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(04/93)

United States Government **Department of Energy**

memorandum

Richland Operations Office

DATE: NOV 14 1995

REPLY TO ATTN OF: TPD:JJM/95-PFP-062

SUBJECT: PLUTONIUM FACILITIES VENTILATION SYSTEMS REPORT TO DNFSB

TO: Richard J. Guimond
Assistant Surgeon General USPHS
Principal Deputy Assistant Secretary
for Environmental Management
EM-2, HQ

In response to your HQ memorandum, Richard J. Guimond and Everet Beckner, to Manager, RL, "Plutonium Facilities Ventilation Systems Report to DNFSB," dated September 13, 1995, attached is a report that evaluates the design, construction, operation, and maintenance of ventilation safety systems at the Hanford Plutonium Finishing Plant (PFP) in terms of applicable DOE and Consensus standards.

As a result of the above report, RL has concluded that there are no corrective actions required at this facility.

In a meeting held at PFP, we have coordinated our responses to the DNFSB report with E. C. Brolin, EM-2.

Lloyd L. Piper, Assistant Manager
for Facility Transition

Attachment

cc w/attach:
E. G. Feldt, EM-65
M. B. Whitaker, EH
E. Brolin, EM-2

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ATTACHMENT 1

SELF ASSESSMENT OF PLUTONIUM FINISHING PLANT

VENTILATION SYSTEMS

OCTOBER 1995

Consists of 35 pages

Self Assessment of Plutonium Finishing Plant Ventilation Systems
October 1995

This assessment of the status of the Plutonium Finishing Plant ventilation system follows the methodology and assessment outline recommended in the DOE-HQ memorandum of September 13, 1995, Plutonium Facilities Ventilation Systems Report to DNFSB, and is responsive to the issues identified by the DNFSB in *Overview of Ventilation Systems at Selected DOE Plutonium Processing Facilities* (DNSFB/TECH-3).

Assessment Element Number 1: List of Affected Facilities

The Plutonium Finishing Plant is located in the 200 West Area of the Hanford Site. The main processing building, 234-5Z Building, was originally designed about 1947 for the conversion of plutonium nitrate product from the Hanford reprocessing plants to metal and fabrication of weapons components. Construction began in 1948 and plutonium processing was initiated on July 5, 1949. Included in the original facility capability was the recovery of plutonium from conversion and fabrication line scraps.

Over the years mission changes eliminated fabrication capability in the early 1960s and provided enhanced scrap recovery capabilities with the construction of the Plutonium Reclamation Facility, 236-Z building, about 1964. In the 1970s the facility was the Atomic Energy Commission Central Scrap Management Office recovery site for many plutonium scrap forms. This necessitated the addition of storage capability of the 2736-Z Plutonium Storage Complex for extended storage of scrap and product forms. The product forms shipped to and from PFP over the past three decades have been nitrate solutions, oxide and metal.

Consistent with the guidance provided in the DOE-HQ memorandum of September 13, 1995 to focus self assessment resources on higher hazard facilities only the three major PFP Buildings (236-Z, 234-5Z and 242-Z) exhausted through the 291-Z Building and the 2736-Z Plutonium Storage Complex will be assessed. The buildings not included in this assessment and reasons for exclusion are:

232-Z - Old incinerator building currently undergoing D&D. Building being removed.

241-Z - This building houses liquid waste tanks. It provides for accumulation and neutralization of the liquid wastes discharged from PFP prior to transfer to tank farms waste tanks. Potential source terms are minimal since the building's plutonium inventory is in liquid form. Some contamination in sumps is present from past leaks, however, it is generally encrusted in dried sludges and corrosion products.

243-Z - New liquid effluent treatment facility. Very low concentrations of plutonium, if any, in liquid streams. No plutonium powder source term.

It must be noted, however, that although this assessment does not address these facilities, the first two were previously assessed in identical fashion as will be described below for the major structures at PFP.

Currently the plutonium inventory at the PFP is slightly over 4 metric tons of plutonium in scrap forms that range from very lean to nearly pure plutonium solutions and powders, product oxide and metal, and mixed oxide fuel components ranging from pins to finished assemblies. This inventory is held in over 8,000 containers most of which are in vault type storage.

In the Plutonium Vulnerability Assessment for the Hanford Site four vulnerabilities associated with the PFP ventilation system were identified:

> 3.1.2.2 Release of Plutonium Holdup in Exhaust Ducts Downstream of the 234-5Z Final HEPA Filters Via 291-Z Stack Exhaust Blowers (Low likelihood, high environmental consequence)
>
> 3.1.5.2 Hydrogen Fluoride Corrosion of Exhaust Ventilation Ductwork and Primary Filters Servicing Glovebox HC-9B in PFP and HA-46 in PFP (low likelihood, low worker consequence)
>
> 3.1.5.3 Corrosion of Ductwork Servicing Laboratories by Acids (Low likelihood, low worker consequence)
>
> 3.1.5.4 Worker Exposure from Exhaust Ventilation Ductwork and Process Vacuum System (high likelihood, low worker consequence)

The vulnerabilities do not represent significant risks and will be remediated as part of the facility terminal cleanout efforts and subsequent decommissioning.

The two ventilation systems assessed are completely separate, once through ventilation systems monitored and controlled from a single ventilation control room that is continuously staffed. Each provides for cleaning and temperature adjustment of supply air through air handling equipment to a building air supply plenum. After distribution throughout the buildings the air is drawn through at least one stage of HEPA filtration prior to discharge from the building. Building spaces occupied by personnel typically have one stage of filtration while process enclosures and storage vaults have two or more stages. The PFP facility has two incoming electric lines (each adequate for full facility load with automatic switchover on loss of one line) and the ventilation systems have steam backup power for the main buildings system and diesel backup for the storage complex system.

Seismic qualification of PFP buildings and the main 200 foot exhaust stack was examined as part of the preparation of the PFP Final Safety Analysis Report (FSAR). The 234-5, 236-Z, 242-Z and 291-Z structures were designed to the Uniform Building Code requirements in effect at time of design. Buildings associated with the 2736-Z Storage Complex were designed for Hanford Design Basis Earthquake maximum horizontal acceleration of 0.25 g. All structures were shown by analysis to have adequate capacity to be qualified to current seismic requirements.

The main facility 200 foot exhaust stack, 291-Z-1, and the exhaust stack for the storage vault in 2736-ZA were also analyzed for seismic loads and meet current requirements. Seismic analyses for the 291-Z-1 stack were done in 1980 and it was found that the stack was overstressed, however, the analyses did not take into account soil structure interaction effects that could reduce the seismic loading at the base of the stack. Additional analyses in 1988 performed by URS/Blume utilized a combination of two and three dimensional models that included soil structure interactions and also accounted for areas of concrete cracking and plastic deformation in the reinforcement. Their analyses and conclusion that the stack would not suffer significant damage and would continue to perform its function were reviewed in detail as part of the DOE-HQ review of the FSAR. The DOE review concluded that the stack meets DOE requirements for a High Hazard structure as specified in UCRL-15910.

The 1947 vintage design criteria for the 234-5Z supply/291-Z exhaust ventilation system could not be located during the FSAR preparation effort, however, the functions and abnormal conditions associated with this system were analyzed extensively and documented in the FSAR. Included in these analyses was response of the main process buildings to the Design Basis Earthquake. The original design appears to have invoked only Uniform Building Code seismic requirements for the ventilation system equipment and its electric and backup steam power supplies. Past studies indicate failure of electric power and steam following a Design Basis Earthquake. Failure of exhaust fans due to the earthquake was assumed in the safety analysis. The analysis demonstrates that loss of operation of the exhaust fans is acceptable.

The 2736-Z Plutonium Storage Complex consists of four buildings constructed at different times from 1970 to 1982 to provide the following functions:

2736-Z - Plutonium Storage Vaults.

2736-ZA - Exhaust ventilation with diesel generator backup and filtration service for the 2736-Z Vault.

2736-ZB - Shipping, receiving, non-destructive assay laboratory and repackaging glovebox support services for the 2736-Z Vault storage function. The mechanical equipment room in this building provides supply air for the vault and supply and filtered exhaust for the 2736-ZB facility.

2721-Z - Backup diesel generators for the PFP facility including ventilation and security related functions associated with the 2736-Z Storage Complex.

The ventilation systems for these building were designed to AEC Manual Chapter 6301 or DOE Order 6430.1, including a 0.25g Design Basis Earthquake, as applicable at time of design.

The ventilation systems included in this self assessment were analyzed for conformance to DOE Order 6430.1A as part of the FSAR preparation effort. Items of non-conformance were evaluated for safety significance and degree of

confidence of the understanding of implications of the non-conformance. A basis for acceptance of each non-conformance was documented.

Assessment Element Number 2: Authorization Basis Status

The current Authorization Basis for the PFP was established with the DOE approvals of the *PFP Operational Safety Requirements*, WHC-SD-CP-OSR-010, and the *PFP Final Safety Analysis Report*, WHC-SD-CP-SAR-021, respectively in May 1994 and January 1995. The DOE Safety Evaluation of the FSAR and OSR is documented in DOE/DP-0130, *Plutonium Finishing Plant Safety Evaluation Report*.

The OSRs for the PFP were prepared in accordance with the content and format requirements of the current applicable DOE Order, 5480.22. Ventilation system components that constitute the facility's safety class confinement Design Feature are included in the OSR.

The FSAR was submitted to DOE-HQ for approval prior to the issuance of DOE Order 5480.23, however, internal assessments by Westinghouse Hanford Company (WHC) and the DOE-HQ review validated that the FSAR content met the DOE Order 5480.23 requirements although the format follows the previously recommended NRC Reg Guide 3.39 format. Based on the OSR and FSAR, the Authorization Basis was established directly without a Basis for Interim Operation. The WHC Implementation Plan for DOE Orders 5480.21, 5480.22 and 5480.23 reflects this approach and identifies that because of the lack of defined long term processing mission for the PFP the FSAR will not be updated for format conformance to DOE Order 5480.23.

The FSAR contains analyses of the functions of the confinement and ventilation systems at PFP including upset conditions. Detailed analyses of seismic response of the facility structures and equipment, as well as less severe challenges to the ventilation system are documented in the FSAR. Lesser events such as loss of electricity, steam, or instrument air and resulting response of the ventilation system were also analyzed.
These analyses examined potential impacts to workers in the facility, nearby co-located workers on the Hanford Site (450-550 meters away) and public at the nearest site boundary (12.6 kilometers west of PFP) and are included in the FSAR. For most ventilation challenges, even severe accident airborne releases within the facility, the installed HEPA filters provide assurance that environmental discharge limits are met. Such limits provide for protection of the environment and personnel outside the facility.

No scenarios were identified where continued operation of the ventilation system is essential to prevent unacceptable airborne release of plutonium. Sections 9.1.7 and 9.2.2. of the FSAR provide a comprehensive overview of the ventilation system as it relates to safety issues. The static air posture was found to be an acceptable facility situation and results in most ventilation system components and functions being assigned as safety significant (WHC Safety Class 3). The final HEPA filtration, the stack air monitors, and the seismic ventilation cutoff switch are the exceptions and are considered Safety Class.

As part of the WHC assessment of FSAR adequacy relative to DOE Order 5480.23 content requirements and establishment of the administrative infrastructure necessary to implement the new FSAR and OSRs detailed System Description Documents were prepared for facility hardware systems that contain safety class (WHC Safety Class 1 and 2) and safety significant (WHC Safety Class 3) components. For the PFP confinement and ventilation systems these documents are:

- WHC-SD-CP-SDD-007, *Definition and Means of Maintaining the Structural Confinement Portion of the PFP Safety Envelope*
- WHC-SD-CP-SDD-005, *Definition and Means of Maintaining the Ventilation System Portion of the PFP Safety Envelope*
- WHC-SD-CP-SDD-006, *Definition and Means of Maintaining the Effluent Stack Monitors Portion of the PFP Safety Envelope*
- WHC-SD-CP-SDD-004, *Definition and Means of Maintaining the Ventilation System Seismic Shutdown Portion of the PFP Safety Envelope*

These documents provide detailed definitions of respective portions of the PFP Safety Envelope and specifically identify related hardware which provide Design Features. These documents further amplify the technical bases for selection of Safety Class components, definitions of operability and surveillance requirements necessary to fully implement the OSRs to assure that the PFP Safety Envelope in maintained. Safety Class items thus identified are maintained on a formal PFP Safety Equipment List.

The basis for the Safety Class designation of structures, systems and components at the PFP reflected in the System Design Descriptions is documented in WHC-SD-CP-TI-181, *Criteria for Identification and Control of Equipment Necessary for the Preservation of the Safety Envelope and Safe Operation of PFP*. This document fully encompasses the criteria contained in DOE Order 5480.22 as supplemented by some more restrictive Westinghouse House Hanford policies. This document also established a risk based prioritization system that was applied to configuration management activities such as bringing and maintaining essential facility drawings up to "As-Built" condition, component identification and labeling, operating and surveillance procedures. All ventilation system essential drawings for PFP are now maintained "As-Built" as a result of a concerted field verified drawing updating effort over the last 5 years.

One of the requirements of DOE Order 5480.23 and predecessor Orders is evaluation of the existing facility configuration in comparison to contemporary design requirements. For the structures and systems at PFP, this analysis was not embodied in the FSAR document but rather is contained in an ancillary document, WHC-SD-CP-ES-128, *Preliminary Evaluation of Plutonium Finishing Plant Conformance to DOE Order 6430.1A General Design Criteria.* This report documents assessments made by technical evaluation teams that examined the facility configuration relative to line by line requirements contained in DOE 6430.1A. Conformance or non-conformance to each requirement

was established as well as the severity of safety implications and consequences of the item. A confidence level of the technical understanding or analysis supporting the determinations was also documented in the report. Each non-conforming item was evaluated for acceptance or upgrade to assure that deviation from general design criteria did not compromise the PFP safety boundary, however, there were no specific requests for waivers from these requirements. The report documents the basis for acceptance of non-conforming items for which upgrades were not implemented. The pertinent details of this report with regard to the ventilation systems at PFP are provided below under Assessment Element 4: Comparison to Applicable DOE and Consensus Standards. As part of the FSAR review, the DOE-HQ reviewed applicable design criteria including comparisons of the PFP design criteria to that required by DOE Order 6430.1A and concluded in the *PFP Safety Evaluation Report* that, "Since the confinement barriers and system design criteria stated in the PFP FSAR were found to be consistent with DOE Order 6430.1A, they are acceptable."

Assessment Element Number 3: Operations and Maintenance

A review of operations and maintenance of the PFP ventilation systems was conducted as part of this self assessment. The work control system records for the previous two years were reviewed. Over the past two years 1182 work authorizations related to PFP System 25, Ventilation, have been established. One thousand five (1005) work authorizations have been completed and archived. On October 24, 1995 one hundred seventy seven (177) work authorizations remain active requiring additional work prior to archiving the package. Many of the 177 active packages are in the post work/review stage. This indicates the field work has been completed, however, the work package is still considered open while undergoing review to assure the documentation is complete. All work packages that have not progressed to beyond the Work Scheduled status were reevaluated by the Ventilation System Cognizant Engineer as part of this assessment to assure that their open status is not jeopardizing facility or personnel safety.

Overall this data demonstrates a work completion performance rate of greater than 85% (1005/1182 = 0.85) for all work authorizations initiated over the past 2 years. If one deleted "new" work requests from the base and considered work packages currently scheduled to be worked or beyond in the completion process the work completion ratio would be over 95%.

The operators of the ventilation systems receive formal training. Plutonium Finishing Plant (PFP) Power Operator Plant Specific Qualification course 200580 was established to ensure understanding of the bases and increase Power Operator's knowledge of procedures and requirements. This course is conducted in accordance with Westinghouse Hanford Company's safety practices and compliance with DOE orders. Response to alarm conditions is included in the training and in operating procedures. Each annunciator panel has an Alarm Response Procedure (ARP). The ARP's are prepared and validated per *PFP Administration Manual*, WHC-CM-5-8, Section 13.5.

The process used to validate operating documents, such as procedures, is detailed in WHC-CM-5-8, Section 13.5. Per this procedure a documented

assessment of an operating document is made to confirm its accuracy related to the intended usage. The validation method may include a final read-through and/or walk-through by the cognizant engineer and a certified operator, or may involve the preparation and performance of an Operability Test Procedure (OTP). To document and record preliminary review, an Operating Document Preliminary Review Form is used. For final acceptance and validation, a Document Acceptance Review Form is completed by the cognizant engineer and the certified operator.

Procedure validation is performed by the people responsible for the normal performance of the procedure and the author. In order of preference, the following methods are used:

First Use (Hands-On) - The procedure is performed as part of a reviewed and approved JCS work package and by personnel who would normally perform the procedure on the equipment. Safety class equipment may not be returned to service until either the procedure is approved or the equipment has been verified as operable using other approved documents after the validation.

Simulator - Performed on simulated equipment.

Walk-through - A step-by-step enactment of the procedure without carrying out the action.

Table-top - The procedure action steps are explained or discussed.

Reference - The information and/or experience developed in a common procedure validation program is referenced by similar activities.

Hardware configuration of the ventilation systems is maintained by performing work only through the Job Control System and recording hardware modifications on engineering drawings.

The Engineering Change Notice (ECN) is used to affect changes to engineering documents (drawings, supporting documents, etc.). This process is formalized in WHC-CM-6-1, *Standard Engineering Practices*, EP-2.2, Engineering Document Change Control. As part of this process of completing the ECN, Block 18 requires the system cognizant engineer to assess the impact of the change addressed by the ECN on other documents. Block 18 lists 45 types of related documents including numerous procedures. Each affected document is specifically listed in Block 19. This listing of documents along with the Impact Level Assessment (see WHC-CM-1-3, *Management Requirements and Procedures*, MRP 5.43) directs the signature chain and approval cycle of the ECN as recorded in Block 20. A signature in Block 20 is the recognition that the signing organization or individual has been notified of the affected document and assumes responsibility for taking the necessary action.

The organization or individual with primary responsibility for each affected document (i.e., maintenance procedure, operating procedure, engineering procedure, calibration procedure, surveillance, etc.) is responsible for

initiating the appropriate change request or change mechanism (ECN, document change request (DCR), procedures change authorization (PCA), interim procedure change (IPC), field change notice (FCN) or control manual document change request (CMDCR). Each type of document has its own tracking mechanism once the change request is entered into the system.

Under the Job Control System the cognizant engineer must verify in the post review process that all documents listed on the J-6 form have been modified before the work package can be sent on to the Work Control Center for close out and archiving.

The list of all PFP essential and support drawings is maintained in WHC-SD-CP-TI-125, *PFP Essential and Support Drawing List*. Essential drawings for the ventilation system include one-line schematics of ventilation systems and ventilation system control systems, including air flow, power supplies and controls. As part of a process restart effort several years ago PFP embarked on an as-built of all essential drawings. This as-built effort ensured that essential drawings match field configuration by a field verification program defined in WHC-SD-CP-WP-019, *Field Verification Program (PFP)*. The verification effort meets the requirements of WHC-CM-6-1, EP-1.3. Table 1 is a summary of ventilation system essential drawings and their status as it relates to the as-built and field verification program.

TABLE 1
Field Verification Program
Plutonium Finishing Plant

SYSTEM NO.	SAFETY SYSTEM, EQUIPMENT OR ITEM	DRAWING NO.	TITLE	AS-BUILT STATUS
25*	HVAC	H-2-099997/1-8	Magnehelic Differential Pressure Gauge Table	Complete
25*	HVAC	H-2-131559/1-5	Testable HEPA Filter Schedule	Complete
25A*	HVAC	H-2-016318/1-4	Fan Control Schematic & Control Panel	Complete
25A*	HVAC	H-2-023400/1-30	E-4 Ventilation Engineering Flow Diagram	Complete
25A*	HVAC	H-2-026089/1-17	HVAC Control Systems Plutonium Process Buildings	Complete
25A*	HVAC	H-2-027650	Ventilation Bldg. Zone Pressures	Complete
25A*	HVAC	H-2-027651	Ventilation Bldg. Zone Pressures	Complete

SYSTEM NO.	SAFETY SYSTEM, EQUIPMENT OR ITEM	DRAWING NO.	TITLE	AS-BUILT STATUS
25A*	HVAC	H-2-027652	Ventilation Bldg. Zone Pressures	Complete
25A	HVAC	H-2-027968	Fan Control Ladder Elementary Diag.	Complete
25A	HVAC	H-2-028850	Electrical Plans, Section Diagrams, & Detail	Complete
25A	HVAC	H-2-029674/1-4	Ventilation Schematic Flow Diagram, 236-Z Building	Complete
25A	HVAC	H-2-029675/1-6	Ventilation Layout	Complete
25B/C*	HVAC	H-2-080159/1-6	Electrical HVAC Control Elementary Diagram, 2736-ZB	In progress
25B/C*	HVAC	H-2-080167/1-6	HVAC Air Flow & Control Diagrams, 2736-ZB	In progress
25D	HVAC	H-2-028852	HVAC Plan Details Flow Diagram, 241-Z	Complete
25E	HVAC	H-2-079466	P&ID 232-Z Exhaust System	In progress. To be combined with H-2-131620
25E	HVAC	H-2-079468/1-2	Exhaust Controls Schematic Loop Diagrams	In progress

* Controlled Print File Drawing

PFP Engineering adheres to a practice of field verifying installation or flow diagrams prior to engineering modifications, when the affected drawings are not previously field verified.

For existing systems, design requirements documents are developed at the time of modifications in accordance WHC-CM-6-1, EP-2.0, Engineering System Design Control. The engineering design and design modification requirements are documented in an Engineering Service Request (ESR) engineering design file which becomes a controlled, lifetime, quality-assurance record.

In developing design requirements, the design engineer is guided by a checklist and the safety class of the system, component or equipment. The checklist is intended to assist the design engineer in developing design requirements which include environmental and safety as well as functional and operational criteria. The design engineer is referred to various elements of DOE Order 6430.1A including seismic qualifications. For seismic

qualified equipment, the cognizant structural engineer is added to the design requirement review process. The engineer is reminded that depending on type of structure involved, special sections within the major chapters could apply to the design (e.g., plutonium processing and handling facility, nonreactor nuclear facility, etc.). For designs which involve new or modified electrical loads, the design engineer is required to add the cognizant electrical engineer to the design requirement review process. In a like fashion, environmental, safety, criticality, etc., factors are reviewed for applicability and reviewers are added to ensure proper compliance. Based upon the checklist, the design engineer drafts the design requirements which will be a required and distinct portion of the engineering design file and titled as such. The engineering procedure requires that the design requirements be approved by the ESR originator, the cognizant engineer, and the cognizant manager as a minimum. As indicated above and depending upon the requirements, others may be added to the review and approval cycle.

Verification of technical design is performed in accordance with EP-4.1, Design Verification Requirements. Design reviews are conducted to ensure that the technical design meets the specified design inputs (requirements) and that the design analysis is correct. The cognizant engineer determines the type of design review depending upon the complexity, safety class, and magnitude of the design effort. The cognizant manager must approve the cognizant engineer's recommended review approach.

The responsibilities, procedures, approval and documentation for single-use, engineering specifications (construction and non-construction) are described in WHC-CM-6-1, EP-1.2, Engineering Specifications. The requirements for a multi-use specification is detailed in Hanford Plant Standard (HPS), Standard Design Criteria, SDC 1.4. Each specification is provided with a unique identifier (see para. 5.4, EP-1.2) and is a controlled document. Changes to single-use specifications are controlled and verified by the Engineering Change Notice (ECN) whose preparation, review/approval, release and incorporation are detailed in WHC-CM-6-1, EP-2.2, Engineering Document Change Notice. Changes to multi-use specification are controlled by SDC 1.4. Each specification is provided with a unique identifier and treated as a lifetime, quality assurance document.

For large and capital projects, design requirements begin to be generated during engineering studies and are formally documented in the Functional Design Criteria, and Conceptual, Preliminary, and Final Design Reports. Each of these documents are reviewed, verified, and approved as engineering supporting documents (see *Project Management*, WHC-CM-6-2, Section 1.0, Project Management) and become part of the project file. Each project file has a unique number. The project engineer and manager determine the reviewers based upon the scope of the project. The system cognizant engineer is always a reviewer of these design requirement documents. The reviewer is responsible for expressing concerns on a Review Comment Record (RCR). Each comment must be dispositioned by the project engineer to the satisfaction of the reviewer. In this manner, the cognizant engineer maintains control over his/her system and ensures that interfaces and boundary conditions are maintained.

Assessment Element Number 4: Comparison to Applicable DOE and Consensus Standards

One of the requirements of DOE Order 5480.23 and its predecessor, DOE Order 5481.1B, is evaluation of the existing facility configuration in comparison to contemporary design requirements. For the structures and systems at PFP, this analysis was not embodied in the FSAR document but rather is contained in an ancillary document, WHC-SD-CP-ES-128,

Preliminary Evaluation of Plutonium Finishing Plant Conformance to DOE Order 6430.1A General Design Criteria. This report documents assessments made by technical evaluation teams that examined the facility configuration relative to line by line requirements contained in DOE 6430.1A.

The general design criteria were grouped into the following nine subject categories:

- Structure
- Confinement
- Ventilation
- Fire Protection
- Instrumentation and Control
- Utilities
- Electrical
- Facility Design
- Administrative Control

Each of the major process buildings at the PFP were assessed against each requirement contained in DOE 6430.1A including the applicable requirements for Special Facilities such as Section 1305, Plutonium Storage Facilities.

Conformance or non-conformance to each requirement was established as well as the severity of safety implications and consequences of the item. A confidence level of the technical understanding or analysis supporting the determinations was also documented in the report. Each non-conforming item was evaluated for acceptance or upgrade to assure that deviation from general design criteria did not compromise the PFP safety boundary. The report documents the basis for acceptance of non-conforming items for which upgrades were not implemented. Table 2 reproduces in a simplified format the previous evaluation of Ventilation requirements for the facilities that are subject of this self assessment. The results were reviewed to assure that facility modifications made subsequent to the original assessment did not negate the previous conclusions. No such instance was found to exist. The review did, however, identify several apparent typographical errors in the original document. These are identified and the correct information is provided in Table 2.

Assessment Element Number 5: Corrective Action Plans

Based on the established Authorization Basis and reviews of the PFP ventilation systems as described above, there are no Unreviewed Safety Questions nor issues or design deficiencies that warrant a corrective action plan.

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 1 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANCE NONCONFORMANCE EVALUATION
DIVISION 1	GENERAL REQUIREMENTS			
0110	Architectural and Special Design Requirements			
0110-12	Energy Conversation			
0110-12.2	General			
	1. For existing construction, ASHRAE Standard 100 shall apply.	No	No	No Safety Consequence. All Nonconforming Facilities: Ac is based on low hazard.
DIVISION 11	EQUIPMENT			
1161	Enclosures			
1161-4	Ventilation			
	2. A ventilation system shall be installed on all enclosure systems to maintain a minimum negative pressure differential of 0.3 in. of water inside the enclosure (except open-face hoods) with respect to the operating area.	Yes	Yes	Potential unacceptable onsite cons
	3. Open-face hoods shall be ventilated such that flow from the operating area into the hood is maintained.	Yes	Yes	Potential unacceptable onsite cons
	4. Safety class items of the ventilation system shall be supplied with emergency power.	No	No	Potential unacceptable offsite cons All Nonconforming Facilities: Ac based on low risk. The 1E powe requirement for the identified buil ventilation systems is not necessa on accident analysis. Briefly, the Safety Class 1 components of the ventilation system are the final H filters (passive elements) and the ventilation shutdown system (fall Accident analysis requires ventila shutdown for the seismic event.

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 2 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANCE & NONCONFORMANCE EVALUATION
				Chapter 9, "Accident Safety Analysis," Section 9.2 of the "PFP Final Safety Analysis Report," WHC-SD-CP-SAR-021.
	5. Failure of any single component or control function shall not compromise minimum adequate ventilation.	Yes	Yes	Potential unacceptable onsite consequence.
	6. HEPA filters shall be provided at the interface of the enclosure outlet and the ventilation system to minimize the contamination of ductwork and at the enclosure inlet to prevent movement of contamination within the enclosure to the operating area in the event of a flow reversal.	Yes	Yes	Potential Environmental or Facility Worker Impact.
	7. The system shall be designed to automatically ensure adequate inflow of air through a credible breach in the enclosure system.	Yes	Yes	Potential unacceptable onsite consequence
	8. Minimum inward air velocity shall be 125 plus or minus 25 linear ft/min or as determined from guidance provided in the ACGIH Industrial Ventilation Manual.	Yes	Yes	Potential unacceptable onsite consequence
	PFP Specifies: Panel breach	No	N/A	Potential unacceptable onsite consequence. 234-5Z: Accept as is based on low hazard. Panel breach events have been evaluated with respect to onsite/offsite release potential in Chapter 9, "Accident Safety Analysis," of the "PFP Final Safety Analysis Report," WHC-SD-CP-SAR-021. Panel breach events present no hazard to onsite/offsite personnel.
	9. The design of the enclosure ventilation flow pattern shall minimize the spread of fire, and fire screens shall be provided where necessary.	Yes	Yes	Potential unacceptable onsite consequence.
	10. For enclosures where overpressurization is possible, a system shall be provided to ensure that confinement is not breached.	Yes	Yes	Potential unacceptable onsite consequence.
	11. Small enclosure systems with positive-pressure supplied gases shall have positive-acting, pressure-relief devices (connected into the exhaust system) to prevent pressurization of the enclosure.	Yes	Yes	Potential unacceptable onsite consequence.

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 3 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANCE & NONCONFORMANCE EVALUATION
DIVISION 13	SPECIAL FACILITIES			
1304	Plutonium Processing and Handling Facilities			
1304-5	Special Design Features			
	12. Exhaust ventilation systems shall be provided with HEPA filtration to minimize the release of plutonium and other hazardous material through the exhaust path.	Yes	Yes	Potential unacceptable offsite consequence
	13. In addition, intake ventilation systems shall also be provided with either HEPA filtration or fail-safe backflow prevention to minimize the release of plutonium and other hazardous material through the inlet path.	No	No	Potential unacceptable onsite consequence All Nonconforming Facilities: Accept as is based on accident scenarios and consequences for abnormal ventilation operation as presented in Chapter 9, "Accident Safety Analysis," of the "PFP Final Safety Analysis Report," WHC-SD-CP-SAR-021.
1304-6	Confinement Systems			
1304-6.2	Primary Confinement System			
	14. The exhaust ventilation system shall be sized to ensure radiological doses are maintained at ALARA Levels in the event of the largest credible breach.	Yes	Yes	Potential unacceptable onsite consequence.
1304-6.3	Secondary Confinement System			
	15. Ventilation systems associated with confinement shall be designed with adequate capacity to ensure proper direction and velocity of air flow in the event of the largest credible breach in the barrier.	Yes	Yes	Potential unacceptable onsite consequence.
1304-7	Effluent Control and Monitoring			
1304-7.3	Effluents			
1304-7.3.1	Airborne Effluents			

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 4 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANCE & NONCONFORMANCE EVALUATION
	16. The airborne radioactive effluents typically associated with PPHFs are furnace off-gas, airborne dust, off-gas from solvent processes, and corrosive vapor or mists from dissolvers. The design of airborne effluent systems shall consider and minimize plutonium holdup at locations in off-gas and ventilation ductwork and include provisions to detect and monitor the buildup of material and for its recovery.	Yes	Yes	Potential unacceptable onsite consequence
1305	Plutonium Storage Facilities			
1305-5	Confinement Systems			
1305-5.1	General			
	17. Exhaust ventilation systems shall be provided with HEPA filtration to minimize the release of plutonium and other hazardous material through the exhaust path.	Yes	Yes	Potential unacceptable offsite consequence.
	18. In addition, inlet ventilation systems shall also be provided with either HEPA filtration or fail-safe backflow prevention to minimize the release of plutonium and other hazardous material through the inlet path.	No	No	Potential unacceptable onsite consequence All Nonconforming Facilities: Accept as is based on accident scenarios and consequences for abnormal ventilation operation as presented in Chapter 9, WHC-SD-CP-SAR-021.
1305-6	Effluent Control and Monitoring			
1305-6.4	Effluents			
1305-6.4.1	Airborne Effluents			
	19. All airborne effluents from confinement areas shall be exhausted through a ventilation system designed to remove particulate material, vapors, and gases as needed to comply with Section 1300-1.4.3, Routine Releases.	Yes	Yes	Potential unacceptable offsite consequence

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 5 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANC NONCONFORMANC EVALUATION
DIVISION 15	MECHANICAL			
1550	Heating, Ventilating and Air-Conditioning Systems			
1550-1	General Sizing and Design Criteria			
1550-1.5	Ventilation-Exhaust Systems Design Requirements			
1550-1.5.7	Equipment Room Ventilation			
	20. Mechanical and electrical equipment rooms shall be exhausted so that room temperature does not exceed NEMA equipment ratings. DOE project criteria shall provide the space temperature limit criterion. Where mechanical ventilation cannot maintain a satisfactory environment, evaporative cooling systems or other mechanical cooling systems shall be provided.	Yes	N/A	Potential unacceptable onsite cons
1550-2	Heating, Ventilating, and Air-Conditioning Systems Selection			
1550-2.5	Air Handling and Air Distribution Systems			
1550-2.5.1	General			
	21. Air flow diagrams shall be developed and provided in the preliminary design phase unless waived by the DOE project criteria. These diagrams shall be provided for each air handling and air distribution system and shall include capacities and locations of fans, coils, filters, terminal devices, and other major air distribution system equipment, as well as air flows and system air pressures and space pressure differentials.	Yes	Yes	Potential Environmental or Facili Worker Impact.
1550-2.5.5	Air Cleaning Devices			
	High-Efficiency Particulate Air Filters			
	22. HEPA filter assembles shall comply with ASME N509.			
	PFP Specifies: Wood frames	Yes	Yes	Potential unacceptable offsite co

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 6 of 24)

APPLICABLE SECTION		ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANC NONCONFORMANC EVALUATION
		Metal frames	No	Yes	Potential unacceptable offsite con All Nonconforming Facilities: A is based on low hazard. The Fla filters used in these facilities are retardant, wood framed filters. A "Fire Hazards Analysis For The Finishing Plant," WHC-SD-EN-R concludes that HEPA filters in th facilities could not be involved in maximum credible fire. The onl to HEPA filters is loading from s particles or products of combusti concluding that the HEPA filters intact but have a reduced airflow them.
	23.	HEPA filtration systems shall be used to minimize the release of particulate contaminants such as carcinogens, infectious agents, radioisotopes, or highly toxic materials when determined by safety analysis to be necessary.	Yes	Yes	Potential unacceptable offsite con
	24.	The design professional shall design for a location that facilitates in-place testing of HEPA filters, with particular attention given to plenum hardware provisions that allow for testing of the HEPA filter bank without requiring the testing personnel to enter the plenum. Utility services shall be extended to the plenum location (e.g., electrical receptacles and compressed air) to facilitate testing work.	Yes	Yes	Potential Environmental or Facili Worker Impact.
		PFP Specifies: 234-5Z Plenum	No	N/A	Potential Environmental or Facili Worker Impact. 234-5Z Plenum: Accept as is ba administrative, procedural and ra protection & industrial safety co established for entry into plenum Plant has been backfitted to exte practicable.
	25.	In-place testing design requirements shall meet all the recommendations	No	Yes	Potential unacceptable offsite co

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 7 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICA NONCONFORMA EVALUATION
	of UL 586, ASME N510, and ERDA 76-21.			All Nonconforming Facilities: is based on functional compli place testing configuration wa designed to current standards. methods are being used to ens uniformity of DOS distributio status of filters. Demonstrate performance of primary filtrat over 30+ year of operation h no problem (i.e., DOS testing demonstrates functional confo
	26. HEPA filtration systems shall be designed with prefilters installed upstream of HEPA filters to extend the HEPA filters life.	No	Yes	Potential Environmental or Fa Worker Impact. All Nonconforming Facilities: is based on evaluation of abn operations as presented in Ch "Accident Safety Analysis," o Final Safety Analysis Report, CP-SAR-021; low risk.
	Filters for Air Handling Systems Serving Inhabited Spaces			
	27. Filters include air filter devices and air filter media used in building environmental air handling systems for removing particulate matter from atmospheric air.			STATEMENT - NO RESPO REQUIRED
	28. These filters shall be specified to meet minimize efficiencies required by the ASHRAE Dust Spot method using atmospheric dust for medium-efficiency applications.	Yes	Yes	Potential Environmental or F Worker Impact.
	29. Filters shall be specified and installed for use as pre-filters, medium-efficiency filters, or high-efficiency filters. These filters shall comply with ARI 850.	Yes	Yes	Potential Environmental or F Worker Impact.
1550-2.5.5	Fire Protection of HEPA Filter Assemblies			
	30. In providing fire protection for the HEPA filters, the design shall	No	N/A	Potential unacceptable offsite

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 8 of 24)

APPLICABLE SECTION		ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANC NONCONFORMANC EVALUATION
		separate prefilters or fire screens equipped with water spray sufficiently from the HEPA filters to restrict impingement of moisture on the HEPA filters. Under conditions of limited separation, moisture eliminators or other means of reducing entrained moisture shall be provided.			234-5Z: Accept as is based on hazard. Fire screens supported sprays are not utilized. Fire ana "Fire Analysis for the Plutonium Plant," WHC-SD-EN-RA-001, c acceptable risk.
	31.	The HEPA filter fire protection system shall be activated in a manner consistent with the fire protection system in the room or building in which the filters are located and as directed by the cognizant DOE fire protection authority.	N/A	N/A	
1550-2.5.6	Ductwork Systems				
	32.	Ductwork systems shall be designed to meet the leakage rate requirements of SMACNA HVAC Air Duct Leakage Test Manual.	Yes	Yes	Potential Environmental or Facil Worker Impact.
	33.	Ductwork, accessories, and support systems shall be designed to comply with the following: • ASHRAE Fundamentals handbook • SMACNA HVAC Duct Construction Standards - Metal and Flexible • SMACNA Fibrous Glass Duct Construction Standards • SMACNA Round Industrial Duct Construction Standards • SMACNA HVAC Duct Design Manual • ACGIH Industrial Ventilation Manual • NFPA 45 • ERDA 76-21	Yes	Yes	Potential Environmental or Faci Worker Impact.
1550-2.5.6	34.	Ductwork shall also be designed to comply with NFPA 90A, including specification and installation of smoke and fire dampers at fire wall penetrations and smoke pressurization/containment dampers as required for smoke pressurization/evacuation systems.	No	No	Potential Environmental or Faci Worker Impact. All Nonconforming Facilities: is based on evaluation of fire ac scenarios and consequences in C "Accident Safety Analysis," of Final Safety Analysis Report," CP-SAR-021. Also, acceptable

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 9 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANC NONCONFORMANC EVALUATION
				low risk from fire as presented in SD-EN-RA-001, Rev. 0, "Fire H Analysis for the Plutonium Finisl Plant."
	35. Fire dampers shall not be used on exhaust system ducting if it is required to maintain confinement of hazardous materials during and after a fire event.	Yes	Yes	Potential unacceptable onsite con
	36. Exhaust ductwork shall comply with NFPA 91.	Yes	Yes	Potential Environmental or Facili Worker Impact.
	37. Ductwork systems shall have testing and balancing dampers and accessories specified and installed as discussed in Section 1550-3.2, Testing and Balancing Devices.	Yes	Yes	Potential Environmental or Facili Worker Impact.
1550-3	Testing, Adjusting and Balancing			
1550-3.1	System Performance Tests			
	38. The design professional shall specify system performance tests for mechanical air distribution and HVAC water distribution systems to verify compliance with DOE project criteria. These tests shall be performed by an independent AABC testing organization in accordance with the guidelines contained in ASHRAE Systems handbook and AABC Volume A-82 or by others as dictated in project-specific criteria.	N/A	N/A	
1550-3.1	Testing and Balancing Devices			
	39. HVAC air and water distribution systems shall be provided with permanently installed calibrated testing and balancing devices and access as needed to accurately measure and adjust water flows or air flows, pressures, or temperatures as required. The design professional shall provide as a minimum the balancing devices in Table 1550-3.2a and Table 1550-3.2b, (DOE 6430.1A). Test devices shall be located and installed according to AABC Volume A-82.	Yes	Yes	Potential Environmental or Facil Worker Impact.

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 10 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANCE & NONCONFORMANCE EVALUATION
1550-99	Special Facilities			
1550-99.0	Nonreactor Nuclear Facilities - General			
1550-99.0.1	General Ventilation and Off-gas Criteria			
	40. These criteria cover ventilation and off-gas systems, or portions of them, that are classified as safety class item in accordance with Section 1300-3.2, Safety Class items.			STATEMENT - NO RESPONSE REQUIRED.
	41. Safety class ventilation and off-gas systems are generally designed to operate in conjunction with physical barriers to form a confinement system to limit the release of radioactive or other hazardous material to the environment and to prevent or minimize the spread of contamination within the facility.			STATEMENT - NO RESPONSE REQUIRED.
	42. Ventilation systems shall be designed to provide a continuous airflow pattern from the environment into the building and then from noncontaminated areas of the building to potentially contaminated areas and then to normally contaminated areas. Thus, the air flow is toward areas of higher radioactive or hazardous material contamination.	Yes	Yes	Potential unacceptable onsite consequence.
	43. Dampers shall be located so that cross-contamination will not occur in case of a localized release of material.	Yes	Yes	Potential unacceptable onsite consequence.
	44. Ventilation system balancing shall be specified to ensure that the building air pressure is always negative with respect to the outside atmosphere.	Yes	Yes	Potential unacceptable onsite consequence.
	PFP Specifies: Office areas	No	No	Potential Environmental or Facility Worker Impact. All Nonconforming Facilities: Accept as is based on a ventilation system which maintains negative to all contamination control zones. Note: "cold side" office areas of the 234-5Z, 232-Z and 2736-ZB facilities are maintained positive with respect to atmosphere. This condition

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 11 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANCE & NONCONFORMANCE EVALUATION
				reduces the potential for bringing "fallout" contamination into plutonium facilities thereby greatly simplifying the type of radiation detection equipment (beta/gamma) required for inside facility use while still permitting detection and control over potential inside contamination events.
	45. Portions of ventilation and off-gas systems that provide required functions following a seismic event shall be designed to be functional following a DBE.	N/A	Yes	Potential unacceptable offsite consequence
	46. The failure of ventilation and off-gas systems not designed as a safety class systems shall not prevent other facility safety class systems from performing their required safety functions.	N/A	Yes	Potential unacceptable offsite consequence
	47. Gas storage areas and process areas that use hazardous materials shall have ventilation systems designed to ensure that the hazardous material concentrations do not exceed the limits referenced in DOE 5480.10 and are ALARA in the workplace environment.	Yes	Yes	Potential unacceptable onsite consequence
	48. Effective loss-of-ventilation alarms shall be provided in all of these areas.	No	No	Potential unacceptable onsite consequence 241-Z: Accept as is based on low risk from postulated building failure. The below ground tanks are protected from building collapse by seismically qualified cover blocks. The radioactive and hazardous material source term in this facility is well within acceptable limits. **(Self Assessment Review Results: The previous assessment document has several apparent typographical errors the respective pages. Review indicates both systems are in conformance.)**
	49. Suitable off-gas stream pretreatment shall be provided upstream of the off-gas cleanup system to remove or reduce the concentration of	Yes	N/A	Potential unacceptable onsite consequence

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANCE & NONCONFORMANCE EVALUATION
	chemicals that would adversely affect system operation.			
	50. Components of ventilation and off-gas systems that require electric power to perform their safety functions shall be considered safety class loads.	Yes	Yes	Potential unacceptable offsite consequence
	51. Adequate instrumentation and controls shall be provided to assess ventilation or off-gas system performance and allow the necessary control of system operation.	Yes	Yes	Potential unacceptable offsite consequence.
	52. Equipment in ventilation and off-gas systems shall be appropriately qualified to ensure reliable operation during normal operating conditions, anticipated operational occurrences, and during and following a DBE.	No	No	Potential unacceptable offsite consequence. All Nonconforming Facilities: Accept as is based on evaluation of abnormal operations, design basis accidents (fire, explosion, etc.) and design basis earthquake accident scenarios and consequences presented in Chapter 9, "Accident Safety Analysis," of the "PFP Final Safety Analysis Report," WHC-SD-CP-SAR-021.
1550-99.0.2	Confinement Ventilation Systems			
	53. The design of a confinement ventilation system shall ensure the ability to maintain desired airflow characteristics when personnel access doors or hatches are open.	Yes	Yes	Potential unacceptable onsite consequence.
	54. The ventilation system design shall provide the required confinement capability under all credible circumstances with the addition of a single failure in the system.	Yes	Yes	Potential unacceptable onsite consequence.
	55. If the maintenance of a controlled continuous confinement airflow is required, electrical equipment and components required to provide this airflow shall be supplied with safety class electric power and provided with an emergency power source.	N/A	No	Potential unacceptable offsite consequence. 2736-ZB: Accept as is based on evaluation of abnormal operations, design basis accidents (strong wind, explosion, etc.) and design basis earthquake accident scenarios and consequences presented in Chapter 9, "Accident Safety Analysis," of

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 13 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICAN NONCONFORMAN EVALUATION
				the "PFP Final Safety Analysis Report," WHC-SD-CP-SAR-0 **Assessment Review Results: indicates that the requiremer applicable to the Storage Co**
	56. Air cleanup systems shall be provided in confinement ventilation exhaust systems to limit the release of radioactive or other hazardous material to the environment and to minimize the spread of contamination within the facility as determined by the safety analysis. The following general cleanup system requirements shall be met, as appropriate, for confinement ventilation system design:			STATEMENT - NO RESPON REQUIRED.
	• The level of radioactive material in confinement exhaust systems shall be continuously monitored. Alarms shall be provided that will annunciate in the event that activity levels above specified limits are detected in the exhaust stream.	Yes	Yes	Potential unacceptable offsite
	• Appropriate manual or automatic protective features that prevent an uncontrolled release of radioactive material to the environment or workplace shall be provided.	Yes	Yes	Potential unacceptable offsite
	• To limit onsite doses and to reduce offsite doses by enhancing atmospheric dispersion, elevated confinement exhaust discharge locations are required. The height of the exhaust discharge location shall ensure that the calculated consequences of normal or accidental releases shall not exceed the radiological guidance contained in Section 1300-1.4, Guidance on Limiting Exposure of the Public.	Yes	No	Potential unacceptable offsite All Nonconforming Facilities: is based on low risk. The ac analyzes documented in Chap "Accident Safety Analysis," S 9.1.7, 9.1.8 and 9.2 of the " Safety Analysis Report," WH SAR-021, show acceptable of site dose consequences consis Section 1300-1.4, "Guidance Exposure Of The Public."
	• An elevated stack shall be used for confinement exhaust discharge. Provisions shall be made to ensure an adequate ventilation exhaust discharge path in the event of stack failure.	No	No	Potential unacceptable onsite All Nonconforming Facilities: is based on acceptable risk, S strong wind analysis conclud

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 14 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANCE & NONCONFORMANCE EVALUATION
				not fall. In addition the 291-Z-1 stack is restrained by tie down to assure collapse, though not credible by natural forces phenomena or accidents, will not impact surrounding structures. See Chapter 9, "Accident Safety Analysis," of the new "PFP Final Safety Analysis Report," WHC-SD-CP-SAR-021, for specific natural forces accident scenarios and consequences demonstrating no acceptable onsite or offsite consequence.
	The stack shall be located so that it cannot fall on the facility or an adjacent facility containing safety class items. The alternative is the construction of a stack that shall remain functional following a DBE, severe natural phenomena, and man-made events.	N/A	Yes	Potential unacceptable offsite consequence
•	Safety class air filtration units shall be designed to remain functional throughout DBAs and to retain collected radioactive material after the accident.	No	Yes	Potential unacceptable offsite consequence All Nonconforming Facilities: Accept as is. Since air filtration units were not designed and installed per the safety class of the equipment in which they serve, failure or continued operation (i.e., whichever is worst condition) is assumed for all accident scenarios and design basis events. The failure or continued operation of air filtration units (i.e., worst case condition) is evaluated in Chapter 9, "Accident Safety Analysis," of the "PFP Final Safety Analysis Report," WHC-SD-CP-SAR-021, to demonstrate no unacceptable onsite or offsite consequence. Those air filtration systems which are required to either fail or remain active, depending upon worst case, are qualified in that mode.
•	The number of air filtration stages required for any area of a facility	Yes	Yes	Potential unacceptable offsite consequence

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 15 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICAN NONCONFORMAN EVALUATION
	shall be determined by safety analysis based on the quantity and type of radioactive materials to be confined.			
	• Air filtration units shall be installed as close as practical to the source of contaminants to minimize the contamination of ventilation system ductwork.	Yes	Yes	Potential Environmental or Faci Worker Impact.
	• Ducts shall be sized for the transport velocities needed to convey, without settling, all particulates contaminants.	No	No	Potential unacceptable onsite co All Nonconforming Facilities: is based on overall system desig procedural controls which preve accumulations. Also, acceptabl evaluation of abnormal operatio basis accidents (fire, explosion, design basis earthquake acciden and consequences presented in C "Accident Safety Analysis," of t Final Safety Analysis Report," CP-SAR-021.
	• Air filtration units shall be located and provided with appropriate radiation shielding to maintain occupational doses ALARA during operations and maintenance.	Yes	Yes	Potential Environmental or Faci Worker Impact.
	• Air filtration units shall be designed for ease of recovery of fissile material and other materials capable of sustaining a chain reaction in case of an accident as well as during normal operations.	N/A	N/A	
	• The cleanup system shall have installed test and measuring devices and shall facilitate monitoring operations, maintenance, and periodic inspection and testing during equipment operation or shutdown, as appropriate.	Yes	Yes	Potential unacceptable offsite co
	• Where spaces, such as a control room, are to be occupied during abnormal events, safety class filtration systems shall be provided on the air inlets to protect the occupants. As a minimum, air inlets shall be filtered to limit the loading of exhaust filters with normal atmospheric dust.	No	No	Potential unacceptable onsite co All Nonconforming Facilities: is based on plant procedures wh evacuation whenever radioactiv present in significant quantities

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 16 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANC NONCONFORMANC EVALUATION
				availability of respiratory protecti equipment throughout the facility including control rooms.
	• Either HEPA filtration or fail-safe backflow prevention for process area intake ventilation systems shall be provided.	No	No	Potential unacceptable offsite con All Nonconforming Facilities: A is based on evaluation of abnorm operations, design basis accidents explosion, etc.) and design basis earthquake accident scenarios an consequences presented in Chapt "Accident Safety Analysis," of th Final Safety Analysis Report," W CP-SAR-021.
	• Consideration shall be given to providing roughing filters or prefilters upstream of a HEPA filter to maximize the useful life of the HEPA filter and reduce radioactive waste volume.	No	Yes	Potential Environmental or Facili Worker Impact. & Potential una offsite consequence. All Nonconforming Facilities: A is based on low risk and plant pr for evacuation and the availabilit of respiratory protection equipm throughout the facility as require **Assessment Review Results: A errors in the original documen are no potential offsite conseq associated with nonconformanc Nonconformance evaluation in document is not germane. The requirement is not related to s**
	Hot cell exhaust systems shall be as follows:			
	• Exhaust prefilters and HEPA filters shall be installed in such a manner as to facilitate filter changing and repairs.	Yes	N/A	Potential Environmental or Facil Worker Impact.
	• Standby filters provide backup protection and facilitate changing the primary filters without shutting down the exhaust fans. Standby filters	Yes	N/A	Potential Environmental or Facil Worker Impact.

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 17 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANCE & NONCONFORMANCE EVALUATION
	shall be installed outside the cell and sealed in an acceptable enclosure for direct maintenance.			
	• All exhaust systems shall have monitors that provide an alarm if the concentration of the hazardous material in the exhaust exceeds specified limits.	No	N/A	Potential unacceptable onsite consequence 236-Z: Accept as is based on monitoring prior to stack exhaust.
	In facilities where plutonium or enriched uranium is processed, the following additional requirements shall be met:			
	• Wherever possible, the designer shall provide enclosures for confining the process work on plutonium and enriched uranium. Design criteria for enclosures of radioactive and other hazardous materials are provided in Section 1161, Enclosures.	Yes	Yes	Potential unacceptable onsite consequence
	• When these confinement enclosures are specified and designed, consideration shall be given to whether room ventilation air can be recirculated. If a recirculation ventilation system is provided, the design shall provide a suitable means for switching from the recirculation mode to a once-through ventilation system.	N/A	Yes	Potential unacceptable onsite consequence.
	• A safety analysis under DOE direction shall establish the minimum acceptable performance requirements for the ventilation system and the response requirements of system components, instrumentation, and controls under normal operations, anticipated operational occurrences, and DBA conditions.	Yes	Yes	Potential unacceptable offsite consequence.
	The safety analysis shall determine systems requirements such as the need for redundant components, emergency power for fans, dampers, special filters, and fail-safe valve/damper positions.	Yes	Yes	Potential unacceptable offsite consequence.
	The safety analysis and the guidelines provided by the cognizant DOE authority shall determine the type of exhaust filtration required for any area of the facility during normal operations, anticipated operational occurrences, and DBA conditions.	Yes	Yes	Potential unacceptable offsite consequence
	• If advantageous to operations, maintenance, or emergency personnel, the ventilation system shall have provisions for independent shutdown.	Yes	Yes	Potential unacceptable offsite consequence.

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 18 of 24)

APPLICABLE SECTION		ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANCE & NONCONFORMANCE EVALUATION
		When a system is shut down, positive means of controlling backflow of air to noncontaminated spaces shall be provided by positive shutoff dampers, blind flanges, or other devices.	Yes	Yes	Potential unacceptable onsite consequence.
1550-99.0.2 (Continued)	•	Equipment to continuously monitor oxygen levels shall be provided for occupied working areas of facilities equipped with significant quantities of inerted or oxygen-deficient process glovebox lines.	N/A	N/A	
	•	The supply air to enclosures that confine the processing of plutonium and enriched uranium shall be filtered by HEPA filters at the ventilation inlets to the enclosures and area confinement barriers to prevent the transport of radioactive contamination in the event of a flow reversal.	Yes	Yes	Potential unacceptable onsite consequence.
	•	If room air is recirculated, at least one stage of HEPA filtration shall be provided in the recirculation circuit.	N/A	Yes	Potential unacceptable onsite consequence.
		The design shall include redundant filter banks and fans that shall be located based on the results of the safety analysis.	N/A	Yes	Potential unacceptable onsite consequence.
		If recirculation systems are used, a means shall be provided to prevent contaminated process enclosure air from exhausting into the working area rooms. Process enclosure air (from hoods, gloveboxes, etc.) shall be treated and exhausted without any potential for recirculation to occupied areas.	N/A	Yes	Potential unacceptable onsite consequence.
	•	Ventilation system components and controls that require electric power to perform safety functions shall be supplied with a safety class UPS and/or emergency power supply as is determined to be required by a systems design/safety analysis.	Yes	Yes	Potential unacceptable offsite consequence.
	•	The designer shall specify and locate components in the exhaust systems to remove radioactive materials and noxious chemicals before the air is discharged to the environment.	Yes	Yes	Potential unacceptable offsite consequence.
		These components shall be capable of safely handling products of combustion. These systems shall be designed to operate under DBA conditions including the DBF. The exhaust system design shall ensure	Yes	Yes	Potential unacceptable onsite consequence.

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 19 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICAN NONCONFORMAN EVALUATION
	that effluents are safely directed through the appropriate ventilation ducts and not spread beyond the physical boundary of the ventilation system until treated.			
•	The number of required exhaust filtration stages to limit the quantity and concentration of airborne radioactive or other hazardous materials released to the environment from any area of the facility shall be determined by the safety analysis. The design shall include all necessary cleaning and detection equipment for detection and removal of noxious chemicals from the exhaust ventilation system.	Yes	Yes	Potential unacceptable offsite co
•	HEPA filters shall be installed at the interface between the enclosures that confine the process and the exhaust ventilation system to minimize the contamination of exhaust ductwork.	Yes	Yes	Potential Environmental or Faci Worker Impact.
	Prefilters shall be installed ahead of HEPA filters to reduce HEPA filter loading.	No	Yes	Potential Environmental or Faci Worker Impact. All Nonconforming Facilities: is based on the accident analyse in Chapter 9, "Accident Safety of the "PFP Final Safety Analy WHC-SD-CP-SAR-021, demon unacceptable consequence to on offsite personnel.
	The filtration system shall be designed to allow reliable in-place testing of the HEPA filter and simplify filter replacement.	Yes	Yes	Potential Environmental or Fac Worker Impact.
•	Separate exhaust ventilation system ductwork and the initial two stages of filtration shall be designed for exhaust air from enclosures that confine the process (e.g., gloveboxes).	Yes	Yes	Potential unacceptable onsite co
	These systems shall maintain a negative pressure inside the enclosure with respect to the operating area.	Yes	Yes	Potential unacceptable onsite co
	These systems shall be designed to remove moisture, heat, and explosive and corrosive gases, as well as other contaminants.	No	Yes	Potential unacceptable onsite co All Nonconforming Facilities: is based on administrative and

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 20 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICAN NONCONFORMAN EVALUATION
				controls for the ventilation syst Significant corrosion gases scr remainder of paths monitored HEPA filters DOS tested routi verify system performance.
	These systems shall be designed to automatically ensure adequate inflow of air through a credible breach in the enclosure confinement.	Yes	Yes	Potential unacceptable onsite e
•	Enclosures that confine the process and are supplied with gases at positive pressure shall have positive-acting pressure-relief valves that relieve to the exhaust system to prevent over-pressurization of the process confinement system.	Yes	Yes	Potential unacceptable onsite e
•	The design of air cleaning systems for normal operations, anticipated operational occurrences, and DBA conditions shall include the use of the following equipment as directed by the cognizant DOE authority and these criteria: - Prefilters - Scrubbers - Process vessel vent systems-HEPA filters - Sand filters - Glass filters - Radioiodine absorbers - Condensers - Distribution - Pressure and flow measurement devices	Yes	Yes	Potential unacceptable onsite e
•	Airborne contaminant cleaning systems shall be designed for convenient maintenance and the ability to decontaminate components and replace components in the supply, exhaust, and cleanup systems without exposure of maintenance to service personnel to hazardous materials.	No	No	Potential Environmental or Fa Worker Impact. All Nonconforming Facilities: as based on the accident analy in Chapter 9, "Accident Safet of the "PFP Final Safety Ana WHC-SD-CP-SAR-021, dem unacceptable consequence to offsite personnel.

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 21 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICA NONCONFORMA EVALUATION
	Filtration systems shall be designed so that a bank of filters can be completely isolated from the ventilation systems during filter element replacement.	Yes	Yes	Potential Environmental or Fa Worker Impact.
1550-99.0.3	Off-Gas System			
57.	The source and characteristics of radioactive material in off-gas systems shall be identified.	Yes	Yes	Potential unacceptable onsite e
58.	The design of an off-gas system shall be commensurate with the characteristics of the radioactive material in the off-gas and the risk associated with its release as an effluent.	Yes	Yes	Potential unacceptable offsite e
59.	The design of the off-gas system shall ensure that off-site doses resulting from normal system operation are maintained within the guidelines referenced in Section 1300.1.4.3, Routine Releases, and are ALARA.	Yes	Yes	Potential unacceptable offsite
60.	Portions of off-gas systems and components that are required to control or limit the release of radioactive material to the environment or for safe operation of the system shall be provided with redundancy.	Yes	Yes	Potential unacceptable onsite e
61.	Electrical equipment and components of off-gas systems that require electric power to perform their safety functions shall be considered safety class loads.	Yes	Yes	Potential unacceptable offsite
62.	Adequate instrumentation shall be provided to monitor and assess system performance and to provide necessary alarms.	Yes	Yes	Potential unacceptable offsite
63.	Appropriate manual or automatic protective features shall be provided to prevent an uncontrolled release of radioactive material to the environment and to minimize the spread of contamination within the facility.	Yes	Yes	Potential unacceptable offsite
64.	The off-gas system shall be designed to allow periodic maintenance, inspection, and testing of components.	Yes	Yes	Potential unacceptable onsite

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 22 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICAN NONCONFORMAN EVALUATION
	65. The system's capacity shall be consistent with the needs for handling off-gas from components and systems during normal operations, anticipated operational occurrences, and DBA conditions.	Yes	Yes	Potential unacceptable onsite co
	66. Process systems tanks and other sealed components shall be vented to an off-gas system.	Yes	Yes	Potential unacceptable onsite co
	67. The design of process confinement off-gas treatment systems shall preclude the accumulation of potentially flammable quantities of hydrogen generated by radiolysis or chemical reactions within process equipment.	Yes	Yes	Potential unacceptable onsite co
	68. Vents for liquid components shall be provided with traps and drains to prevent inadvertent flooding of off-gas systems.	Yes	Yes	Potential unacceptable onsite co
	69. Adequate shielding shall be provided for filters, absorbers, scrubbers, and other off-gas treatment systems components to maintain occupational exposures within the limits specified in DOE 5480.11. In addition, to the extent practical, the shielding design shall use ALARA principles to minimize overall exposures.	Yes	Yes	Potential Environmental or Fac Worker Impact.
	70. Corrosive gases and particles from vats, scrubbers, and similar equipment in gloveboxes shall be neutralized prior to reaching the HEPA off-gas filters.	No	No	Potential Environmental or Fac Worker Impact. All Nonconforming Facilities: is based on low risk and monit practices and administrative & controls established by plant m
	71. Air ventilated gloveboxes shall have the ability to safely contain in-box contaminants when an access port is opened or a glove ruptures.	Yes	Yes	Potential unacceptable onsite co
	72. Traps shall be designed for nuclear criticality safety under conditions of design loading of fissile or other materials capable of sustaining a chain reaction. The design shall also minimize the spread of contamination during replacement.	Yes	Yes	Potential unacceptable onsite co
	73. All vent streams having the potential of containing significant quantities if radioactive material shall be processed by an off-gas cleanup system	Yes	Yes	Potential unacceptable offsite c

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 23 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANC NONCONFORMANC EVALUATION
	before being exhausted to the environment.			
	74. The cleanup systems shall be designed to remove particulate and noxious chemicals and control the release of gaseous radionuclides.			
	PFP Specifics: Particulates	Yes	Yes	Potential unacceptable onsite con
	Noxious Chemicals (NO_x/HF, CCl_4)	No	N/A	Potential unacceptable onsite con All Nonconforming Facilities: A is based on low risk and monitor practices and administrative & p controls established by plant ma
1595	Controls			
1595-6	Control of Air Handling Systems			
1595-6.1	Mechanical Ventilation Control			
	75. All supply, return, and exhaust ventilation systems shall be equipped with automatic and manual control of fan operation to shut off the fan when ventilation is not required.	Yes	Yes	Potential Environmental or Faci Worker Impact.
	76. These systems shall also be provided with manual gravity-operated or automatic control of dampers for outside air intake and exhaust or relief to prevent introduction of outside air when ventilation is not required.	Yes	Yes	Potential Environmental or Faci Worker Impact.
	77. Systems that circulate air shall be provided with minimum outdoor air damper position control to assure that the minimum outdoor air quantity is being introduced to the system.	N/A	Yes	Potential Environmental or Faci Worker Impact.
	78. Automatic dampers should fail open for return air and fail closed for outside air.	N/A	N/A	
1595-6.3	Automatic Control Dampers			
	79. Automatic air control dampers shall be specified to be the low-leakage type with a maximum leakage of 5 CFM/square foot at maximum, system velocity of 1500 FPM and 1-inch pressure differential.	Yes	Yes	Potential Environmental or Faci Worker Impact.

Table 2: Evaluation of Main (234-5Z, 236-Z and 242-Z) Buildings and 2736-Z Storage Complex (2736-Z, 2736-ZA and 2736-ZB) for Conformance with the Ventilation Requirements of DOE Order 6430.1A and Invoked Consensus Standards
(Sheet 24 of 24)

APPLICABLE SECTION	ITEM NUMBER/CRITERIA	CONFORMANCE MAIN BUILDINGS	CONFORMANCE STORAGE COMPLEX	SAFETY SIGNIFICANCE & NONCONFORMANCE EVALUATION
	80. The dampers shall be opposed-blade type for modulating control, but may be parallel-blade type for two-position control.	Yes	Yes	Potential Environmental or Facility Worker Impact.
	81. Dampers shall be sized for at least 20 percent of the total ductwork resistance pressure drop. Return air damper shall never be sized less than 1500 FPM.	Yes	Yes	Potential Environmental or Facility Worker Impact.
	82. Pilot positioners and operators shall be out of airstream.	Yes	Yes	Potential Environmental or Facility Worker Impact.