03.117 Auxiliary Fan Failure
(03. HSS Procedure)

OBJECTIVE:

To replace the auxiliary (aux) cabin fan on the Trace Contaminant Control Subassembly (TCCS).

EQUIPMENT:

1x Orange caution cone
5/32 T-handle Allen wrench (will be gathered during the procedure)
Auxiliary cabin fan (will be gathered during the procedure)
Flashlight
Large flat head screwdriver
Magnetic dish
Phillips screwdriver
Portable anemometer
Gloves
Safety glasses
Static wrist tether
Shop vacuum

REFERENCES:
Air Flow Tracking Spreadsheet
Serial Number Tracking Spreadsheet

NOTE
A backup main fan is not on station. Only a backup auxiliary cabin fan is available in case of any failure. The TCCS may require the use of the auxiliary cabin fan for proper operation in case of a main fan failure. If an auxiliary fan fails and is no longer circulating the cabin air, it must be replaced. For this procedure, substitute Aux Fan 1 or 2 depending on which fan has failed.

1. CHECKING THE CIRCUIT BREAKER

   1.1 Go to the circuit breaker located above the L1 workstation and check the status of the lights.
      1.1.1 Identify which, if any, lights are out. If a light is out, this means the circuit has been broken and will have to be reset upon completion of the repair.

2. DEACTIVATE MAIN CABIN FANS (IF ACTIVATED)

   2.1 Deactivate Main Cabin Fan 1 and Main Cabin 2 by pressing the corresponding buttons on the circuit breaker panel.
   2.2 Verify the fans are deactivated by checking the CDRA HSS display for orange immobile fan icons. See Figure 1.

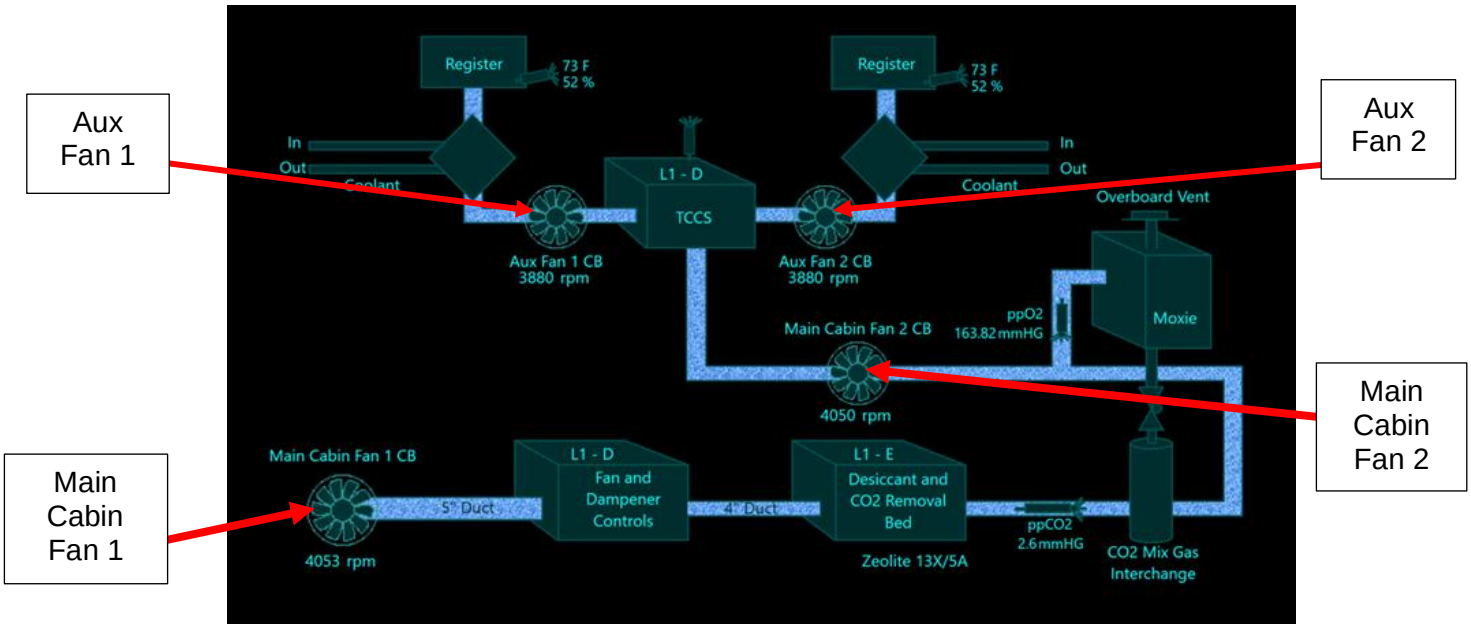

Figure 1: HSS Main/Aux Cabin Fan Power

GMWS 3. <u>DEACTIVATE AUX CABIN FANS (IF ACTIVATED)</u>

3.1 If an Aux Cabin Fan is still activated, deactivate it by pressing the corresponding button on the circuit breaker panel.

3.2 Verify the fans are deactivated by checking the CDRA HSS display for orange immobile fan icons. See Figure 1.

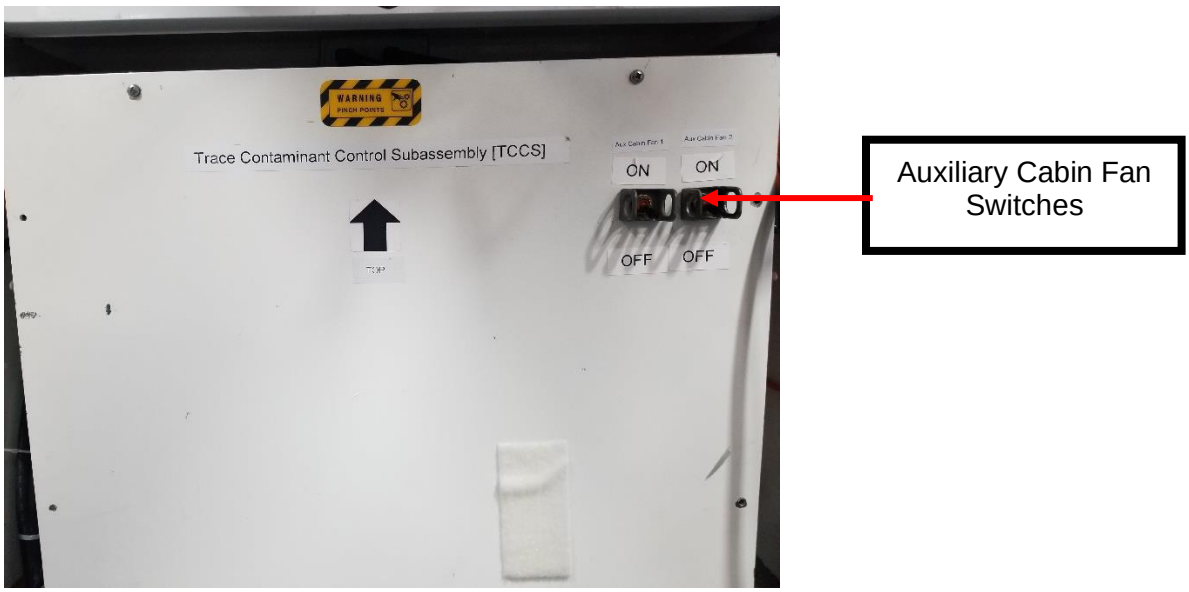

Figure 2: Trace Contaminant Control Subassembly (TCCS) Panel

3.3 On TCCS Panel, flip power switches of Aux Cabin Fan 1 to “OFF” (see Figure 2).

3.4 On TCCS Panel, flip power switches of Aux Cabin Fan 2 to “OFF” (see Figure 2).

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

4, DEACTIVATE FAN DAMPENER ASSEMBLY (FDA) PUMP (IF ACTIVATED)

4.1 Remove by sliding floor panel 1D and temp stow. Place orange caution cone next to opening.

4.2 Don static wrist tether and attach to any unpainted metallic surface.

4.3 Don gloves and safety glasses.

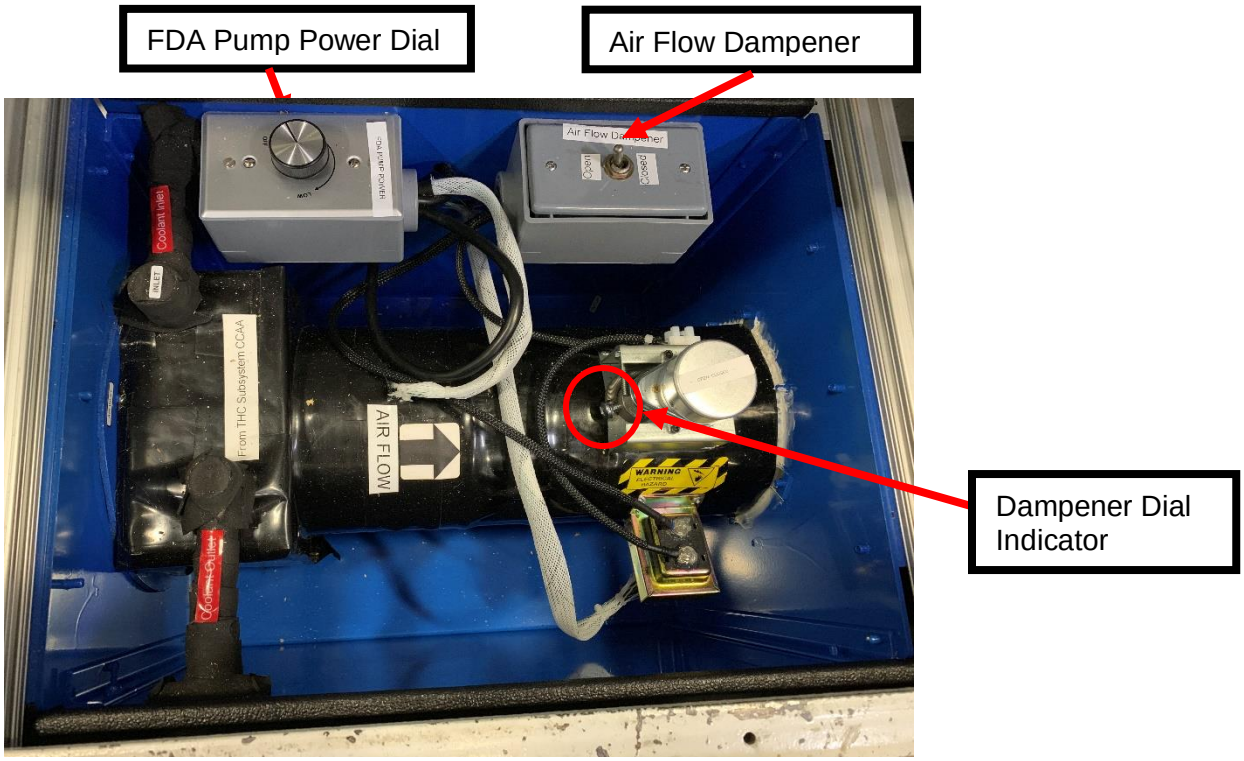

Figure 3: Fan Dampener Assembly (FDA) Pump

4.4 Turn FDA Pump Power Dial counterclockwise to “OFF”. Listen for a click (see figure 3).

NOTE
Read step 4.6 before executing 4.5. Step 4.6 is time dependent and can be missed if not actively watching the Dampener Dial Indicator.

4.5 Flip Air Flow Dampener switch to “CLOSED” (see figure 3).

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

4.7 Detach static wrist tether.

ALC 5. GATHER 5/32 T-HANDLE ALLEN WRENCH

Figure 4: 5/32 T-handle Allen Wrench

5.1 Remove 5/32 T-handle Allen wrench from Airlock Toolbox (see Figure 4).

L1D 6. REMOVE USED AUXILIARY CABIN FAN

6.1 Attach static wrist tether to an unpainted metallic surface.

6.2 On TCCS panel, use Phillips screwdriver to remove Phillips screws and temp stow in magnetic dish (see Figure 2).

NOTE
Disconnecting the affected 12VDC (Direct Current Voltage) cable from the quick disconnect socket, allows for better ease to temp stow the TCCS panel.

6.3 Disconnect affected Aux Cabin Fan 1 (2) 12VDC Power Cable from Aux Cabin Fan 1/2 quick disconnect.

6.4 Remove TCCS Panel and temp stow. See figure 2.

6.5 Inspect TCCS with flashlight for debris and clean as necessary with shop vacuum.

6.6 Use flathead screwdriver to loosen hose ring clamp downstream of used Aux Cabin Fan 1 (2).

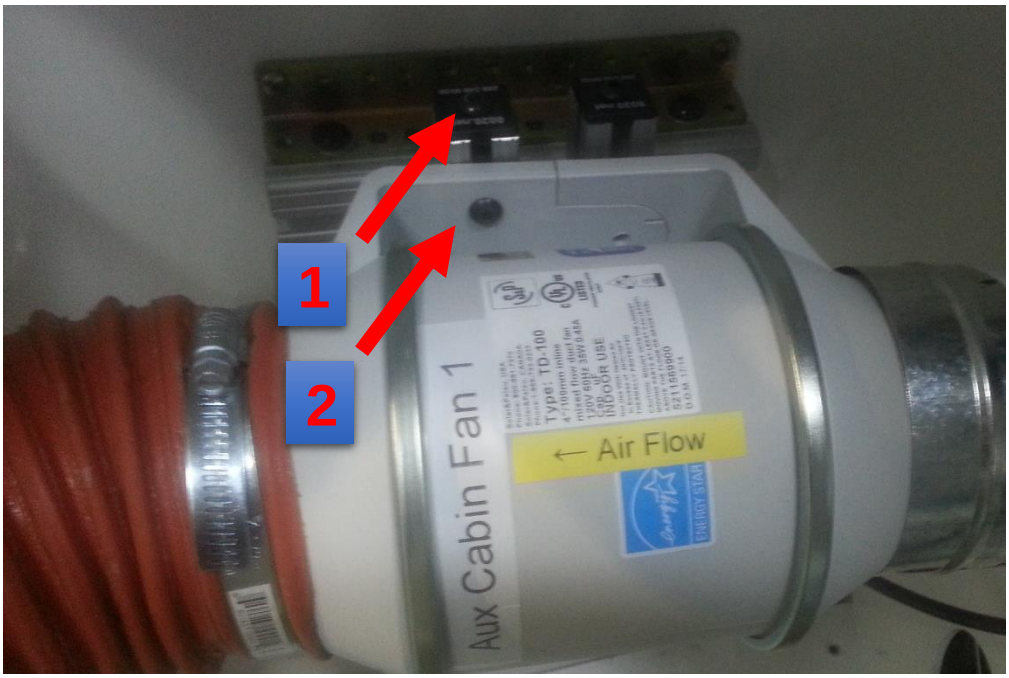

Figure 5: Top Retaining Hex Bolts for Auxiliary Cabin Fans 1 (2)

6.7 Use 5/32 T-handle Allen wrench to remove hex head bolt 1 and loosen hex head bolt 2 stabilizing Aux Cabin Fan 1 (2). (See Figure 5.)

6.8 Temp stow retaining hex head bolts and nuts in magnetic dish and 5/32 T-handle Allen wrench.

6.9 To replace an Aux Fan, disconnect Aux Cabin Fan from hose assembly by pulling the fan up until hex head bolt 2 and nut are free of retaining bracket, then rotate the fan clockwise while pushing up to remove fan out of the hose assembly.

6.10 Disconnect Aux Cabin Fan from the cable connection. (See Figure 6)

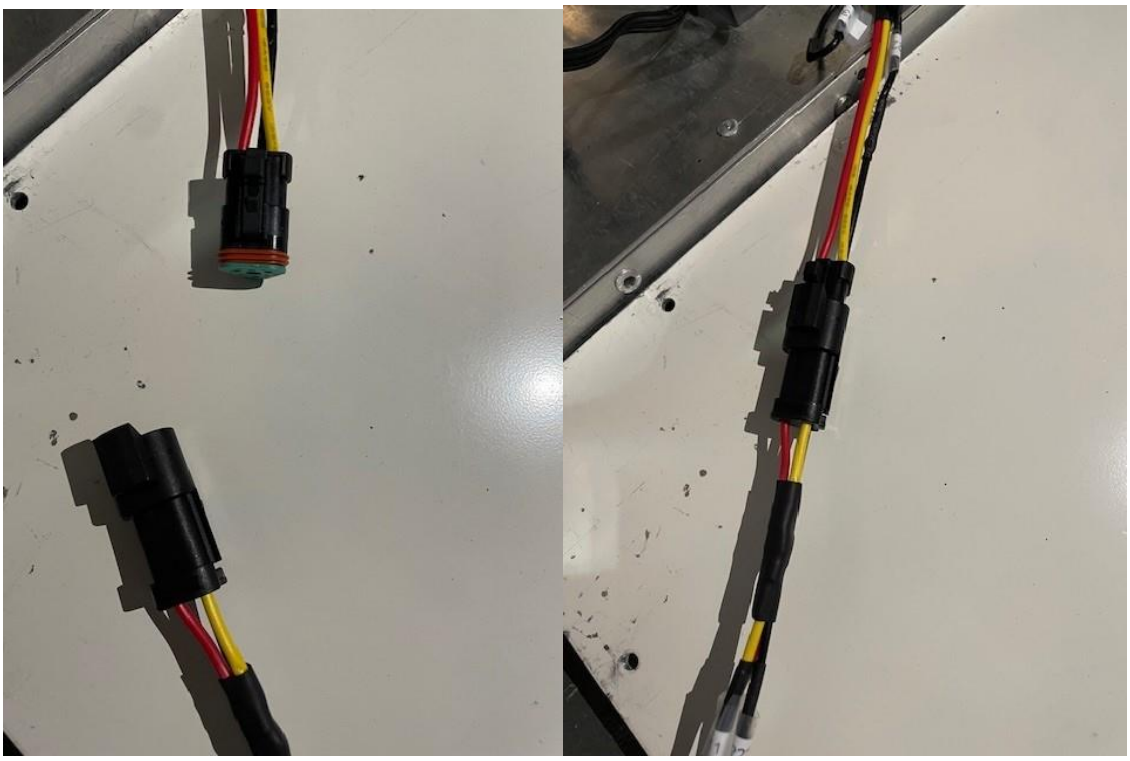

Figure 6: Auxiliary Cabin Fan Connectors

6.11 Record used Aux Cabin Fan 1 (2) S/N in Serial Number Tracking Spreadsheet.

6.12 Detach static wrist tether from metallic surface.

ALD 7. RETRIEVE NEW AUXILIARY CABIN FAN

7.1 Remove spare Aux Cabin Fan from airlock module drawer ALC-L02.

7.2 Inspect spare Aux Cabin Fan with flashlight for damage/debris.

7.3 Return used Aux Cabin Fan to airlock module drawer ALC-L02 where spare Aux Cabin Fan previously resided with a sticky note saying “used”.

L1D 8. INSERT CLEAN AUXILIARY CABIN FAN

8.1 Attach static wrist tether to an unpainted metallic surface.

8.2 Check spare Aux Cabin Fan has same airflow direction as TCCS.

NOTE
Hex head bolt 2 needs the retaining nut to be attached (loose not tight) in order to properly slide into the 80/20 aluminum support bracket.

8.3 To replace Aux Fan, connect Aux Cabin Fan to hose assembly by rotating the fan counterclockwise while pushing the fan down until the fan is inside the upstream duct, then push the fan down slightly and slide hex head bolt 2 into the retaining bracket.

8.4 Attach the downstream hose and hose clamp over the replacement fan.

8.5 Use 5/32 T-handle Allen wrench to tighten retaining hex head bolts stabilizing Aux Cabin Fan.

8.6 Confirm the retaining hex head bolts are engaged in the retaining nuts.

8.7 Use flathead screwdriver to tighten hose ring clamp on side of new Aux Cabin Fan.

8.8 Record Spare Aux Cabin Fan S/N for filter assembly in Serial Number Tracking Spreadsheet.

8.9 Connect Aux Cabin Fan to appropriate connector.

8.10 Retrieve and reattach TCCS control panel.

8.11 Detach static wrist tether from metallic surface.

L1D 9. <u>REACTIVATE NEW AUXILIARY CABIN FAN</u>

9.1 On TCCS Panel, activate Aux Cabin Fan 1 and Aux Cabin Fan 2 (See Figure 2).

CAUTION
Ensure all wires that have been disconnected are reconnected before resetting a circuit breaker.

9.2 On the circuit breaker panel, press the buttons for the Aux Fan 1 and Aux Fan 2.

9.2.1 Circuit breaker light should illuminate.

9.2.2 Verify hardware re-energizes.

9.3 Check hose assembly on each side of both Aux Cabin Fans for air leaks.

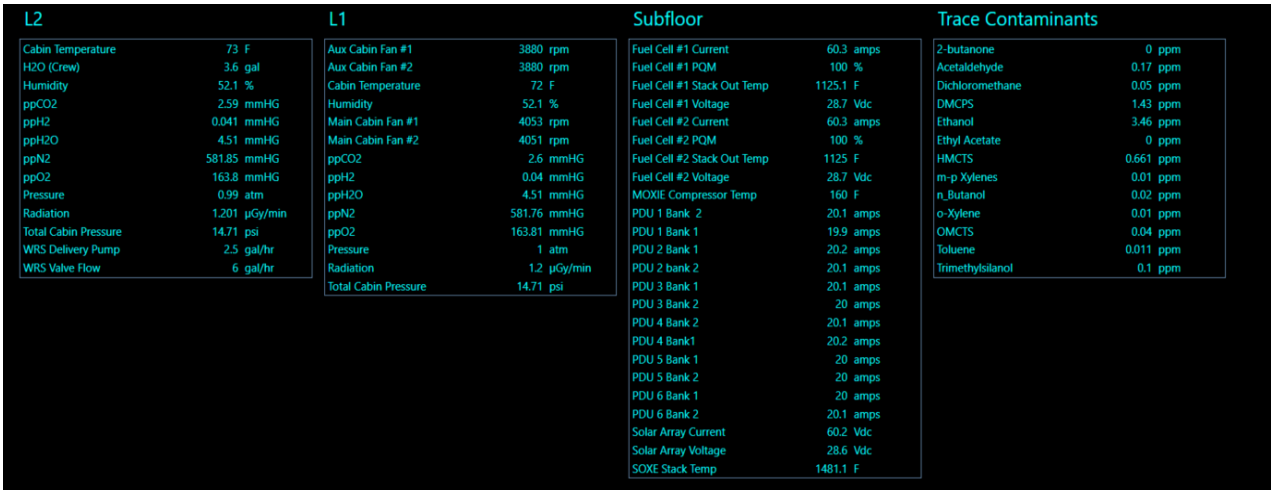

Figure 7: HSS Parameter Display

9.4 Verify good telemetry via HSS Parameter display (See Figure 7).

L1D Subf 10. ACTIVATE FDA PUMP

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

10.1 Go to the opened Floor Panel 1D and flip Air Flow Dampener switch to “OPEN” (see Figure 3).

9.1.1 Check that the Dampener Dial Indicator (metal Philips head screw with spring attached) rotates to fully open.

10.2 Turn FDA Pump Power Dial to “ON” by rotating clockwise. After hearing click, stop rotation at Midpoint.

11. CDRA VENT CHECK

Figure 8: Cabin Output Vent C/D and Cabin Output Vent D/E

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

11.2 Confirm airflow is within expected range by reporting the flow. (Reading should be greater than 0.5 m/s.)

11.3 Doff gloves, safety glasses, and static wrist tether.

11.4 Stow all equipment including orange caution cones.