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CCP-TP-040

Revision 4

CCP
Glovebox
HEPA Filter Change

EFFECTIVE DATE: 02/26/2004

David H. Haar

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RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
2	04/02/2003	Added a Record of Table of Contents. Added two notes prior to step 4.2.2 and new steps 4.2.2, 4.2.3, and 4.6.5. Revised section 5.0
3	01/09/2004	Removed link to electronic forms, revised Sections 2.0, 3.0 and 4.0 and Attachment 1; performed minor editorial changes throughout document.
4	02/26/2004	Revised Sections 2.0 and 4.0 in response to findings from the LLNL Contractor ORR.

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1.0 PURPOSE

This procedure specifies the steps to be followed for the replacement of High Efficiency Particulate Air (HEPA) filters attached to the gloveboxes at the Mobile Visual Examination and Repackaging (MOVER) facility.

1.1 Scope

This procedure applies to the Central Characterization Project (CCP) glovebox contained within the MOVER and gloveboxes utilized for visual examination (VE) by the CCP, as applicable.

2.0 REQUIREMENTS

2.1 References

Baseline Documents

- DOE Standard 302, *Specification for HEPA Filters used by DOE Contractors*
- DOE/CBFO-94-1012, U.S. Department Of Energy, Carlsbad Field Office *Quality Assurance Program Document* (QAPD)
- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan* (QAPjP)
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-PO-005, *CCP Conduct of Operations*

Referenced Documents

- CCP-QP-002, *CCP Training and Qualification Plan*
- CCP-QP-008, *CCP Records Management*
- CCP-TP-042, *CCP Bagging Out Process Waste and Replacing Glovebox Windows and Gloves*
- CCP-TP-044, *CCP Startup and Shutdown of the MOVER*

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2.2 Training Requirements

2.2.1 Personnel performing this procedure will be trained and qualified in accordance with CCP-QP-002, *CCP Training and Qualification Plan*, prior to performing this procedure.

2.3 Equipment List

- 7/16 in. Socket
- 7/16 in. Wrench
- 8-in. Circular HEPA filter
- 8-in. Circular spacer
- Viton Chevron gaskets (4 minimum)
- Silcone grease
- Permabond adhesive or other approved adhesive
- Fantastic™ or other approved cleaner
- Brown paper
- Masking tape
- Vinyl tape
- Wipes (e.g., Kimwipes, cheesecloth)
- Surgical gloves
- Safety glasses
- Catch bag
- Herculite or similar material
- O-ring

2.4 Precautions and Limitations

2.4.1 If during the course of executing the requirements of this procedure an abnormal situation occurs that causes deviation from the normal process, and this abnormal condition cannot be corrected as directed in this procedure, VE operators shall **IMMEDIATELY STOP WORK** and perform the following: notify the Radiological Control Technician (RCT), Vendor Project Manager (VPM), and the VE Technical Supervisor (TS) or designee.

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NOTE

The Two-Person Rule is in effect for the MOVER. Entrance to the MOVER requires at least two people, one of which must be a qualified MOVER operator.

NOTE

The introductory box attached to the MOVER glovebox is used as a storage compartment only. The introductory box door is secured with a restraint.

2.4.2 **IF** the introduction of any item is needed to be made into the glovebox,
THEN use one of the following options:

[A] Option 1: Perform a Bag-in in accordance with the most current procedure of CCP-TP-042, *CCP Bagging Out Process Waste and Replacing Glovebox Windows and Gloves* (normally Option 1).

[B] Option 2: If the introductory box must be used to introduce any item into the glovebox, a specific work plan will be developed which will indicate why this method is to be used, outline operational steps, and identify radiological controls to be required. The specific work plan must be reviewed and approved by the CCP VPM and Subcontract Technical Representative (STR) prior to any actual use of this option.

2.4.3 Prior to opening any door, verify that the green door light is illuminated **AND** the red door light is not illuminated.

2.4.4 **IF** the red door light is illuminated,
THEN DO NOT proceed into the MOVER.

2.4.5 **IF** entering through one of the MOVER exterior doors,
THEN verify the CAM **AND** VENTILATION lights are **NOT** illuminated (flashing).

NOTE

The Lawrence Livermore National Laboratory (LLNL) STR will work with the VPM and TS to develop a plan for entering the MOVER.

2.4.6 **IF** lights are illuminated (flashing red or yellow),
THEN DO NOT enter the MOVER **AND** immediately contact the TS or RCT and STR.

2.4.7 **IF** TRU mixed waste was processed in the MOVER unit while the HEPA filter was in use,
THEN the spent HEPA filter must be managed as mixed waste.

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2.4.8 **IF** ONLY TRU waste was processed in the MOVER unit while the HEPA filter was in use,
THEN the spent HEPA filter may be managed as radioactive waste.

2.4.9 Only qualified VE operators are allowed to install/replace HEPA filters attached directly to the gloveboxes. The RCT will be present at all times during the performance of this procedure to monitor the operation and to conduct contamination surveys, as appropriate.

2.4.10 No TRU waste container is allowed in the MOVER during this procedure.

2.4.11 No spark-creating operations (e.g., welding, cutting, grinding, etc.) SHALL be allowed in the MOVER with waste in the glovebox. Repairs requiring the use of spark-creating tools (e.g., welder, grinder, cutting torch, etc.) will only be allowed with the prior approval of the Host Facility Site Technical Representative (STR) and the CCP MOVER Technical Supervisor (TS), **NO** TRU waste in the glovebox, and approved work authorization documentation (e.g., Hot Work permit, Integration Work Sheet (IWS), etc.).

NOTE

Use of non-sparking tools within the MOVER glovebox reduces the likelihood of a fire within the glovebox that could lead to a radiological material release.

Non-sparking, spark-resistant, or spark-proof tools are those tools specifically manufactured as such or tools rendered spark-resistant by covering with tape or special coating and approved by the Host Site STR.

2.4.12 Non-sparking, spark-resistant, or spark-proof tools SHALL be used within the MOVER glovebox. Inspection of the glovebox tools will be performed daily prior to use. The inspection SHALL verify that only approved tools are available.

2.5 Prerequisite Actions

2.5.1 Verify that an approved IWS has been issued for this work, and that operators are listed on, have read, and have signed the IWS.

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2.5.2 Verify that a description of the Permabond adhesive is included in the IWS and the Material Safety Data Sheet (MSDS) has been reviewed to verify compliance with the Bay Area Air Quality Management District (BAAQMD) regulations, as applicable.

2.5.3 Verify all non-participating personnel are not inside the MOVER while HEPA filter change is in process.

2.5.4 Verify MOVER Daily Pre-operational Checklist and MOVER Logbook has been completed per CCP-TP-044, *CCP Startup and Shutdown of the MOVER*, prior to starting work.

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3.0 RESPONSIBILITIES

3.1 VE Operator

3.1.1 Performs the work as described in this procedure to replace the glovebox HEPA filters.

NOTE

At LLNL, the function of RCT is performed by the Hazards Control Health and Safety Technician.

3.2 Radiological Control Technician (RCT)

3.2.1 Conducts radiological surveys to verify radiation and contamination levels are maintained as low as reasonably achievable (ALARA).

3.3 Technical Supervisor

3.3.1 Verifies that all personnel implement this procedure properly.

3.4 Vendor Project Manager

3.4.1 Reviews and approves specific work plans for introduction of items through the introductory glovebox, as required.

3.5 Host Site Technical Representative (STR)

3.5.1 Reviews and approves specific work plans for introduction of items into the introductory glovebox/glovebox, as required.

3.6 Facility Records Custodian

3.6.1 Processes and transmits all records generated in accordance with CCP-QP-008, *CCP Records Management*.

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4.0 PROCEDURE

NOTE

The Visual Examination Operator (VEO) performs all steps in this procedure unless otherwise indicated.

4.1 Area Preparation for Filter Replacement

VEO

[A] Cut a piece of Herculite or similar material that is suitable enough for the work area.

[B] Tape the Herculite or similar material to the floor or area as needed.

[C] Tape a catch bag under the filter housing area where the end plate will be removed.

4.2 Rubber Seal Preparation

NOTE

These steps are followed before starting the filter replacement operation to allow time for the adhesive to cure and to minimize the time the filter housing is open. The adhesive operation should take place in a well ventilated area.

[A] Don appropriate personal protective equipment (PPE) per specified IWS.

[B] Inspect each Viton Chevron gasket for defects (e.g., tear, shape deformation). **DO NOT** use defective gaskets.

[C] Place the new HEPA filter on a work table or other flat surface with the new airflow arrow pointing up.

[D] Place the new spacer on a work table with the closed end up.

[E] Gently stretch a Viton Chevron gasket over each end of the HEPA filter and the spacer pointing in the opposite direction of the airflow arrow.

[F] Position the Viton Chevron Gaskets within ½ in. of, and parallel to, the ends of the HEPA filter and the spacer.

[G] By pressing a finger on the outside edge of the gasket, make a gap between the top of the Viton Chevron gasket and the wall of the HEPA filter or spacer.

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[H] Run a small continuous bead of Permabond adhesive along the gasket between it and the HEPA filter or spacer.

NOTE

The adhesive bond should be allowed to cure for at least ten minutes.

[I] Spread a light coat of silicone grease on the outside of the gaskets.

4.3 Filter Installation

VEO and RCT

4.3.1 Remove the nut securing the fire screen to the inside top of the glovebox.

WARNING

There is the potential for contamination to be released when the end plate of filter housing is removed.

VEO

4.3.2 Don the PPE specified in the approved IWS for changing the HEPA filter for the glovebox.

First VEO

4.3.3 Perform the following:

[A] Complete Section 1 of Attachment 1, HEPA Filter Replacement Checklist.

[B] **IF** both readings are within acceptable range, **THEN GO TO** Step 4.3.3 [D].

[C] **IF** either reading is NOT within acceptable range, **THEN STOP WORK**, notify the RCT, TS and VPM.

[D] Remove the end plate of the filter housing.

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Second VEO

4.3.4 Move into a position where the old filter and spacer can be received or caught inside the glovebox when removed.

First VEO

4.3.5 Perform the following:

[A] Place the new 8-inch circular spacer over the exposed HEPA filter inside the filter housing.

NOTE

The spacer shall be inserted with the open end first and the spacer cut-out-hole aligned with existing exhaust/supply plumbing.

CAUTION

First VEO push spacer in slowly and Second VEO should be in a position to receive the used filter inside the glovebox at this time.

[B] Push the new spacer into the housing until the spacer is flush with the end of filter housing.

[C] Place the new filter over the spacer in the filter housing.

[D] Push the filter until it is flush with the end of the filter housing.

[E] Apply additional silicone grease to the O-ring, if necessary.

[F] Install end plate onto the filter housing.

[G] Complete Section 2 of Attachment 1.

[H] **IF** all readings are within acceptable range, **THEN GO TO** Step 4.3.6.

[I] **IF** any of readings are **NOT** within acceptable range, **THEN STOP WORK**, notify RCT, TS, and VPM.

Second VEO

4.3.6 Prepare the old filter and spacer for disposal. The old filter will be managed by LLNL in accordance with applicable procedures and policies.

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4.4 Post-Installation Actions

RCT

4.4.1 Survey the area.

VEO and RCT

4.4.2 **IF** the area is contaminated,
THEN follow the decontamination procedures in the host site-specific IWS **AND** repeat Step 4.4.1 prior to proceeding with this procedure.

4.4.3 Remove applicable PPE.

VEO

4.4.4 Install the fire screen inside the glovebox over the filter opening.

4.4.5 Give HEPA Filter Replacement Checklist to Facility Records Custodian.

Facility Records Custodian

4.4.6 Process and transmit applicable records in accordance with CCP-QP-008.

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5.0 RECORDS

Records generated during the performance of this procedure are maintained as QA records in accordance with CCP-QP-008. The records are the following:

QA/Nonpermanent

- Attachment 1 – HEPA Filter Replacement Checklist

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Attachment 1 – HEPA Filter Replacement Checklist

Action	Acceptable Range	Value	Within Acceptable Range? Yes or No
Section 1: Prior to HEPA Filter Replacement			
Take glovebox chamber magnahelic reading	0.2 to 0.4 in. H_2O		☐ Yes ☐ No
Take glovebox chamber photohelic reading	0.2 to 0.4 in. H_2O		☐ Yes ☐ No
Section 2: After HEPA Filter Replacement			
Take glovebox chamber magnahelic reading	0.2 to 0.4 in. H_2O		☐ Yes ☐ No
Take glovebox chamber photohelic reading	0.2 to 0.4 in. H_2O		☐ Yes ☐ No
Take exhaust HEPA photohelic readings	≤1.0 in. H_2O		☐ Yes ☐ No
VEO1:			
(Printed Name)	(Signature)	(Date)	