03.102 CDRA LiOH Canister Swapout
(03. HSS AR 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 Lithium Hydroxide (LiOH) Canister Assembly on the Carbon Dioxide Removal Assembly (CDRA).

EQUIPMENT:

LiOH canister
Flashlight
Shop vacuum
Portable anemometer
PPE safety glasses
PPE Kobalt work gloves
PPE static wrist tether
Orange caution cone
Sticky notes
Pen

REFERENCES:
Serial Number Tracking Spreadsheet
Airflow Tracking Spreadsheet
Procedure 3.118 TCCS Auxiliary Fan Activation

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

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

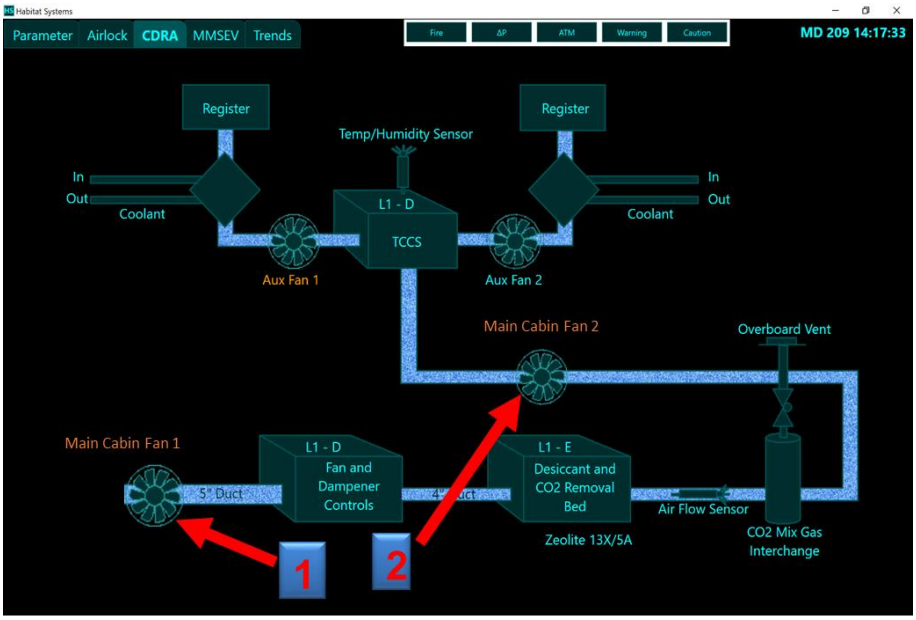

Figure 1: CDRA Assembly: Main Cabin Fan Power Switches

1.2 On HSS CDRA display, touch Main Cabin Fan 1 icon to deactivate fans (see Figure 1)

Verify fan has audibly shutoff.

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.

1.3 On HSS CDRA display, touch Main Cabin Fan 2 icon to deactivate fans (see Figure 1)

Verify fan has audibly shutoff.

GMWS 2. DEACTIVATE AUX CABIN FANS (IF ACTIVATED)

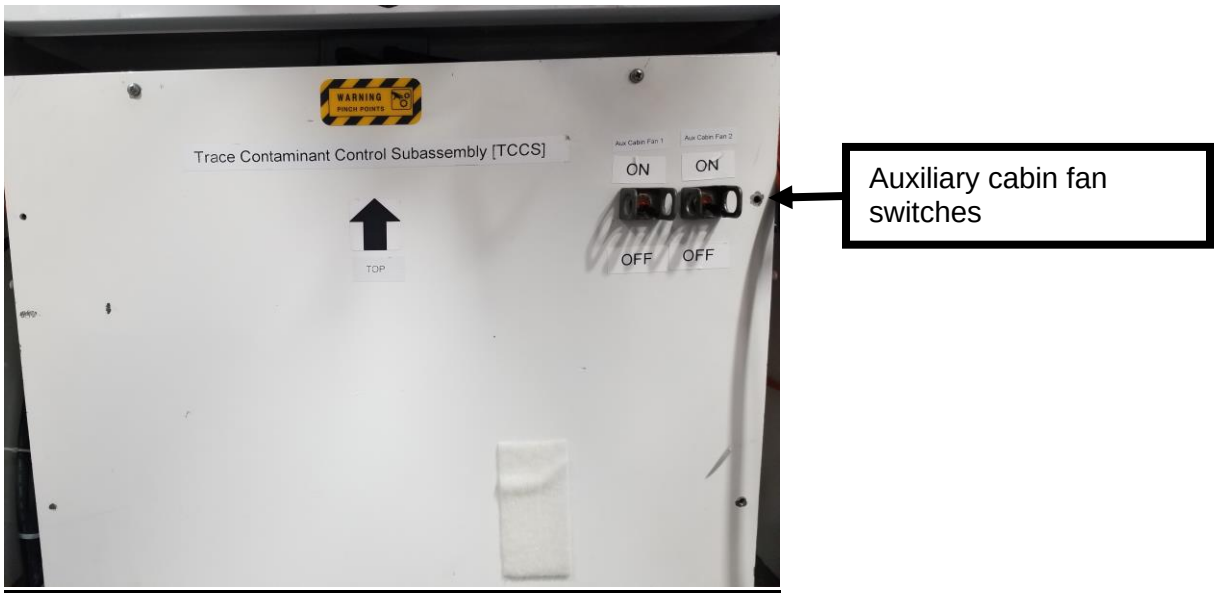

Figure 2: Trace Contaminant Control Subassembly (TCCS) Panel

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

2.1 On TCCS Panel, check power switches of Aux Cabin Fan 1 and Aux Cabin Fan 2 are “OFF” (see Figure 2).

2.1.1 If power switches of Aux Cabin Fan 1 and Aux Cabin Fan 2 are **NOT** “OFF”, flip each switch to “OFF”.

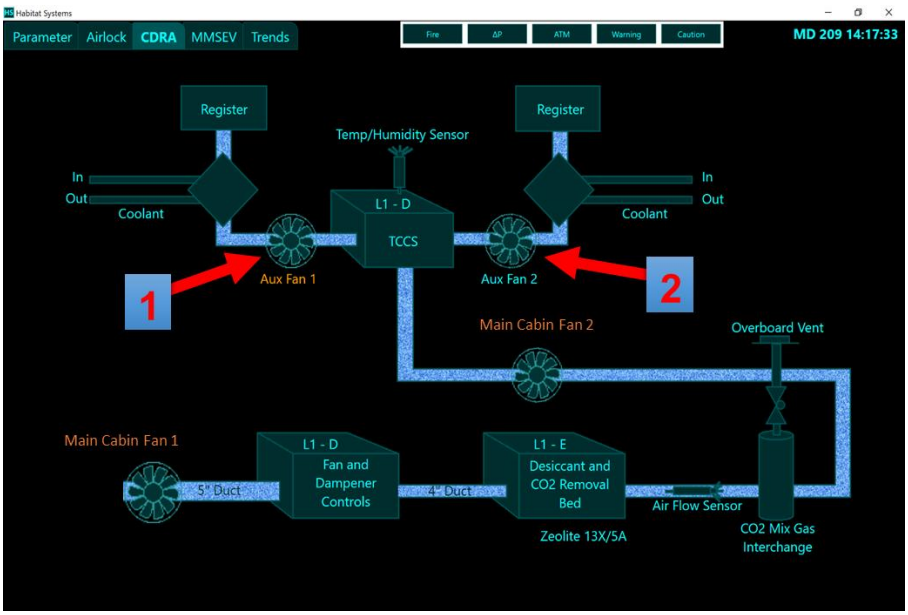

Figure 3: CDRA Assembly: Aux Cabin Fan Power Switches

2.2 On HSS CDRA display, touch Aux Cabin Fan 1 icon to deactivate fan (see Figure 3).

2.3 On HSS CDRA display, touch Aux Cabin Fan 2 icon to deactivate fans (see Figure 3).

L1D Subf

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

3.1 Place orange caution cone next to open work area L1D subfloor to warn other crewmembers.

3.2 Remove by sliding floor panel 1D and temp stow.

3.3 Don Kobalt gloves and safety glasses.

NOTE
Read step 3.5 before executing 3.4. Step 3.5 is time dependent and can be missed if not actively watching the Dampener Dial.

3.4 Don tether and attach to any unpainted metallic surface.

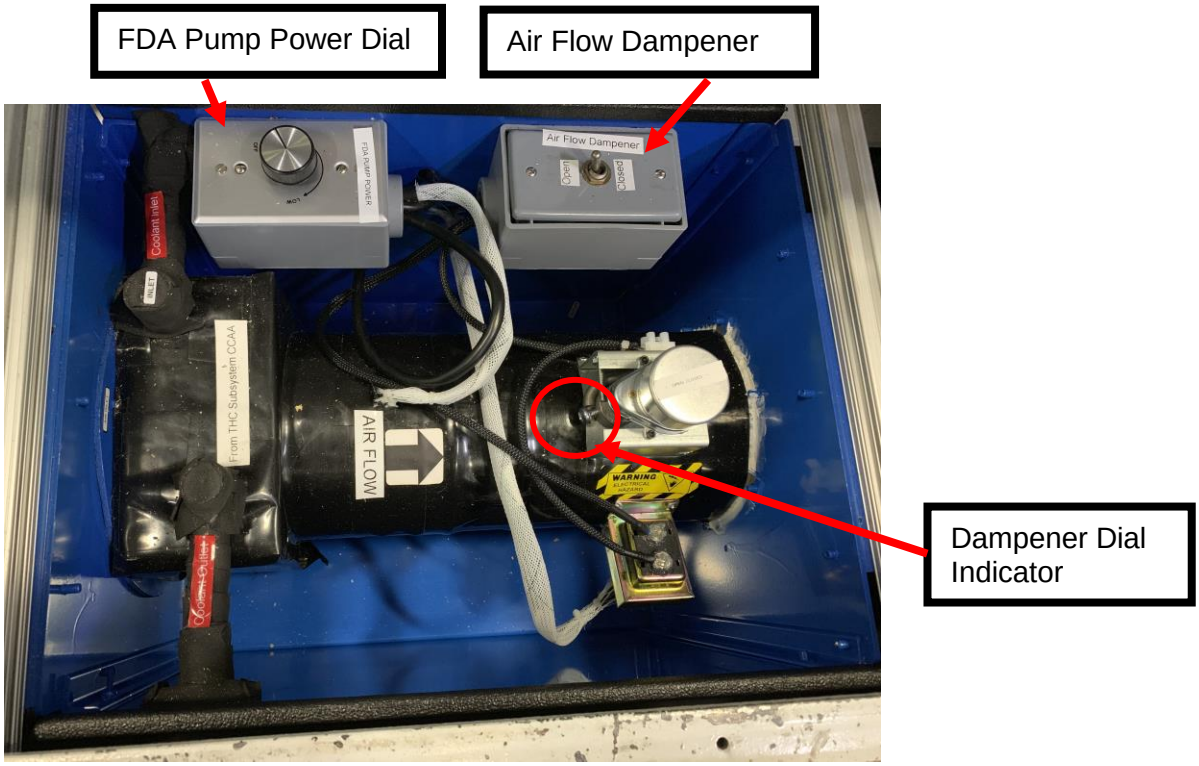

Figure 4: Fan Dampener Assembly (FDA) Pump

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

3.6 Flip Air Flow Dampener switch to “Closed”.

3.7 Confirm Dampener Dial Indicator (metal Philips head screw with spring attached) rotates to fully closed (see Figure 3).

3.8 Detach static wrist tether.

L1C Subf 4. REMOVE USED LiOH CANISTER

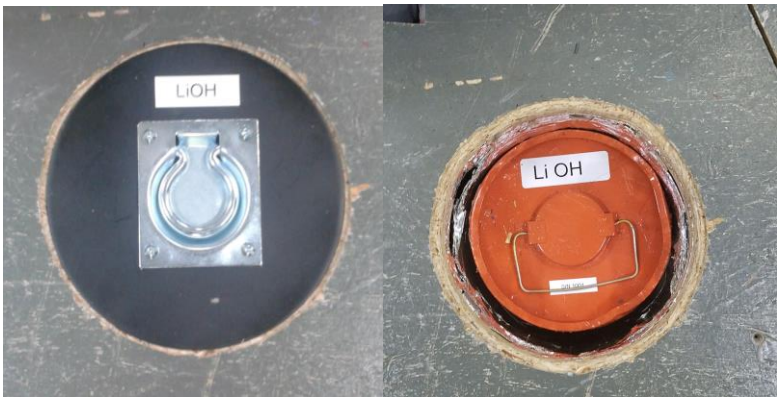

Figure 5. LiOH Canister a) Assembly cover b) LiOH canister

4.1 Go to LiOH in-floor receptacle near 1C subfloor.

4.2 Remove LiOH Canister Cover and temp stow (see Figure 5a).

4.3 Attach static wrist tether to unpainted metallic surface.

4.4 Remove LiOH Canister from filter assembly (see Figure 5b).

4.5 Inspect filter assembly with flashlight for debris and clean as necessary with shop vacuum.

Figure 6: Anemometer

4.6 Gather portable anemometer (see Figure 6) and take reading in m/s of filter assembly air flow at the LiOH canister entrance. Hold anemometer within an inch of the LiOH canister entrance for 20 seconds to gather an accurate reading and record the average reading in the Airflow Tracking Spreadsheet (Reading should be zero m/s).

4.7 Record used LiOH Canister Serial Number in Serial Number Tracking Spreadsheet.

4.8 Detach the static wrist tether from the surface and doffit..

4.9 Label used LiOH Canister with sticky note and stow in consumables drawer in ALC L01.

ALC

5. RETRIEVE CLEAN LiOH CANISTER

Figure 7: LiOH Canister

5.1 Remove clean LiOH Canister from ALC L01 (see Figure 7).

5.2 Inspect clean LiOH Canister with flashlight for debris and clean, as necessary.

L1C Subf

6. INSERT CLEAN LiOH CANISTER

6.1 Don static wrist tether and attach to unpainted surface.

6.2 Inspect interior of hose and filter assembly with flashlight for debris and clean as necessary with shop vacuum.

6.3 Insert clean LiOH Canister into filter assembly.

6.4 Detach static wrist tether from unpainted surface.

6.5 Record clean LiOH Canister Serial Number in the Serial Number Tracking Spreadsheet.

6.6 Replace LiOH Canister cover and safely latch.

L1D Subf 7. ACTIVATE FDA PUMP

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

7.1 Attach static wrist tether to any unpainted surface.

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. Verify dial is set to “Medium” position (see Figure 4).

7.4 Detach static wrist tether.

L1F Subf 8. ACTIVATE MAIN CABIN FANS

8.1 On HSS CDRA interface, press Cabin Fan One and Cabin Fan two to reactivate.

8.2 On HSS CDRA display, touch Main Cabin Fan 1 icon to activate fan (see Figure 1).

Verify fan has audibly turned on.

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

Verify fan has audibly turned on.

8.4 Replace floor panel 1D and safely latch.

NOTE
The TCCS auxiliary (aux) fans do not have variable speeds. They are used to increase air flow throughout the habitat during off-nominal operations.

GMWS

8.5 ACTIVATE TCCS AUX FAN 1 AND FAN 2

8.5.1 On the TCCS Panel, flip the power switch of Aux Cabin Fan 1 to “ON” (see Figure 2).

8.5.2 On the TCCS Panel, flip the power switch of Aux Cabin Fan 2 to “ON” (see Figure 7).

9 TURN ON AUX FANS ON HSS

9.1 Access the HSS interface on Surface Pro. Select the CDRA display

9.2 Hover over Aux Fan 1
9.2.1 Press finger to Aux fan one. The Aux fan One display should start moving

9.3 Hover over Aux fan 2
9.3.1 Press finger to Aux fan two, the Aux Fan Two display should start moving

10. HSS VENT CHECK

Figure 8: Cabin Output Vent C/D **Figure 9**: Cabin Output Vent D/E

10.1 Gather portable anemometer and take readings in m/s of exhaust flow at cabin output vents C/D and D/E (Figures 8 and 9). Hold anemometer (see Figure 5) within an inch of the vent for 20 seconds to gather an accurate reading and record the average reading in Airflow Tracking Spreadsheet.

10.2 Call MCC to confirm air flow is within expected range by reporting the flow. (Reading should be greater than 0.5 m/s.)

10.3 Doff PPE Kobalt work gloves, static wrist tether, and safety glasses.

10.4 Stow all equipment including orange caution cones.