

## **03.104 CDRA Zeolite Filter Swapout**

(03. HSS Procedure)

### NOTE

Starting MD16, when this procedure calls for you to request authorization from MCC for an action, you may proceed on your own go.

### OBJECTIVE:

To replace the Zeolite 5A and 13X Filters on the Carbon Dioxide Removal Assembly (CDRA).

### EQUIPMENT:

Zeolite 5A filter (will be gathered during the procedure)  
Zeolite 13X filter (will be gathered during the procedure)  
Sticky notes  
Pen  
Flashlight  
Shop vacuum  
Portable anemometer  
PPE safety glasses  
PPE Kobalt work gloves  
PPE static wrist tether  
2x Orange caution cone

### REFERENCES:

Serial Number Tracking Spreadsheet  
Airflow Tracking Spreadsheet

### NOTE

The CDRA requires the use of the Fan Dampener Assembly (FDA) for proper operation. The assembly prevents particulate matter from interfering with the infrared sensor and damaging the sampling pump. If the filter becomes clogged, the assembly must be replaced.

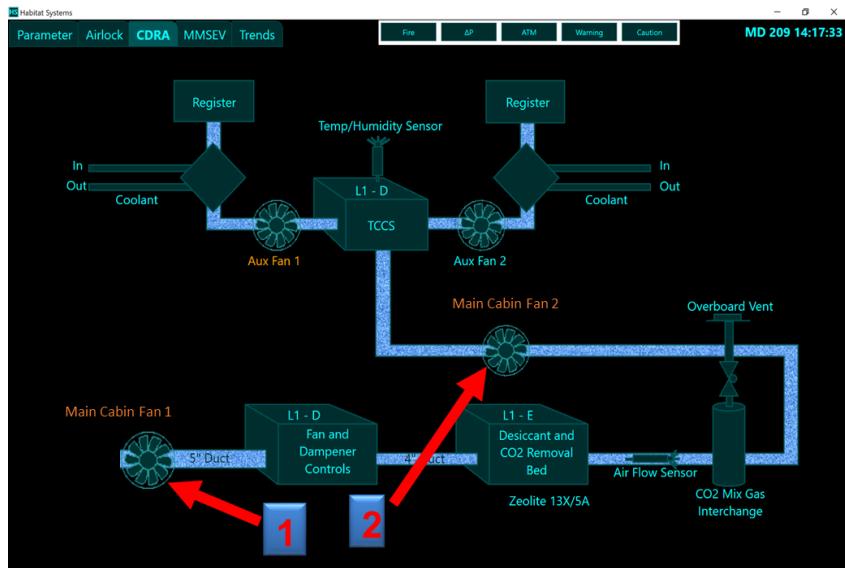
### 1. DEACTIVATE MAIN CABIN FANS

### NOTE

The sounds of the Main Cabin Fans 1 and 2 and the TCCS Auxiliary Fans will diminish as each are turned off. The TCCS Auxiliary Fans status can also be observed due to loss of vibration by touching each of the fan housing bodies.

#### 1.1 Open HSS on Surface Pro and navigate to CDRA tab.

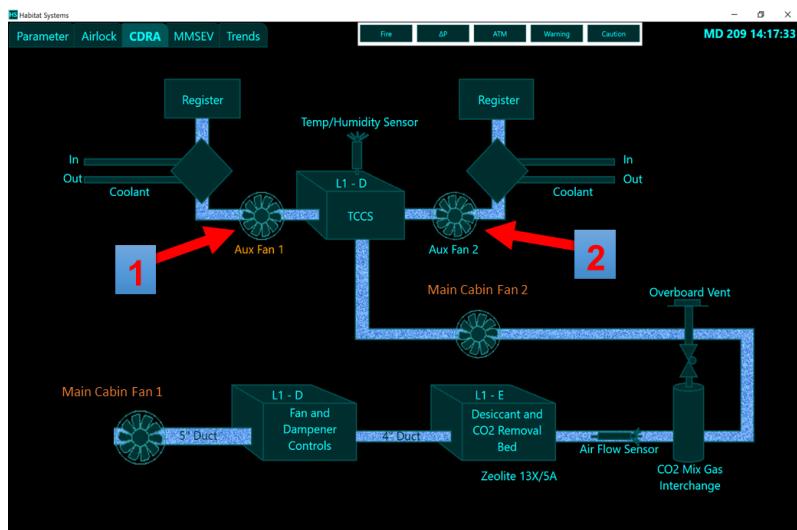
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**Figure 1:** Main Cabin Fan Power Switches in HSS CDRA

- 1.2 On HSS CDRA display, touch Main Cabin Fan 1 icon to deactivate fan (see Figure 1)
  - Verify fan has audibly shutoff.
- 1.3 On HSS CDRA display, touch Main Cabin Fan 2 icon to deactivate fan (see Figure 1)
  - Verify fan has audibly shutoff.

## 2. DEACTIVATE AUX CABIN FANS

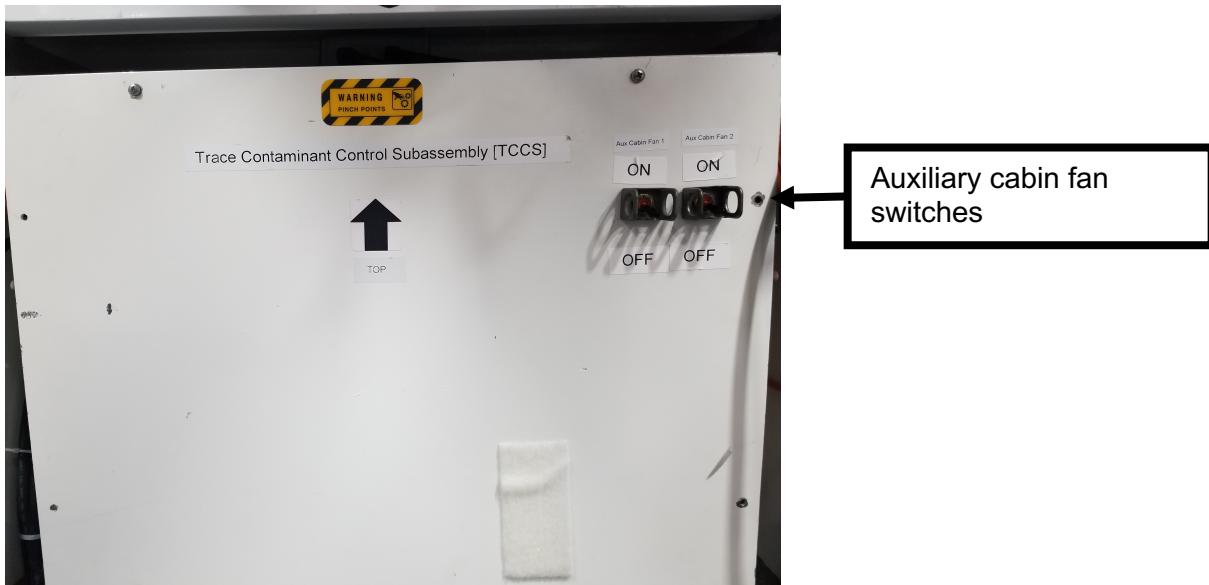


**Figure 2:** Aux Cabin Fan Power Switches in HSS CDRA

- 2.1 On HSS CDRA display, touch Aux Cabin Fan 1 icon to deactivate fan (see Figure 2).

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- 2.2 On HSS CDRA display, touch Aux Cabin Fan 2 icon to deactivate fan (see Figure 2).



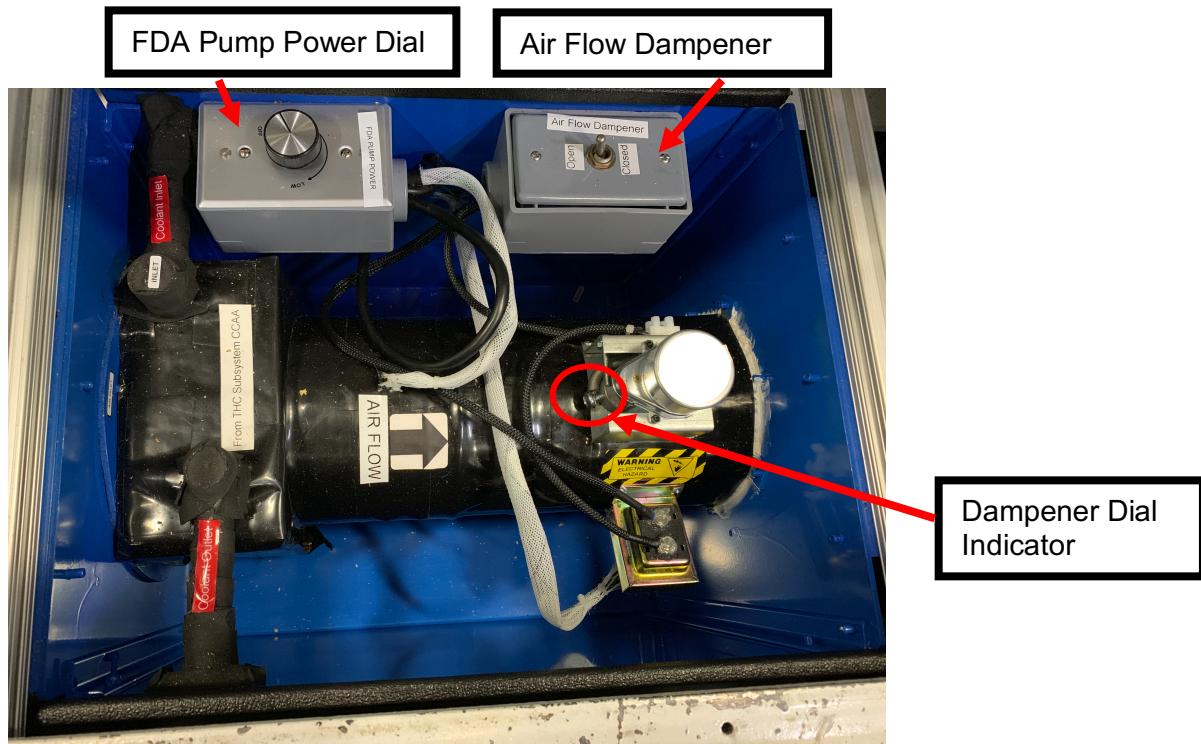
**Figure 3:** Trace Contaminant Control Subassembly (TCCS) Panel

- 2.3 On TCCS Panel, check power switches of Aux Cabin Fan 1 and Aux Cabin Fan 2 are “OFF” (see Figure 3).
  - 2.3.1 Move stowage as necessary in order to access the TCCS Panel.
  - 2.3.2 If power switches of Aux Cabin Fan 1 and Aux Cabin Fan 2 are **NOT** “OFF”, flip each switch to “OFF”.

#### 3. DEACTIVATE FAN DAMPENER ASSEMBLY (FDA) PUMP (IF ACTIVATED)

- 3.1 Remove by sliding floor panel 1D and temp stow.
- 3.2 Place orange caution cone next to open work area L1D subfloor to warn other crewmembers.
- 3.3 Don Kobalt Gloves, Safety glasses.
- 3.4 Don static wrist tether and attach to any unpainted metallic surface.

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**Figure 4:** Fan Dampener Assembly (FDA) Pump

- 3.5 Turn FDA Pump Power Dial counterclockwise to “OFF” (see Figure 4). Listen for a click.

**NOTE**

Read step 3.7 before executing 3.6. Step 3.7 is time dependent and can be missed if not actively watching the Dampener Dial Indicator.

- 3.6 Flip Air Flow Dampener switch to “Closed” (see Figure 4).
- 3.7 Confirm Dampener Dial Indicator (metal Philips head screw with spring attached) rotates to fully closed (see Figure 4).
- 3.8 Detach static wrist tether.
- L1E Subf 4. **REMOVE SATURATED ZEOLITE 5A AND 13X FILTERS**
- 4.1 Remove floor panel 1E and temp stow. Place orange cone next to 1E
- 4.2 Attach static wrist tether to any unpainted metallic surface.

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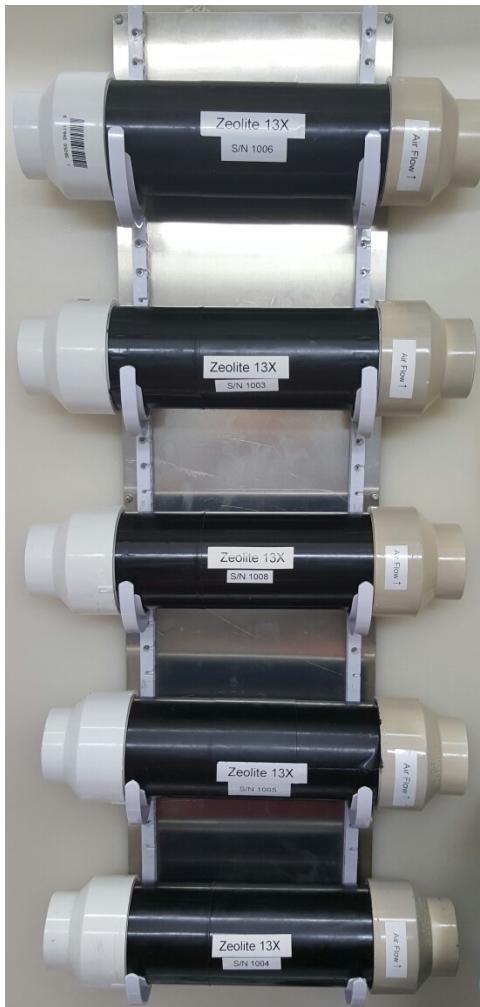
**Figure 5:** Zeolite Filter Assembly

- 4.3 Inspect filter assembly with flashlight for debris and clean as necessary with shop vacuum (see Figure 5).
- 4.4 Remove Zeolite 5A Filter from filter assembly Location 2.  
Label as used with sticky note.
- 4.5 Record number of used Zeolite 5A Filter S/N in the Serial Number Tracking Spreadsheet.
- 4.6 Remove Zeolite 13X Filter from filter assembly Location 1.  
Label as used with sticky note.
- 4.7 Record in Serial Number Tracking Spreadsheet.

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4.8 Detach static wrist tether from metallic surface.

**5. RETRIEVE CLEAN ZEOLITE 5A AND 13X FILTERS**



**Figure 6:** Zeolite Canister Rack

5.1 Remove QTY 1 clean Zeolite 5A Filter from Zeolite Rack located on Airlock Module Wall C (see Figure 6).

Stow used Zeolite 5A Filter in place of removed clean filter.

5.2 Inspect clean Zeolite 5A Filter with flashlight for damage/debris.

5.3 Remove QTY 1 clean Zeolite 13X Filter from Zeolite Rack located on Airlock Module Wall C (see Figure 6).

Stow used Zeolite 13X Filter in place of removed clean filter.

5.4 Inspect clean Zeolite 13X Filter with flashlight for damage/debris.

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**6. INSERT CLEAN ZEOLITE 5A AND 13X FILTERS**

- 6.1 Attach static wrist tether to any unpainted metallic surface near floor panel 1E.
- 6.2 Inspect interior of hose and filter assembly with flashlight for debris and clean as necessary with shop vacuum.
- 6.3 Insert Clean Zeolite 5A Filter to filter assembly Location 2.
- 6.4 Record in Serial Number Tracking Spreadsheet.
- 6.5 Confirm clean Zeolite 5A Filter has same air flow direction as FDA.
- 6.6 Insert clean Zeolite 13X Filter to filter assembly Location 1.
- 6.7 Record in Serial Number Tracking Spreadsheet.
- 6.8 Confirm clean Zeolite 13X Filter has same air flow direction as FDA.
- 6.9 Replace floor panel 1E and safely latch.
- 6.10 Detach static wrist tether.

**7. ACTIVATE FDA PUMP**

**NOTE**

FDA Pump Power Dial can be set from Low to High. When on, always leave dial set to medium.

- 7.1 Attach Static wrist tether to an unpainted metallic surface near floor panel 1D.
- 7.2 Flip Air Flow Dampener switch to “OPEN” (see Figure 4).
  - 7.2.1 Check that the Dampener Dial Indicator (metal Philips head screw with spring attached) rotates to fully open (see Figure 4).
- 7.3 Turn FDA Pump Power Dial to “ON” by rotating clockwise. After hearing click, stop rotation at Midpoint. (see Figure 4).

**8. ACTIVATE MAIN CABIN FANS**

- 8.1 On HSS CDRA display, touch Main Cabin Fan 1 icon to activate fan (see Figure 1).  
-Verify fan has audibly turned on.
- 8.2 On HSS CDRA display, touch Main Cabin Fan 2 icon to activate fan (see Figure 1).  
- Verify fan has audibly turned on.

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8.3 Replace floor panel 1D and safely latch.

8.4 Detach and doff static wrist tether.

## **9. ACTIVATE AUX CABIN FANS**

9.1 On TCCS Panel, flip power switches of Aux Cabin Fan 1 and Aux Cabin Fan 2 to “ON” (see Figure 3).

9.1.1 Move stowage as necessary in order to access the TCCS Panel.

9.2 On HSS CDRA display, touch Aux Cabin Fan 1 icon to activate fan (see Figure 2).

9.3 On HSS CDRA display, touch Aux Cabin Fan 2 icon to activate fan (see Figure 2).

## **10. PERFORM ECLSS VENT CHECK**



**Figure 7:** Cabin Output Vent C/D

**Figure 8:** Cabin Output Vent D/E

10.1 Gather portable anemometer and take reading in m/s of exhaust flow at cabin output vents C/D and D/E (Figures 7 and 8). Hold anemometer within an inch of the vent for 20 seconds to gather an accurate reading and record the highest reading, day, and time in Airflow Tracking Spreadsheet.

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- 10.2 Confirm airflow is within expected range. (Reading should be greater than 0.5 m/s.)
- 10.3 Doff PPE Kobalt work gloves and safety glasses.
- 10.4 Stow all equipment including orange caution cones.