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TO: J. PARROTT --- NRC HEADQUARTERS
FROM: D.L. HORTON AOC-21 TEL: 716 942-4300

DATE: 01/03/2001
PAGE: 1

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CONTROLLED COPY#	PROC ID	REV#	FC#	ISSUE DATE	PROCEDURE TITLE
007	PSR-3	2		01/03/2001	BUILDING AND VESSEL VENTILATION SYSTEM REQUIREMENTS

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PSR-16	6	1	ANHYDROUS AMMONIA MONITORING INSTRUMENTATION AND STORAGE REQUIREMENTS	ACTIVE	06/27/2000	KOCIALSKI,T.F.
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Date: 01/02/01

Document ID Number: PSR-3 Revision Number: 2

Field Change Number (if applicable): _____

Document Title: Process Safety Requirement - Building and Vessel Ventilation System Requirements

Cognizant Author: Joe Johnson Ext. 674-8313 ext. 234
(Printed Name)

Describe the following information below:

(1) Where the change appears in the procedure. (2) Detail the changes that were made. (3) Why the change was made. (4) What organizations/personnel [by title] are affected by change.

(1.a) Page 2

(1.b) Throughout procedure as indicated by side revision bars

(1.c) Page 27

(2.a) Added reference to indicate source of Criterion 3.b

(2.b) Changed "per an approved procedure" to "per an approved IMPLEMENTING PROCEDURE" throughout as indicated by side revision bars

(2.c) Table 1 for WTF changed 8PDR-2 to 8PDR-10; 8PDR-2 to 8PDR-10A; 08PDAH-4 to 8PDAH-26; 08PDAH-4 to 8PDAH-26A

(3) Change (2.a) for clarity and completeness; change (2.b) for consistency throughout the PSR & to use appropriate terminology; change (2.c) to reflect instrumentation associated with relevant HEPA filter

(4) Tank Farm Engineering and Projects (Dan Meess)

West Valley Demonstration Project

Doc. ID Number PSR-3

Revision Number 2

Revision Date 01/03/2001

PROCESS SAFETY REQUIREMENTS

BUILDING AND VESSEL VENTILATION SYSTEM REQUIREMENTS

APPROVED BY _____ 1/2/01
Cognizant Manager — Date

APPROVED BY _____ 1/2/01
Radiation & Safety Committee, Chairman — Date

AUTHORIZATION _____ 1/3/01
TO IMPLEMENT Site Operations & Facility Closure Projects Manager — Date

AUTHORIZATION _____ 1-3-01
TO IMPLEMENT High Level Waste Projects Manager — Date

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PROCESS SAFETY REQUIREMENT - 3

TITLE: Building and Vessel Ventilation System Requirements

CRITERIA: High-efficiency particulate air (HEPA) filtered ventilation and off-gas systems shall be provided for Hazard Category 2 facilities. (PSR Criterion 3.b from WV-365, *Preparation of WVDP Safety Documents*, Attachment C, Process Safety Requirements Criteria.)

UNACCEPTABLE EVENT: Loss of airborne radioactive material confinement.

Process Safety Requirement - 3 Page No.

PROCESS SAFETY REQUIREMENT

BUILDING AND VESSEL VENTILATION SYSTEM REQUIREMENTS

APPLICABILITY

This Process Safety Requirement (PSR) applies to the following ventilation systems: the Vessel Off-Gas (VOG) System, the Head End Ventilation (HEV) System, the Main Plant Ventilation System, the Supernatant Treatment System Permanent Ventilation System (STS PVS), and the Waste Tank Farm (WTF) ventilation system. This PSR does not apply to systems providing ventilation for the Fuel Receiving and Storage (FRS) Facility. The vitrification facility ventilation and off-gas system requirements are contained in PSR-12, "Vitrification Facility Ventilation and Off-Gas Systems Requirements."

OBJECTIVE

The objective of this PSR is to ensure the OPERATION of ventilation systems in Hazard Category 2 facilities and the OPERABILITY of associated alarms, back-up systems, and switchover capability.

SPECIFICATIONS

1. HEPA FILTER (FILTER BANK) GENERAL REQUIREMENTS

1.1 LIMITING CONDITION FOR OPERATION

A high efficiency particulate air (HEPA) filter (FILTER BANK) installed for use at the WVDP for radionuclide removal (identified in Table 1) shall provide a collection efficiency of at least 99.95 percent for particulates 0.3 microns in diameter and larger. This requirement does not apply to HEPA FILTER BANKS in the Head End Ventilation System and the STS Permanent Ventilation System. Requirements for HEPA FILTER BANKS in these systems are detailed in their respective LIMITING CONDITION FOR OPERATION (LCO).

ACTION

A HEPA filter (FILTER BANK) that has been determined not to provide a collection efficiency of at least 99.95 percent for particulates 0.3 microns in diameter and larger shall be IMMEDIATELY removed from service and shall be replaced with a HEPA filter (FILTER BANK) having the required collection efficiency.

SURVEILLANCE REQUIREMENT

HEPA filters (FILTER BANKS) for the Vessel Off-Gas (VOG), Main Plant, and Waste Tank Farm (WTF) (identified in Table 1) shall be tested in-place ANNUALLY and after each filter change, before return to routine service, to establish that the installed filters (either individually, or collectively when in a FILTER BANK) provide a collection efficiency of at least 99.95 percent particulates 0.3 microns in diameter and larger. In-place leak tests shall be performed per an approved IMPLEMENTING PROCEDURE.

1.2 LIMITING CONDITION FOR OPERATION

a. Instrumentation (identified in Table 1) for monitoring differential pressure across the OPERATING final HEPA filter (FILTER BANK) and across the backup final HEPA filter (FILTER BANK) shall have current calibration.

b. Instrumentation (identified in Table 1) for monitoring differential pressure across the OPERATING final HEPA filter (FILTER BANK) shall be OPERATING.

c. Instrumentation (identified in Table 1) for monitoring differential pressure across the backup final HEPA filter (FILTER BANK) shall be OPERABLE.

ACTION

a. If any instrument (identified in Table 1) for monitoring differential pressure across the OPERATING final HEPA filter (FILTER BANK) and across the backup final HEPA filter (FILTER BANK) does not have current calibration, that instrument shall be declared INOPERABLE and IMMEDIATE efforts shall be taken to calibrate that instrument.

b. If the instrumentation monitoring differential pressure across the OPERATING final HEPA filter (FILTER BANK) should become INOPERABLE, filter operation may continue for ten days, provided that the instrumentation monitoring the differential pressure across the OPERATING FILTER TRAIN is OPERATING. If the OPERATING FILTER TRAIN differential pressure instrumentation is also INOPERABLE or unavailable, the backup FILTER TRAIN shall be placed on-line and IMMEDIATE efforts shall be taken to restore the OPERABILITY of the affected equipment. In systems not maintaining an OPERABLE backup FILTER TRAIN, operations within the facility shall be terminated within 24 hours and restart not permitted until the OPERABILITY of the affected equipment is restored.

c. If the differential pressure instrumentation associated with the backup final HEPA filter (FILTER BANK) should become INOPERABLE, IMMEDIATE efforts shall be taken to restore the OPERABILITY of the affected equipment.

SURVEILLANCE REQUIREMENTS

a. Instrumentation (identified in Table 1) for monitoring differential pressure across the OPERATING final HEPA filter (FILTER BANK) and across the backup final HEPA filter (FILTER BANK) shall be calibrated ANNUALLY per an approved IMPLEMENTING PROCEDURE.

b. Instrumentation (identified in Table 1) for monitoring the differential pressure across the OPERATING final HEPA filter (FILTER BANK) shall be monitored and the readings recorded once per SHIFT.

c. Instrumentation (identified in Table 1) for monitoring the differential pressure across the backup final HEPA filter (FILTER BANK) shall be monitored and the readings recorded at least once during the period when the backup final HEPA filter (FILTER BANK) is OPERATING to satisfy a SURVEILLANCE REQUIREMENT.

1.3 LIMITING CONDITION FOR OPERATION

a. Instrumentation (identified in Table 1) for monitoring differential pressure across the OPERATING FILTER TRAIN and across the backup FILTER TRAIN shall have current calibration.

b. Instrumentation (identified in Table 1) for monitoring differential pressure across the OPERATING FILTER TRAIN shall be OPERATING.

c. Instrumentation (identified in Table 1) for monitoring differential pressure across the backup FILTER TRAIN shall be OPERABLE.

ACTION

a. If any instrument (identified in Table 1) for monitoring differential pressure across the OPERATING FILTER TRAIN and across the backup FILTER TRAIN does not have current calibration, that instrument shall be declared INOPERABLE and IMMEDIATE efforts shall be taken to calibrate that instrument.

b. If the instrumentation monitoring the differential pressure across the OPERATING FILTER TRAIN should become INOPERABLE, IMMEDIATE efforts shall be taken to restore the OPERABILITY of the affected equipment.

c. If the differential pressure instrumentation associated with the backup FILTER TRAIN should become INOPERABLE, IMMEDIATE efforts shall be taken to restore the OPERABILITY of the affected equipment.

SURVEILLANCE REQUIREMENTS

a. Instrumentation (identified in Table 1) for monitoring differential pressure across the OPERATING FILTER TRAIN and across the backup FILTER TRAIN shall be calibrated ANNUALLY per an approved IMPLEMENTING PROCEDURE.

b. Instrumentation (identified in Table 1) for monitoring the differential pressure across the OPERATING FILTER TRAIN shall be monitored and the readings recorded once per SHIFT.

c. Instrumentation (identified in Table 1) for monitoring the differential pressure across the backup FILTER TRAIN shall be monitored and the readings recorded at least once during the period when the backup FILTER TRAIN is OPERATING to satisfy a SURVEILLANCE REQUIREMENT.

1.4 LIMITING CONDITION FOR OPERATION

Alarms (identified in Table 1) shall be OPERABLE for OPERATING ventilation or off-gas treatment systems.

ACTION

If an alarm becomes INOPERABLE, the filter or FILTER TRAIN differential pressure shall be monitored HOURLY and the readings recorded. IMMEDIATE efforts shall be taken to restore the OPERABILITY of the affected equipment.

SURVEILLANCE REQUIREMENT

Alarms (identified in Table 1) shall be tested QUARTERLY. OPERABILITY shall be determined per an approved IMPLEMENTING PROCEDURE.

1.5 LIMITING CONDITION FOR OPERATION

a. Set points for final OPERATING HEPA filter (FILTER BANK) low differential pressure alarms (identified in Table 1) shall be set less than the initial OPERATING differential pressure following filter changeout, and shall be reset to annunciate within 3 inches W.C. below the OPERATING differential pressure once the OPERATING differential pressure has exceeded 5 inches W.C.

b. The OPERATING differential pressure across any final HEPA filter (FILTER BANK) (identified in Table 1) shall not be below the low differential pressure alarm set point.

ACTION

a. If the final OPERATING HEPA filter (FILTER BANK) low differential pressure alarm set point is found not to be in compliance with the set point identified in the LCO, IMMEDIATE efforts shall be taken to reset the set point within the specified limit. Until the set point is reestablished, differential pressure shall be recorded on an HOURLY basis.

b. If the differential pressure across a final HEPA filter (FILTER BANK) is below the low differential pressure alarm set point, the ventilation system shall be IMMEDIATELY switched to the backup FILTER TRAIN. The integrity of all HEPA filters shall be verified and inoperable HEPA filters shall be replaced, if failed. In facilities not maintaining a redundant ventilation system, all operations within the facility shall be IMMEDIATELY shutdown in an orderly fashion and restart not permitted until proper system operation has been established.

SURVEILLANCE REQUIREMENTS

a. Final HEPA filter (FILTER BANK) low differential pressure alarm set points shall be verified WEEKLY to be set: 1) within 3 inches W.C. below the OPERATING differential pressure once the OPERATING differential pressure has exceeded 5 inches W.C., or 2) less than the OPERATING differential pressure if the OPERATING differential pressure has not yet exceeded 5 inches W.C.

b. Final OPERATING HEPA filter (FILTER BANK) differential pressure shall be recorded once per SHIFT. (Required to be performed routinely by SURVEILLANCE REQUIREMENT 1.2.b.)

1.6 LIMITING CONDITIONS FOR OPERATION

a. Set points for final OPERATING HEPA filter (FILTER BANK) high differential pressure alarms (identified in Table 1) shall be set no greater than 75 percent of the greatest differential pressure for which that filter (FILTER BANK) has been qualified (i.e., 7.5 inches W. C.).

b. The sustained OPERATING differential pressure across any final HEPA filter (FILTER BANK) (identified in Table 1) shall not exceed 85 percent of the greatest differential pressure for which that filter (FILTER BANK) has been qualified (i.e., 8.5 inches W. C.).

ACTION

a. If the final OPERATING HEPA filter (FILTER BANK) high differential pressure alarm set point is found to be set greater than 75 percent of the greatest differential pressure for which that filter has been qualified (i.e., 7.5 inches W. C.), IMMEDIATE efforts shall be taken to reset the set point within the specified limit.

b. If the sustained differential pressure across an OPERATING final HEPA filter (FILTER BANK) exceeds 85 percent of the greatest differential pressure for which the filter has been qualified (i.e., 8.5 inches W. C.), the backup HEPA filter (FILTER BANK) shall IMMEDIATELY be put on-line and the previously OPERATING filter (FILTER BANK) shall not be returned to service until OPERABILITY of the affected equipment is restored. In facilities not maintaining a backup filter (FILTER BANK), all operations within the facility shall be IMMEDIATELY shutdown in an orderly fashion and restart not permitted until OPERABILITY of the affected equipment is restored.

SURVEILLANCE REQUIREMENTS

a. OPERATING final HEPA filter (FILTER BANK) high differential pressure alarm set points shall be verified QUARTERLY in accordance with an approved IMPLEMENTING PROCEDURE.

b. Final OPERATING HEPA filter (FILTER BANK) differential pressure shall be monitored and recorded once per SHIFT and verified to be no greater than 85 percent of the greatest differential pressure for which the filter has been qualified (i.e., 8.5 inches W. C.). (Required to be performed routinely by SURVEILLANCE REQUIREMENT 1.2.b.)

2. VESSEL OFF-GAS (VOG) SYSTEM

2.1 LIMITING CONDITION FOR OPERATION

The VOG System shall maintain an OPERATING FILTER TRAIN and exhaust blower and an OPERABLE backup FILTER TRAIN and exhaust blower for redundancy.

ACTION

If redundancy in filtration capability or exhaust blower OPERABILITY is lost, LWTS operations may continue provided a FILTER TRAIN and exhaust blower are OPERATING, and that IMMEDIATE effort is taken to restore the OPERABILITY of the affected equipment. If both FILTER TRAINS or exhaust blowers become INOPERABLE, LWTS operations shall be terminated within 24 hours and restart not permitted until OPERABILITY of the affected equipment is restored.

SURVEILLANCE REQUIREMENTS

Execution of SURVEILLANCE REQUIREMENT 1.2.b for the VOG system shall establish that the VOG system is OPERATING. OPERABILITY of the backup VOG FILTER TRAIN and exhaust blower shall be tested QUARTERLY. OPERABILITY shall be determined per an approved IMPLEMENTING PROCEDURE.

2.2 LIMITING CONDITION FOR OPERATION

The capability for manual switchover in the VOG system from the OPERATING exhaust blower to the OPERABLE backup exhaust blower shall be OPERABLE.

ACTION

If the capability for manual switchover from the OPERATING VOG exhaust blower to the backup VOG exhaust blower becomes INOPERABLE, IMMEDIATE effort shall be taken to restore the switchover capability. LWTS operations may continue provided an exhaust blower and a final FILTER TRAIN are OPERATING, and that IMMEDIATE efforts shall be taken to restore the switchover capability.

SURVEILLANCE REQUIREMENT

Manual switchover capability shall be tested QUARTERLY. This test shall be performed per an approved IMPLEMENTING PROCEDURE and shall verify the OPERABILITY of the manual switchover capability and the OPERABILITY of the backup exhaust blower.

2.3 LIMITING CONDITION FOR OPERATION

The capability for manual switchover in the VOG system from the OPERATING final FILTER TRAIN to the OPERABLE backup final FILTER TRAIN shall be OPERABLE.

ACTION

If the capability for manual switchover from the OPERATING final FILTER TRAIN to the backup final FILTER TRAIN becomes INOPERABLE, IMMEDIATE effort shall be taken to restore the switchover capability. LWTS operations may continue provided a final FILTER TRAIN and exhaust blower are OPERATING, and that IMMEDIATE efforts shall be taken to restore the switchover capability.

SURVEILLANCE REQUIREMENT

Manual switchover capability shall be tested QUARTERLY. This test shall be performed per an approved IMPLEMENTING PROCEDURE and shall verify the OPERABILITY of the manual switchover capability and the OPERABILITY of the backup final FILTER TRAIN.

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3. HEAD END VENTILATION (HEV) SYSTEM

3.1 LIMITING CONDITION FOR OPERATION

A FILTER TRAIN installed for use in the HEV System for radionuclide removal (comprised of HEPA FILTER BANKS identified in Table 1) shall provide a collection efficiency of at least 99.95 percent for particulates 0.3 micron in diameter and larger.

ACTION

A HEV HEPA FILTER TRAIN that has been determined not to provide a collection efficiency of at least 99.95 percent for particulates 0.3 microns in diameter and larger shall be IMMEDIATELY removed from service and shall be replaced with a HEPA FILTER TRAIN having the required collection efficiency.

SURVEILLANCE REQUIREMENT

HEPA FILTER TRAINS (comprised of HEPA FILTER BANKS identified in Table 1 for the HEV) shall be tested in-place ANNUALLY and after changeout of filters in either FILTER BANK, before return to routine service, to establish that the FILTER TRAIN provides a collection efficiency of at least 99.95 percent for particulates 0.3 microns in diameter and larger. In-place leak tests shall be performed per an approved IMPLEMENTING PROCEDURE.

3.2 LIMITING CONDITION FOR OPERATION

The HEV System shall maintain an OPERATING FILTER TRAIN and exhaust blower, and an OPERABLE backup FILTER TRAIN and exhaust blower for redundancy.

ACTION

If redundancy in HEV filtration capability or exhaust blower OPERABILITY is lost for a period of time exceeding ten days, all affected operations within the Main Plant except the available ventilation systems shall be shutdown in an orderly fashion. Operations within the Main Plant may continue beyond the ten day period only if: 1a) the Radiation and Safety Committee has approved a plan for expedient repair or replacement of the failed unit; and 1b) the main plant

stack effluent monitoring and sampling systems are OPERATING; or 2) if HEV operation is suspended by approved procedures.

If the HEV System fails to such an extent that normal flow of filtered air in the Main Plant is not available, all operations within the Main Plant except ventilation system operation shall be shutdown IMMEDIATELY in an orderly manner. Operations within the Main Plant may continue if HEV operation is suspended by approved procedures.

SURVEILLANCE REQUIREMENT

Execution of SURVEILLANCE REQUIREMENT 1.2.b for the HEV System shall establish that the HEV System is OPERATING. OPERABILITY of the backup HEV FILTER TRAIN and exhaust blower shall be tested QUARTERLY. OPERABILITY shall be determined per an approved IMPLEMENTING PROCEDURE.

3.3 LIMITING CONDITION FOR OPERATION

The capability for automatic switchover in the HEV system from the OPERATING FILTER TRAIN to the backup FILTER TRAIN and the capability for automatic switchover from the primary OPERATING exhaust blowers to the backup exhaust blower shall be OPERABLE.

ACTION

If the capability for automatic switchover from the OPERATING HEV FILTER TRAIN to the backup HEV FILTER TRAIN or from the OPERATING HEV blowers to the backup HEV blower becomes INOPERABLE for a period of time exceeding ten days, all operations within the Main Plant except the available ventilation systems shall be shutdown IMMEDIATELY in an orderly fashion. Operations within the Main Plant may continue beyond the ten day period only if: 1) the FILTER TRAIN differential pressure alarm instrumentation is OPERATING; and 2) manual switchover capability exists; and 3) the main plant stack effluent monitoring and sampling systems are OPERATING.

SURVEILLANCE REQUIREMENT

Automatic switchover capability shall be tested QUARTERLY. This test shall be performed per an approved IMPLEMENTING PROCEDURE and shall verify the OPERABILITY of the automatic switchover capability and the OPERABILITY of the backup FILTER TRAIN and the automatic switchover, startup, and operation of the backup exhaust blower.

4. MAIN PLANT VENTILATION SYSTEM

4.1 LIMITING CONDITION FOR OPERATION

The Main Plant Ventilation System shall maintain an OPERATING FILTER TRAIN and exhaust blower, and an OPERABLE backup FILTER TRAIN and exhaust blower for redundancy.

ACTION

If redundancy in Main Plant Ventilation System filtration capability or exhaust blower OPERABILITY is lost for a period of time exceeding ten days, all operations within the Main Plant except the available ventilation systems shall be shutdown in an orderly fashion. Operations within the Main Plant may continue beyond the ten day period only if: 1) the Radiation and Safety Committee has approved a plan for expedient repair or replacement of the failed unit; and 2) the Main Plant stack effluent monitoring and sampling systems are OPERATING.

If the Main Plant Ventilation System fails to such an extent that normal flow of filtered air in the Main Plant is not available, all operations within the Main Plant except ventilation system operation shall be shutdown IMMEDIATELY in an orderly manner.

SURVEILLANCE REQUIREMENT

Execution of SURVEILLANCE REQUIREMENT 1.2.b for the Main Plant Ventilation System shall establish that the Main Plant Ventilation System is OPERATING. OPERABILITY of the backup FILTER TRAIN and exhaust blower shall be tested QUARTERLY. OPERABILITY shall be determined per an approved IMPLEMENTING PROCEDURE.

4.2 LIMITING CONDITION FOR OPERATION

The capability for automatic switchover in the Main Plant Ventilation System from the primary OPERATING FILTER TRAIN and exhaust blower to the backup FILTER TRAIN and exhaust blower shall be OPERABLE.

ACTION

If the capability for automatic switchover in the Main Plant Ventilation System from the primary OPERATING FILTER TRAIN and exhaust blower to the backup FILTER TRAIN and exhaust blower becomes INOPERABLE for a period of time exceeding ten days, all operations within the Main Plant except the available ventilation systems shall be shutdown IMMEDIATELY in an orderly manner. Operations within the Main Plant may continue beyond the ten day period only if: 1) the FILTER TRAIN differential pressure alarm instrumentation is OPERATING; and 2) manual switchover capability exists; and 3) the Main Plant stack effluent monitoring and sampling systems are OPERATING.

SURVEILLANCE REQUIREMENT

Automatic switchover capability shall be tested QUARTERLY. This test shall be performed per an approved IMPLEMENTING PROCEDURE and shall verify the OPERABILITY of the automatic switchover capability and the OPERABILITY of the backup FILTER TRAIN and the automatic switchover, startup, and operation of the backup exhaust blower.

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5. SUPERNATANT TREATMENT SYSTEM PERMANENT VENTILATION SYSTEM (STS PVS)

5.1 LIMITING CONDITION FOR OPERATION

A FILTER TRAIN installed for use in the STS PVS for radionuclide removal (comprised of HEPA FILTER BANKS identified in Table 1) shall provide a collection efficiency of at least 99.95 percent for particulates 0.3 micron in diameter and larger.

ACTION

A STS PVS HEPA FILTER TRAIN that has been determined not to provide a collection efficiency of at least 99.95 percent for particulates 0.3 microns in diameter and larger shall be IMMEDIATELY removed from service and shall be replaced with a HEPA FILTER TRAIN having the required collection efficiency.

SURVEILLANCE REQUIREMENT HEPA FILTER TRAINS (comprised of HEPA FILTER BANKS identified in Table 1 for the STS PVS) shall be tested in-place ANNUALLY and after changeout of filters in either FILTER BANK, before return to routine service, to establish that the FILTER TRAIN provides a collection efficiency of at least 99.95 percent for particulates 0.3 microns in diameter and larger. In-place leak tests shall be performed per an approved IMPLEMENTING PROCEDURE.

5.2 LIMITING CONDITION FOR OPERATION The STS PVS shall maintain an OPERATING FILTER TRAIN and exhaust blower, and an OPERABLE backup FILTER TRAIN and exhaust blower PRIOR to and throughout a STS process CAMPAIGN and/or when the PVS is used to provide ventilation for any of the high level waste (HLW) tanks 8D-1, 8D-2, 8D-3, or 8D-4 to satisfy the requirements of LCO 6.1.

ACTION

If redundancy in STS PVS filtration capability or exhaust blower OPERABILITY is lost, the OPERABLE STS PVS FILTER TRAIN or exhaust blower shall be used to provide ventilation while repairs to the affected equipment are made. If repairs require greater than 10 days to complete, the STS shall be placed in standby and waste processing shall not be resumed until OPERABILITY of the

affected equipment is restored. If redundancy is lost while the STS PVS is being used to provide ventilation for the high level waste tanks during tank access through risers, the risers shall be IMMEDIATELY sealed and operations in the risers not permitted until OPERABILITY of the affected equipment is restored. If redundancy is lost while the STS PVS is being used to provide routine ventilation for any of the high level waste tanks 8D-1, 8D-2, 8D-3, or 8D-4, operations involving the HLW tanks shall be terminated within 24 hours and restart not permitted until OPERABILITY of the affected equipment is restored or until the HLW tanks are returned to an OPERATING Waste Tank Farm ventilation system.

SURVEILLANCE REQUIREMENT

Execution of SURVEILLANCE REQUIREMENT 1.2.b for the STS PVS shall establish that the STS PVS is OPERATING. OPERABILITY of the backup FILTER TRAIN and STS PVS exhaust blower shall be tested QUARTERLY. OPERABILITY shall be determined per an approved IMPLEMENTING PROCEDURE.

5.3 LIMITING CONDITION FOR OPERATION

The capability for automatic switchover from the OPERATING STS PVS FILTER TRAIN and exhaust blower to the backup STS PVS FILTER TRAIN and exhaust blower shall be OPERABLE.

ACTION

If the capability for automatic switchover from the OPERATING STS PVS FILTER TRAIN and exhaust blower to the backup STS PVS FILTER TRAIN and exhaust blower becomes INOPERABLE, IMMEDIATE effort shall be initiated to restore the OPERABILITY of the affected equipment. If repairs require a period greater than ten days to complete, the STS shall be placed in standby and waste processing shall not be resumed until OPERABILITY of the affected equipment is restored.

SURVEILLANCE REQUIREMENT

Automatic switchover capability shall be tested QUARTERLY. This test shall be performed per an approved IMPLEMENTING PROCEDURE and shall verify the OPERABILITY of the automatic switchover capability, the OPERABILITY of the backup FILTER TRAIN, and the automatic switchover, startup, and operation of the backup exhaust blower.

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6. WASTE TANK FARM VENTILATION SYSTEM (WTFVS)

6.1 LIMITING CONDITION FOR OPERATION

The WTFVS shall maintain an OPERATING filter and exhaust blower and an OPERABLE backup filter and exhaust blower for redundancy while the WTFVS is being used as the primary means for HLW tank ventilation. In the event that the WTFVS is not available for all of the HLW tanks 8D-1, 8D-2, 8D-3, and 8D-4; the OPERABILITY requirements for the Supernatant Treatment System Permanent Ventilation System (STS PVS) specified in LCO 5.2 shall be met for tanks not ventilated by the WTFVS.

ACTION

If redundancy in the WTFVS filtration capability or exhaust blower OPERABILITY is lost, operations in the HLW tanks may continue provided a filter and exhaust blower are OPERATING, and that IMMEDIATE effort is taken to restore the OPERABILITY of the affected equipment. If both filters or exhaust blowers become INOPERABLE, the STS PVS may be used to provide ventilation for the HLW tanks. If the WTFVS is INOPERABLE and the STS PVS redundancy in filtration capability or exhaust blower OPERABILITY is lost, operations involving the HLW tanks shall be terminated within 24 hours and restart not permitted until OPERABILITY of either the WTFVS or the redundant STS PVS equipment is restored.

SURVEILLANCE REQUIREMENT

Execution of SURVEILLANCE REQUIREMENT 1.2.b for the WTFVS shall establish that the WTFVS is OPERATING. OPERABILITY of the backup WTF filter and exhaust blower shall be tested QUARTERLY. OPERABILITY shall be determined per an approved IMPLEMENTING PROCEDURE.

6.2 LIMITING CONDITION FOR OPERATION

The capability for manual switchover from the WTFVS OPERATING filter and exhaust blower to the OPERABLE WTFVS backup filter and exhaust blower shall be OPERABLE.

ACTION

If manual switchover capability from the WTFVS OPERATING filter to the backup filter or from the WTFVS OPERATING blower to the backup blower becomes INOPERABLE, operations in the HLW tanks may continue provided a filter and exhaust blower are OPERATING, and that IMMEDIATE effort is taken to restore the OPERABILITY of the affected equipment.

SURVEILLANCE REQUIREMENT

Manual switchover capability shall be tested QUARTERLY. This test shall be performed per an approved IMPLEMENTING PROCEDURE and shall verify the OPERABILITY of the manual switchover capability, the OPERABILITY of the backup filter, and the manual switchover, startup, and operation of the backup exhaust blower.

BASES

1. HEPA FILTER (FILTER BANK) GENERAL REQUIREMENTS

1.1 HEPA filters provide the primary barrier to the release of airborne contamination to the environment. A minimum mass removal efficiency has been determined for ventilation system filters to ensure that these releases are maintained As Low As Reasonably Achievable (ALARA). Filter system efficiency is determined at the WVDP through in-place leak testing new filters before operation and through subsequent annual tests.

Exceptions to the requirements in this LCO have been made for the Head End Ventilation System and the Permanent Ventilation System due to restrictions in the physical configuration of these systems which do not allow for testing of individual HEPA FILTER BANKS. Special requirements for these systems have been provided in LCOs. The Safety Analysis Report (SAR) for the FRS Facility indicates that airborne contamination levels in the facility are sufficiently low that a HEPA-filtered ventilation system is not required to maintain doses ALARA.

HEPA filters purchased for use at the WVDP are required to have been previously tested to ensure an acceptable particulate removal efficiency. Leak tests are

performed on filters in-place in the system. Demonstration of acceptable HEPA filter (FILTER BANK) efficiency following filter replacement potentially requires filter adjustments. An in-place leak test is performed after each adjustment to determine that the filter has sealed adequately. Once it has been determined that the filter seal is acceptable, the filter must successfully pass subsequent in-place leak tests.

1.2 Failure of a HEPA filter could potentially result in the release of a significant amount of radioactive contamination. High differential pressure across a filter could result in filter failure and indicates that the filter needs to be changed. Low differential pressure across a filter indicates a possible filter failure. Differential pressure instrumentation has therefore been incorporated into facility ventilation systems to ensure detection of abnormal pressure conditions.

Instrumentation accuracy and OPERABILITY is ensured through routine calibration. OPERABILITY is also determined through routine SHIFT readings. OPERABILITY of backup instrumentation is determined through ANNUAL calibration and readings taken during periodic testing of backup equipment.

Final HEPA filter differential pressure can be determined either directly through instrumentation dedicated to the filter or indirectly through FILTER TRAIN differential pressure instrumentation. FILTER TRAIN differential pressure instrumentation can provide a level of assurance of filter integrity; however, it is not a direct indication of final HEPA filter differential pressure and must not serve in this capacity for an extended period of time. Because failure of final filter instrumentation does not result in a degradation of filter system integrity, use of FILTER TRAIN instrumentation to indicate differential pressure is preferred over loss of filter system redundancy due to declaring the OPERATING filter system INOPERABLE. Therefore, operation may continue for a limited time provided that FILTER TRAIN instrumentation is available and OPERATING.

Failure of both instruments reduces the ability to determine filter integrity to an unacceptable level and requires that the backup FILTER TRAIN be placed on

line. It is therefore necessary to maintain instruments for the backup final HEPA filter and the backup FILTER.TRAIN in a state of readiness. In systems not having a backup or having an INOPERABLE backup, operations in the ventilated facility must be halted to minimize the amount of airborne radioactive contamination generated.

1.3 FILTER TRAIN differential pressure instrumentation provides a backup to final HEPA filter differential pressure instruments. This instrumentation must therefore be OPERATING for the online FILTER TRAIN and must be OPERABLE for the offline FILTER TRAIN.

1.4 Alarms provide a prompt indication of an off-normal pressure differential occurrence and therefore must be maintained OPERABLE to minimize the consequences due to this condition.

1.5 Final HEPA filter low differential pressure alarm levels are dynamic to account for increased differential pressure due to particulate loading following filter installation. Selection of a limit of 3 inches W.C. below the OPERATING differential pressure once the OPERATING differential pressure has exceeded 5 inches W.C. allows for determination of a low differential pressure occurrence while minimizing false alarms. Differential pressure below the low differential pressure alarm set point indicates a possible final HEPA filter failure, possibly resulting in the release of unfiltered air to the environment. For this reason, filters having differential pressure below the low differential pressure alarm set point must be IMMEDIATELY placed off-line until filter integrity is determined.

1.6 Final HEPA filter high differential pressure alarm set point requirements have been made such that the high differential alarm will annunciate before the maximum sustained OPERATING differential pressure is achieved. This provides a sufficient amount of time for an orderly filter changeout. HEPA filters purchased for use at the WVDP have been previously tested to withstand a differential pressure of 10 inches W.C. The maximum sustained OPERATING filter differential pressure has been chosen to provide an adequate margin to safety. Routine monitoring of filter differential pressure ensures that the OPERATING

differential pressure has not exceeded this value. This is the only means of determination once the high differential pressure alarm point has been exceeded.

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2. VESSEL OFF-GAS (VOG) SYSTEM

2.1 The VOG System provides ventilation for vessels associated with the Liquid Waste Treatment System (LWTS). The ventilation system and vessels are located entirely within the former reprocessing facility (main plant) in ventilated cells. This system maintains a redundant filter and blower so that failure of the OPERATING FILTER BANK or exhaust blower does not require IMMEDIATE facility shutdown. In the event of complete failure of the VOG system, off-gas can passively migrate through the VOG system preventing over-pressurization of system vessels. The main plant ventilation system is sufficient to prevent migration of any leakage contamination into routinely occupied areas. However this is not a desirable method of operation; therefore, an orderly shutdown of the LWTS must be performed within 24 hours. Twenty-four hours permits the completion of evaporation of the contents in the evaporator thereby avoiding the need to send off-spec concentrates back to the high level waste tank.

2.2 The VOG System maintains an OPERABLE manual switchover capability to ensure that backup systems in-place can be put on-line when necessary. Failure of switchover capability does not result in a degradation of filter system integrity, therefore specific criteria have been established in the LCO for continued operation of the ventilation system without this capability.

2.3 OPERABILITY of manual switchover capability and backup equipment is routinely tested to ensure that systems will perform their functions when required.

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3. HEAD END VENTILATION (HEV) SYSTEM

3.1 The HEV System exhausts the Process Mechanical Cell (PMC), General Purpose Cell (GPC), Chemical Process Cell (CPC) and provides ventilation support for the Contact Size Reduction Facility (CSRF). The HEV System is comprised of

redundant trains consisting of a prefilter, a roughing filter, and two HEPA filters in series. Electric motors power the two identical primary blowers while the backup blower is powered independently.

The physical configuration of the HEV System precludes in-place leak testing of the final HEPA filter. It is possible only to obtain an efficiency of the roughing filter - HEPA filter - HEPA filter combination. The series of filters employed in the system are provided primarily to extend the life of the final HEPA filter rather than for particulate removal considerations. Therefore, the LCO requirement for the collection efficiency of the FILTER TRAIN is the same as that for final HEPA filters (FILTER BANKS) as set forth in LCO 1.1.

3.2 The Main Plant Ventilation System initially provided ventilation for the entire main plant building, with the HEV System added on several years after the initiation of reprocessing to improve ventilation in high airborne activity cells. Dampers in the ventilation system can be adjusted to allow the Main Plant Ventilation System to ventilate cells normally serviced by the HEV System in the event that the HEV System, including backup equipment, should become INOPERABLE. It is under this reconfiguration that carefully monitored work in the plant can be performed per approved work procedures in the absence of HEV operation.

Equipment in this system is provided with a backup to ensure continuous OPERABILITY. Operations in the main plant facility may continue for ten days without an OPERABLE backup filter or exhaust blower while affected equipment is being returned to service. Ten days permits equipment repair or replacement without upsetting maintenance programs, yet entails minimal risk when conducting operations without a spare. If the system is not restored to OPERABILITY within ten days, work in the plant must be suspended unless specific requirements stated in the LCO are met. This ensures restriction of projects which may result in the generation of airborne radioactive materials.

Filter differential pressure instrumentation is monitored routinely to ensure that the system is OPERATING.

3.3 The HEV System shall maintain an OPERABLE automatic switchover capability to ensure that backup systems in-place can be put on-line when necessary.

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4. MAIN PLANT VENTILATION SYSTEM

4.1 The Main Plant Ventilation System exhausts air through the process areas beyond the CPC from clean areas to successively more contaminated areas. Equipment in this system is provided with a backup to ensure continuous OPERABILITY. Operations in the main plant facility may continue for ten days without an OPERABLE main plant ventilation system backup filter or exhaust blower while affected equipment is being returned to service. Ten days permits equipment repair or replacement without upsetting maintenance programs, yet entails minimal risk when conducting operations without a spare. If the system is not restored to OPERABILITY within ten days, work in the plant must be suspended unless specific requirements stated in the LCO are met. This ensures restriction of projects which may result in the generation of airborne radioactive materials.

Filter differential pressure instrumentation is monitored routinely to ensure that the system is OPERATING.

4.2 The Main Plant Ventilation System shall maintain an OPERABLE automatic switchover capability to ensure that backup systems in-place can be put on-line when necessary.

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5. SUPERNATANT TREATMENT SYSTEM PERMANENT VENTILATION SYSTEM (STS PVS)

5.1 The STS PVS provides the ventilation for the STS building and backup ventilation support for the WTF HLW storage tanks. The physical configuration of the STS PVS precludes in-place leak testing of the final HEPA filter. It is possible only to obtain an efficiency of the roughing filter - HEPA filter - HEPA filter combination. The series of filters employed in the system are provided primarily to extend the life of the final HEPA filter rather than for

particulate removal considerations. Therefore, the LCO requirement for the collection efficiency of the FILTER TRAIN is the same as that for final HEPA filters (FILTER BANKS) as set forth in LCO 1.1.

System OPERABILITY is determined through routine readings of final HEPA filter differential pressure instrumentation.

5.2 Equipment in this system is provided with a backup to ensure continuous OPERABILITY. Operations in the STS may continue for ten days without an OPERABLE STS PVS backup filter or exhaust blower while affected equipment is being returned to service. Ten days permits equipment repair or replacement without upsetting maintenance programs, yet entails minimal risk when conducting operations without a spare. The STS PVS may also be configured to provide ventilation for the HLW tanks. If the STS PVS redundancy is lost while it is serving as the primary ventilation system for a HLW tank, contamination control would rely on a single operating filter train or blower. Shutdown of operations in the HLW tanks would minimize the potential for degradation of the remaining filter train or blower and potential loss of contamination confinement.

5.3 The STS PVS shall maintain an OPERABLE automatic switchover capability to ensure that backup systems in-place can be put on-line when necessary.

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6. WASTE TANK FARM VENTILATION SYSTEM (WTFVS)

6.1 The WTFVS is the primary ventilation system for the HLW storage tanks and provides ventilation of STS process vessels. In addition, the Supernatant Treatment System Permanent Ventilation System (STS PVS) may be configured to provide ventilation for the HLW tanks. While either system has sufficient capacity to adequately ventilate the HLW tanks, failure of the WTFVS and loss of redundancy in the STS PVS would result in only a single system available to ventilate the tanks. Consequently, operations in the WTF must be terminated within 24 hours. Twenty-four hours provides sufficient time to permit an orderly shutdown of the Supernatant Treatment System or transfer operations to the Vitrification Facility.

System OPERABILITY is determined through routine readings of final HEPA filter differential pressure instrumentation.

6.2 OPERABILITY of manual switchover capability and backup equipment is routinely tested to ensure that these systems will perform their functions when required.

ATTACHMENTS

Table 1 - Ventilation System Blower, Filter, and Instrumentation Summary

REFERENCES

WVNS-SAR-002, Safety Analysis Report for Low-Level Waste Processing and Support Activities

TABLE 1

Ventilation System Blower, Filter, and Instrumentation Summary

Vent System	HEPA Filter (FILTER BANK)	Final HEPA Filter (FILTER BANK) Primary(P) Backup(B)	Exhaust Blower Primary(P) Backup(B)	Final HEPA Filter (FILTER BANK) ΔP Recorder	FILTER TRAIN ΔP Recorder (Backup)	High Pressure Differential Alarm	Low Pressure Differential Alarm
VOG	6T-2 6T-2A	6T-3 6T-3A	6K-2 6K-2A	6PDR-17 6PDR-17	--- ---	06PDAH-10 06PDAH-10	--- ---
HEV	15T-72 15T-72A	15T-73 15T-73A	15K-20(P) 15K-20A(P) 15K-21(B)	15PDR-45 15PDR-45A	15PDR-44 15PDR-44A	15PDAH-34 15PDAH-34A	15PDAL-35 15PDAL-35A
Main Plant	--- ---	15T-49(P) 15T-49A(B)	15K-10(P) 15K-10A(B)	15PDR-11 15PDR-6	15PDR-10 15PDR-5	15PDAH-11 15PDAH-6	15PDAL-6A 15PDAL-3A
STS PVS	56T-203 56T-203A	56T-204 56T-204A	56K-201 56K-201A	56PDR-229 56PDR-230	56PDR-231 56PDR-232	56PDAH-229 56PDAH-230	56PDAL-229 56PDAL-230
WTF	--- ---	8T-1 8T-1A	8K-1 8K-1A	8PDR-10 8PDR-10A	– –	8PDAH-26 8PDAH-26A	– –

WVNS RECORD OF REVISION

Rev. No.	Description of Changes	Revision On Page(s)	Dated
2	Added reference for Criteria 3.b.	2	01/03/01
	Changed "per an approved procedure" to "per an approved IMPLEMENTING PROCEDURE" throughout	All	
	Table 1 for WTF changed 8PDR-2 to 8PDR-10; 8PDR-2 to 8PDR-10A; 08PDAH-4 to 08PDAH-2; 08PDAH-4 to 8PDAH-26A	27	