Page#	Team
Canyon Lobby	1	6	Secure storage room door in the open position for surveillance viewing		See Note 4	469	Field Work Team

Note 4 This task was not defined by the HVAC Team. A new work package or J3 must be generated.

Case 4 System-Operational

S/S	Case	Task	End Point	Closed	Comment	Page#	Team
202-A Ventilation	4	6	Define system calibration and preventive maintenance requirements		See Note 5	921	Field Work Team
202-A Ventilation	4	7	Isolate/blank U-Cell inlet duct		2A-95-00336	923	Field Work Team
202-A Ventilation	4	7	Provide system spare parts inventory listing		See Note 6	922	Field Work Team
202-A Ventilation	4	7	Isolate/blank lines, ducts between pressure zones to minimize interaction between zones.		2A-95-00479 2A-95-00480 2A-95-00363 2A-95-00367 2A-95-00340 2A-95-00355 2A-95-00420 2A-96-00135 2A-96-00008 2A-95-00431 2A-96-00005 2A-95-00482 2A-96-00063 2A-95-00338 2A-95-00336 RRTN.8E 2A-96-00044 See Note 1	922	Field Work Team

202-A Ventilation	4	7	Establish three pressure zones		2A-95-00479 2A-95-00480 2A-95-00363 2A-95-00367 2A-95-00340 2A-95-00355 2A-95-00420 2A-96-00135 2A-96-00008 2A-95-00431 2A-96-00005 2A-95-00482 2A-96-00063 2A-95-00338 2A-95-00336 RRTN.8E 2A-96-00044 See Note 1	922	Field Work Team
202-A Ventilation	4	7	Isolate/blank R-cell inlet duct		2A-95-00338	923	Field Work Team
202-A Ventilation	4	7	Isolate/blank supply routings; Branch D to ESWGR, Branch H to process blower room, Branch B to AMU, Branch G to AMU, Branch to office.		See Note 1 See Note 7 2A-96-00044 ECN 639413	922	Field Work Team

Note 5 The system Calibration are defined by the Samcons unit. The preventive maintenance requirements are the same as the current procedure.

Note 6 Same as the current spare parts listed for the main exhaust fans.

Note 7 The large door between the Process and Service Blower rooms has been secured open. Air for the system is pulled form these rooms. Ventilation to the office, AMU, and compressor areas, have been abandon in place and require no Isolation/blanking.

Case 6 System-Abandoned in Place

s/s	Case	Task	End Point	Closed	Comment	Page#	Team
FH-V11-1 (#1 Filter)	6	3	Remove/fix source material to mitigate contamination migration using the reasonable best effort methodology		See Note 8 2A-96-00006	943	Field Work Team
FH-V11-1 (#1 Filter)	6	5	Maintain negative pressure		2A-96-00006 See Note 1	944	Field Work Team
FH-V11-1 (#1 Filter)	6	5	Isolate/blank filter outlet		2A-96-00006	944	Field Work Team
FH-V11-2 (#2 Filter)	6	3	Remove/fix source material to mitigate contamination migration using the reasonable best effort methodology		See Note 8	946	Field Work Team
FH-V11-2 (#2 Filter)	6	5	Maintain negative pressure		See Note 1	947	Field Work Team
FH-V11-2 (#2 Filter)	6	5	Isolate/blank filter outlet		See Note 1 See Note 9	947	Field Work Team

Note 8 All contaminated material with the #1 deep bed filter is inaccessible to personnel.

Note 9 The #2 Deep Bed filter is to remain in service.

Labs

S/S	Case	Task	End Point	Closed	Comment	Page#	Team
Lab HVAC Equipment	6	5	Isolate stacks (296-A-5A & 296-A-5B).		2A-95-00425 2A-97-00001	574	Field Work Team

N-Cell

S/S	Case	Task	End Point	Closed	Comment	Page#	Team
N-Cell Room Exhaust	6	5	Remove HEPA filter and Isolate		See Note 10 2A-95-00369 2A-95-00432	646	Field Work Team
N-Cell Room Exhaust	6	5	Isolate/blank supply ventilation		2A-95-00363 2A-95-00367	646	Field Work Team

Note 10 Filters surveyed and left in place.

PR Room (Product Removal Room)

S/S	Case	Task	End Point	Closed	Comment	Page#	Team
PR-Room Exhaust	6	3	Remove/fix source material to mitigate contamination migration using the Reasonable Best Effort methodology		2A-96-00128	711	Field Work Team
PR-Room Exhaust	6	4	Isolate/blank exhaust ducts		2A-95-00480 2A-96-00128	713	Field Work Team
PR-Room Exhaust	6	5	Isolate Stack 296-A-1		2A-95-00478	713	Field Work Team
PR-Room Exhaust	6	5	Isolate/plug fan housing floor drain to R-Cell sump		??	713	Field Work Team
PR-Room Exhaust	6	5	Remove HEPA filters and isolate		2A-95-00478 See Note 10	713	Field Work Team
PR-Room Gloveboxes	6	5	Remove inlet HEPA's and Blank		??	719	Field Work Team
PR-Room Gloveboxes	6	5	Remove Exhaust HEPA's and blank main exhaust duct		??	719	Field Work Team
PR-Room Gloveboxes	6	5	Ensure system to maintain negative pressure in gloveboxes is in place		2A-96-00128	720	Field Work Team

Note 10 Filters surveyed and left in place.

Q-Cell

S/S	Case	Task	End Point	Closed	Comment	Page#	Team
Q-Cell Gloveboxes	6	5	Remove inlet HEPA's and blank. Leave one HEPA.		2A-95-00340 2A-95-00365 2A-95-00341 2A-95-00354 See Note 10	711	Field Work Team

Note 10 Filters surveyed and left in place.

R-Cell

s/s	Case	Task	End Point	Closed	Comment	Page#	Team
R-Cell Equipment	6	5	Isolate ventilation from environment		2A-95-00338	765	Field Work Team

Note 10 Filters surveyed and left in place.

Railroad Tunnel

S/S	Case	Task	End Point	Closed	Comment	Page#	Team
Railroad Storage Tunnel #1 & #2	6	5	Isolate/remove stack (296-A-9 & 296-A-10)		2A-95-00423 2A-97-00002	968	Field Work Team
Railroad Storage Tunnel #1 & #2	6	5	Remove HEPA filters and isolate		2A-95-00423 2A-97-00002 See Note 10	968	Field Work Team
Railroad Storage Tunnel #1 & #2	6	5	Isolate Number one and two fans		2A-95-00423 2A-97-00002	968	Field Work Team
Railroad Tunnel (Between Vertical	2	5	Isolate/seal doors and other access points		2A-95-00424 2A-95-00484 RRTN.82 RRTN.87 RRTN.88 RRTN.8E	980	Field Work Team

Note 10 Filters surveyed and left in place.

Sample Gallery

S/S	Case	Task	End Point	Closed	Comment	Page#	Team
Sample Gallery	2	5	Isolate/seal access points		2A-95-00431	776	Field Work Team
Sample Gallery Hood HVAC	6	5	Blank East and West end ducts		2A-95-00426 2A-95-00428	786	Field Work Team
Sample Gallery Hood HVAC Station	6	3	Remove/fix source material to mitigate contamination migration using the Reasonable Best Effort methodology		2A-96-00128	789	Field Work Team
Sample Gallery Hood HVAC Station	6	5	Isolate stacks (296-A-2 & 296-A-3)		2A-97-00001	980	Field Work Team
Sample Gallery Room Exhaust	6	2	Remove/shield source material to mitigate radiation exposure using the Reasonable Best effort methodology		2A-96-00128	810	Field Work Team
Sample Gallery Room Exhaust	6	3	Remove/fix source material to mitigate contamination using the Reasonable Best effort methodology		2A-96-00128	811	Field Work Team
Sample Gallery Room Exhaust	6	5	Isolate stacks (296-A-6 & 296-A-7)		2A-97-00001	812	Field Work Team

Storage Gallery

S/S	Case	Task	End Point	Closed	Comment	Page#	Team
Storage Gallery Systems	6	5	Isolate/blank ventilation duct to tunnel		2A-95-00479	850	Field Work Team

Ventilation Supply Rooms

S/S	Case	Task	End Point	Closed	Comment	Page#	Team
HVAC Air Supply	4	6	Define system calibration and preventive maintenance requirements		Samcons	874	Field Work Team
HVAC Air supply	4	7	Provide system spare parts inventory listing		Prefilter part number	874	Field Work Team
Process Blower Room	1	5	Isolate/plug floor drains		??	868	Field Work Team
Process Blower Room	1	5	Seal external doors and isolate potential pathways from the environment		Door Disposition list	868	Field Work Team
Service Blower Room	1	5	Isolate/plug floor drains		??	872	Field Work Team
Service Blower Room	1	5	Seal external doors and isolate potential pathways from the environment		Door Disposition list	868	Field Work Team

White Room

S/S	Case	Task	End Point	Closed	Comment	Page#	Team
White Room	6	5	Isolate existing room exhaust		2A-95-00430	894	Field Work Team
White Room HVAC	6	5	Isolate Stack (296-A-8)		2A-95-00430	894	Field Work Team
White Room HVAC	6	5	Remove HEPA Filters and isolate		2A-95-00430 See Note 10	894	Field Work Team

Note 10 Filters surveyed and left in place.

Appendix 2 - Door Disposition

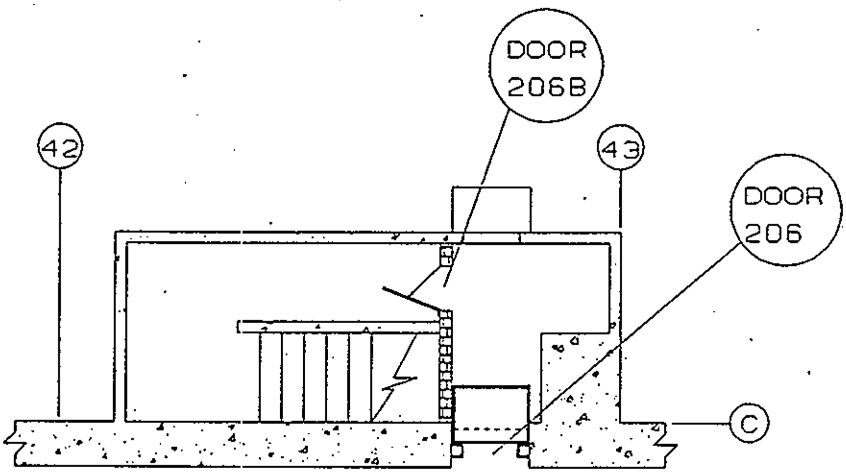
PUREX PROPOSED DOOR DISPOSITION

- All door numbers are per drawing H-2-75734, Figure 55 and Figure 56.
- The Surveillance Path is clearly marked by paint on the floor and/or chain.*
- The following signs or equivalent are to be placed on each door.*

SIGNS/AIDS

Sign #1	Not an Exit. Do not Open
Sign #2	Air Lock Door. Keep Door Closed for Ventilation Control. Do Not Loiter in Flow Path
Sign #3	Ventilation Flow Path. Do Not Obstruct. Do Not Loiter in Flow Path
Sign #4	Exit

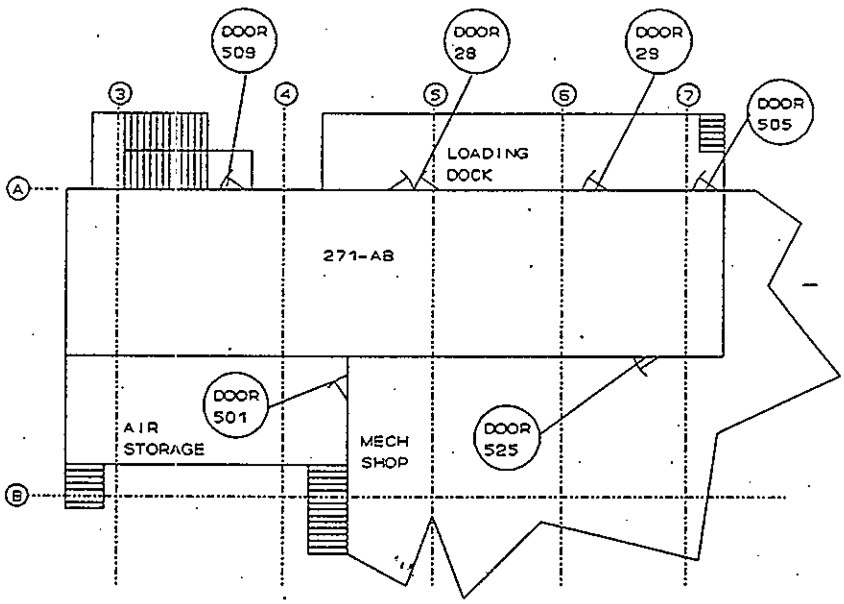
* Sign posting and Path markings may be modified per field installation and/or instructions.



DOOR NUMBERS

STAIR #13 - ELEV 732'-6"
DOOR 206B, NOT SHOWN ON DWG H-2-75734
NTS, PARTIAL VIEW SHOWN FOR CLARITY

Figure 55, Additional Door Number, Stairwell at Column 42



DOOR NUMBERS

271-AB DOOR NUMBERS
NOT SHOWN ON DWG H-2-75734
NTS, PARTIAL VIEW SHOWN FOR CLARITY

Figure 56, Additional Door Numbers

DOOR DISPOSITION, PUREX HVAC TEAM			
Door #	Action reqd.	Sign #	Comment
1	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
2	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
3	Sweeps and Seals	#2	Sealed for ventilation, Air Lock Door.
4	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
5	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
6	Secure door open or remove.	#3	Ventilation flow path
7	Flow Control Point	#3	Laminar flow
9	Flow Straightener	#3	Laminar flow
11	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open. (done)
12	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
13	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
14	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
15	Sweeps and Seals	#4 #2	Emergency Exit
16	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
18	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
19	Sweeps and Seals	#4 #2	Emergency Exit
20	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
21	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
22	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.

DOOR DISPOSITION, PUREX HVAC TEAM			
Door #	Action reqd.	Sign #	Comment
24	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
26	Secure door open or remove.	#3	Ventilation flow path
28	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
29	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
41	Sweeps and Seals	#2	Sealed for ventilation, Air Lock Door.
42	Sweeps and Seals	#2	Sealed for ventilation, Air Lock Door.
43	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
44	Sweeps and Seals	#4 #2	Emergency Exit
60	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
61	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
69	Sweeps and Seals	#4 #2	Emergency Exit
70	roll up door	#4 #2	Emergency Exit
72	Sweeps and Seals	#4 #2	Emergency Exit
75	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
76	Sweeps and Seals	#4 #2	Emergency Exit
77	Secure door open or remove.	#3	Ventilation flow path
83	Sweeps and Seals	#4 #2	Emergency Exit
84	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
102	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
108	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
125	Sweeps and Seals	#4 #2	Emergency Exit
126	Sweeps and Seals	#4 #2	Emergency Exit

DOOR DISPOSITION, PUREX HVAC TEAM			
Door #	Action reqd.	Sign #	Comment
130	Sweeps and Seals	#4 #2	Emergency Exit
131	Sweeps and Seals	#4 #2	Emergency Exit
137	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
145	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
148	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
149	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
150	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
158	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
160	Secure door open or remove.	#3	Ventilation flow path
161	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
162	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
163	Sweeps and Seals	#2	Sealed for ventilation, Air Lock Door.
164	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
173	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
174	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
175	Sweeps and Seals	#4 #2	Emergency Exit
200	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
201	Flow Straightener	#3	Laminar flow
202	Sweeps and Seals	#4 #2	Emergency Exit
203	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.

DOOR DISPOSITION, PUREX HVAC TEAM			
Door #	Action reqd.	Sign #	Comment
204	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
205	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open. (optional)
206	Flow Straightener	#3	Laminar flow
206B	Flow Control Point	#3	Laminar flow
207	Seal with Aluminum Tape	#1	Door Sealed. Not and Exit
236	Sweeps and Seals	#2	Sealed for ventilation. Air Lock Door.
237	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
241	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
244	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
246	Sweeps and Seals	#2	Sealed for ventilation. Air Lock Door.
263	Sweeps and Seals	#4 #2	Emergency Exit
274	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
275	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
300	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
301	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
326	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
327	Flow Control Point	#3	Laminar flow
328	Sweeps and Seals	#4 #2	Emergency Exit
330	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
331	Sweeps and Seals	#4 #2	Emergency Exit
400	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.

DOOR DISPOSITION, PUREX HVAC TEAM			
Door #	Action reqd.	Sign #	Comment
402	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
408	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
409	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
501	Sweeps and Seals	#4 #2	Emergency Exit
505	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
509	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
525	Seal with Aluminum Tape	#1	Door Sealed, Not and Exit
B1	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
B2	Secure door open or remove.	#3	Ventilation flow path
B3	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
B4	Sweeps and Seals	#4 #2	Emergency Exit
B5	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
B6	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
B7	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
B8	Sweeps and Seals	#4 #2	Emergency Exit
B9	Secure door open or remove.	#3	Ventilation flow path
B11	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
B12	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open. (OPTIONAL)
B13	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.
B14	Sweeps and Seals	#2	Sealed for ventilation, Air Lock Door.

DOOR DISPOSITION, PUREX HVAC TEAM			
Door #	Action reqd.	Sign #	Comment
B16	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
B18	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
B21	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
B28	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
B47	Secure door open or remove.	#3	Ventilation flow path
B48	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
B49	Secure door open or remove.	#3	Ventilation flow path
B50	Sweeps and Seals	#4 #2	Emergency Exit
B100	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
B101	Sweeps and Seals	#2	Sealed for ventilation. Air Lock Door.
B102	Flow Straightener/damper control	#3	Laminar flow
B104	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
B108	Secure door open or remove.	#3	Ventilation flow path
B109	Secure door open or remove.	#3	Ventilation flow path
B111	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
B112	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
B113	Sweeps and Seals	#4 #2	Emergency Exit
B114	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
B115	Sweeps and Seals	#4 #2	Emergency Exit
B119	Sweeps and Seals	#4 #2	Emergency Exit

DOOR DISPOSITION, PUREX HVAC TEAM			
Door #	Action reqd.	Sign #	Comment
B120	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
B124	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
B126	Secure door open or remove.	#3	Ventilation flow path
B127	Seal with Aluminum Tape	#1	Sealed for ventilation. Not an Exit. Do Not Open.
B128	Secure door open or remove.	#3	Ventilation flow path
B129	Secure door open or remove.	#3	Ventilation flow path
B130	Secure door open or remove.	#3	Ventilation flow path
B133	Sweeps and Seals	#2	Sealed for ventilation. Air Lock Door.
B134	Sweeps and Seals	#2	Sealed for ventilation. Air Lock Door.
B135	Sweeps and Seals	#2	Sealed for ventilation. Air Lock Door.
B136	Secure door open or remove.	#3	Ventilation flow path
B137	Sweeps and Seals	#2	Sealed for ventilation. Air Lock Door.
B138	Secure door open or remove.	#3	Ventilation flow path
B139	Sweeps and Seals	#2	Sealed for ventilation. Air Lock-Door.
B140	Sweeps and Seals	#2	Sealed for ventilation. Air Lock Door.
B144	Secure door open or remove.	#3	Ventilation flow path
B145	Secure door open or remove.	#3	Ventilation flow path
B146	Sweeps and Seals	#2	Sealed for ventilation. Air Lock Door.
B147	Sweeps and Seals	#2	Sealed for ventilation. Air Lock Door.
B148	Sweeps and Seals	#4 #2	Emergency Exit
B149	Sweeps and Seals	#2	Sealed for ventilation. Air Lock Door.
B150	Secure door open or remove.	#3	Ventilation flow path

DOOR DISPOSITION, PUREX HVAC TEAM			
Door #	Action reqd.	Sign #	Comment
B151	Seal with Aluminum Tape	#1	Sealed for ventilation, Not an Exit, Do Not Open.

SIGNS/AIDS

Sign #1 Not an Exit, Do not Open
Sign #2 Air Lock Door. Keep Door Closed for Ventilation Control
Do Not Loiter in Flow Path
Sign #3 Ventilation Flow Path,
Do Not Obstruct,
Do Not Loiter in Flow Path
Sign #4 Exit

Appendix 3 - Task Index

HVAC Consolidation, ESR PO-1179, Task#/Work Package#/ECN# Report

Task #	Title	Work Package #	ECN #	DWG #	EP Page#
673.21	SUPPLY DUCT MODIFICATION, 673' Level	2A-95-00342	600482 615370	H-2-52305 H-2-75821	-
673.23	PR FAN DEACTIVATION/DECONTAMINATION (OUTSIDE) (616865 SUPERSEDED)	2A-95-00478	624220	H-2-52324 H-2-65318 H-2-66017 H-2-68199 H-2-70110	713
673.24	STORAGE GALLERY MODIFICATION BLANK/SHUTDOWN EXHAUST FAN (600486 SUPERSEDED)	2A-95-00479	624059	H-2-52326 H-2-76953 H-2-76954	112 850 922
673.25	ISOLATE PR DUCTS ENTERING PLENUM 4 (616854 SUPERSEDED)	2A-95-00480	639411	H-2-76226 H-2-76223	922 713
673.26	FOAM PLENUM 4 (TASK DESCOPED)	ϕ	ϕ	ϕ	ϕ
673.27	BLANK N HOOD EXHAUST IN R-Cell (TASK DESCOPED CANCEL ECN 616859)	ϕ	624046	H-2-65314	ϕ
673.28	FOAM PR DUCT TO FILTER BOX 1 & 2 AND LINE TO R (TASK DESCOPED ECN CANCELED) (616863)	2A-95-00481	639410	H-2-57924	ϕ
673.29	STABILIZE SAMPLE GALLERY FILTER BOX 1 & 2 (TASK DESCOPED)	ϕ	ϕ	ϕ	ϕ
673.2A	BLANK N ROOM EXHAUST/CLEAN-OUT (600498 and 624041 Superseded)	2A-95-00369 2A-95-00432	624045 629096	H-2-93210 H-2-65315	646
673.2B	ISOLATE N ROOM EXHAUST PORTS (ADD SMALL HEPA)	2A-95-00369	624045	H-2-93210 H-2-65315	646

HVAC Consolidation, ESR PO-1179, Task#/Work Package#/ECN# Report					
Task #	Title	Work Package #	ECN #	DWG #	EP Page#
673.2C	BLANK N SUPPLY (SAMPLE GALLERY)	2A-95-00363 2A-95-00367	624042	H-2-65314 H-2-65315	922 646
673.2D	BLANK Q EXHAUST DUCT TO PR (616857 Superseded)	2A-95-00340	624055	H-2-59556 H-2-59557	711 922
673.2E	BLANK Q AMU DUCT TO HOT CELL (616931 SUPERSEDED)	2A-95-00365	624223	H-2-59556 H-2-59557	-
673.2F	Q FILTER SYSTEM (SAME AS 673.2D)	2A-95-0341	616857	H-2-59556 H-2-59557	711
673.2G	BLANK PR SUPPLY (SAMPLE GALLERY)	2A-95-00364	616856	H-2-52314	-
673.2H	BLANK Q MAINTENANCE ROOM EXHAUST FILTER	2A-95-00354	616881	H-2-59556 H-2-59557	711
673.2K	Hot Shop Lobby MODIFICATIONS (AIRLOCK #9) ECN 600494 & 624053 superseded by ECN 629089	2A-96-00007	629089	H-2-65253	-
673.2L	REMOVE THE ELBOW IN Hot Shop (drop Elbow) (616853 SUPERSEDED)	2A-95-00363	629094	H-2-52306	922 646
673.2N	BLANK Q-CELL SUPPLY (SAMPLE GALLERY)(616862 Superseded)	2A-95-00355	624043	H-2-59556	922
673.2P	Q-CELL AMU CRACK REPAIR (J3, NO ECN REQD)		ϕ	ϕ	-
673.2R	M-CELL COVER BLOCK INSTALL AND SEAL (ON HOLD)	ϕ	ϕ	ϕ	ϕ
673.2S	Q-CELL HOT CELL DOOR SEAL (J3, NO ECN REQD.)		ϕ	ϕ	-

HVAC Consolidation, ESR PO-1179, Task#/Work Package#/ECN# Report

Task #	Title	Work Package #	ECN #	DWG #	EP Page#
673.2T	CANYON LOBBY EXHAUST BLANK (616915 SUPERSEDED)	2A-95-00420 2A-96-00135	639401 624221	H-2-52328	922
673.2U	Q-CELL MAINTENANCE HOOD AND LOAD-OUT HOOD SEAL (TASK MOVED TO WESTRA'S Q-CELL SCHEDULE)	ϕ	ϕ	ϕ	ϕ
700.31	SUPPLY DUCT ANALYSIS/MODIFICATION	2A-95-00421	615373 615372	H-2-74235 H-2-52315	-
700.32	COLUMN 1: COLUMN 42 STAIRWELL MODIFICATIONS (624208 SUPERSEDED) (624209 SUPERSEDED)	2A-96-00008	162169 162168	H-2-57572 H-2-52211	922
700.34	ISOLATE SAMPLE GALLERY (J3 No ECN Reqd)	2A-95-00431	619498	H-2-75734	387 425 776 922
700.36	FIX SAMPLE GALLERY HOOD EXHAUST DUCT (624218 SUPERSEDED)	2A-96-00128	624049 639402	H-2-52313	711 713 720 789 810 811
712.41	SUPPLY DUCT MODIFICATION/ANALYSIS	2A-95-00422	615374 615375	H-2-52331 H-2-52333 H-2-75821	-
712.43	WHITE ROOM FLOW DIVERSION (624054 SUPERSEDED)	2A-96-00005	162170	H-2-52328	922

HVAC Consolidation, ESR PO-1179, Task#/Work Package#/ECN# Report

Task #	Title	Work Package #	ECN #	DWG #	EP Page#
712.45	ECMP FLOW REGULATION	2A-95-00482 2A-96-00063	616929 629091	H-2-57099 H-2-57115 H-2-57116 H-2-76246 H-2-76248	922
712.47	ECMP ZONE ISOLATION (no action required, door to be left in place 1-29-96) SAFETY ISSUE	ϕ	ϕ	ϕ	ϕ
RCELL.51	SEAL COVER BLOCKS, R-Cell (J3, NO ECN REQD)	2A-95-00339	ϕ	ϕ	-
RCELL.53	SEAL OFF R-CELL VENTILATION SUPPLY	2A-95-00338	600489 624039 629095	H-2-52324 H-2-74236	112 765 922
RCELL.55	REMOVE R-Cell INTERNAL HVAC FILTERS	2A-95-00337	616851 624040	H-2-64906 H-2-74236	-
UCELL.62	SEAL COVER BLOCKS, U-CELL (J3, NO ECN REQD)	2A-95-00419	ϕ	ϕ	-
UCELL.64	SEAL OFF U-CELL VENTILATION SUPPLY	2A-95-00336	600491 624037	H-2-3937 H-2-74236	112 922 923
UCELL.65	REMOVE U-CELL INTERNAL HVAC FILTERS	2A-95-00335	600483 624038	H-2-96902 H-2-74236	-
UCELL.67	FRACTIONATOR VENTILATION	2A-95-00483	616930	H-2-64908 H-2-76247 H-2-64905	-
HTFF.72	PROVIDE SHUTDOWN AIR/PREHEAT ELECTRICAL CASE (TASK DESCOPED)	ϕ	ϕ	ϕ	ϕ

HVAC Consolidation, ESR PO-1179, Task#/Work Package#/ECN# Report

Task #	Title	Work Package #	ECN #	DWG #	EP Page#
HTFF.74	ENGINEERING SUPT DEACTIVATION #1, Design Effort	2A-96-00006	624050	H-2-55040 H-2-53469	943
HTFF.76	ENGINEERING SUPT CONVERT #3 FILTER, Design Effort	ϕ	ϕ	ϕ	ϕ
RRTN.81	BURIAL TUNNEL SHIELD DOORS #1 (NO ECN REQD.)	ϕ	ϕ	ϕ	ϕ
RRTN.82	BURIAL TUNNEL SHIELD DOOR #2 (J3. NO ECN REQD.)		ϕ	ϕ	980
RRTN.83	TUNNEL #1 EXHAUST BLANK ECN 616914 and ECN 624044 is changed by ECN 626902	2A-95-00423	626902	H-2-58134	968
RRTN.84	TUNNEL #2 EXHAUST BLANK	2A-97-00002	639416	H-2-58134 H-2-94433	968
RRTN.85	INSTALL PLUGS IN TUNNEL ENTRY DRAINS	2A-95-00424	619452	H-2-53371 H-2-66058 H-2-58206	980
RRTN.87	SEAL RAILROAD TUNNEL BACK-DRAFT DAMPERS	2A-95-00484	619496	H-2-76953	980
RRTN.88	SEAL RAILROAD OUTSIDE TUNNEL DOORS (J3, NO ECN REQD.)		ϕ	ϕ	980
RRTN.8D	OVERHEAD RR DOOR INSPECTION (NO ECN REQD)	ϕ	ϕ	ϕ	ϕ
RRTN.8E	OVERHEAD RAILROAD DOOR MODIFICATION (J3 NO ECN REQD)		619499	ϕ	922 980
MISC.91	INSPECT 202A ROOF (NO ECN REQD)	ϕ	ϕ	ϕ	ϕ

HVAC Consolidation, ESR PO-1179, Task#/Work Package#/ECN# Report

Task #	Title	Work Package #	ECN #	DWG #	EP Page#
MISC.93	AIR IN-LEAKAGE TO 202A/INCLUDE VACUUM BREAKER (624210 SUPERSEDED)	2A-95-00485	616891 622801	H-2-57572	112 425
MISC.97	202A OUTSIDE DOORS/OPENINGS/SECURE (FCO-J3 Door Disposition List)	FCO 2A-97-06			112 387 425
MISC.99	ALTERATION/BLANK EXTRANEOUS SUPPLY DUCTS (616932 SUPERSEDED)	2A-96-00044	639417 639413	H-2-52337 H-2-52338 H-2-52340 H-2-52368 H-2-52339	711 765 922
MISC.9A	DUCT HOLE CUTTING (&FB1;FB2)(PR DUCT SAMPLE GAL) (TASK DESCOPED)	ϕ	ϕ	ϕ	ϕ
MISC.9C	SIGNS & CHAINS AROUND FILTERS (NO ECN REQD)	ϕ	ϕ	ϕ	ϕ
MISC.9E	MODIFICATION OF SUPPLY AIR HANDLING UNITS	2A-96-00121	624225	H-2-52338 H-2-52339 H-2-52396 H-2-52398	765
MISC.9G	CAP MISC. STACKS	2A-97-00001	639415	H-2-62931 H-2-52365	112 574 812 980
DOC.S1	BUILDING/AIR SWITCH-OVER (WORK PLAN)	ϕ	ϕ	ϕ	ϕ
DOC.S5	IEFD UPDATE	ϕ	ϕ	H-2-825908	-

HVAC Consolidation, ESR PO-1179, Task#/Work Package#/ECN# Report

Task #	Title	Work Package #	ECN #	DWG #	EP Page#
ELE/ELW .A21	LABORATORY HOOD EXHAUST SYSTEM (ELE/ELW) (616885 SUPERSEDED)	2A-95-00425	639409	H-2-52357 H-2-52394 H-2-58273 H-2-92440	112 574
EGE.A23	EAST SAMPLE GALLERY ROOM EXHAUST (EGE) (616888 SUPERSEDED)	2A-95-00426	639407	H-2-64905 H-2-93293	112 786
EGW.A25	WEST SAMPLE GALLERY ROOM EXHAUST (EGW) (616893 SUPERSEDED)	2A-95-00428	624049	H-2-52328 H-2-76245 H-2-76247 H-2-64906 H-2-76660	112
EHE.A27	EAST SAMPLE GALLERY HOOD EXHAUST (EHE) (624051 CANCELED) (616884 SUPERSEDED)	2A-95-00427	639408	H-2-96848 H-2-52317 H-2-92510 H-2-52326	112
EHW.A28	WEST SAMPLE GALLERY HOOD EXHAUST (EHW) (624052 CANCELED) (616886 SUPERSEDED)	2A-95-00429	639412	H-2-96849 H-2-52313 H-2-92510 H-2-52328	112
EW.A29	WHITE ROOM EFFLUENT (EW)	2A-95-00430	616879	H-2-75933 H-2-75926 H-2-98915	112 894