03.126 CDRA Excess Cabin Gases
(03. HSS Procedure)

OBJECTIVE:

To remove excess gases such as hydrogen, oxygen or argon from the cabin air.

EQUIPMENT:

Zeolite Regeneration Unit (will be gathered during the procedure)
PPE safety glasses
PPE Kobalt work gloves
PPE static wrist tether
Timer
Orange caution cone

REFERENCE

3.101 CCAA Main Cabin Fan Activation
3.103 CDRA Zeolite Filter Regeneration
3.121 TCCS Fan Dampener Assembly

NOTE

The removal of excess gas buildup such as hydrogen, nitrogen and argon for the Sabatier process is a means to maintain a closed-loop cycle for cabin air on POLARIS. This process will follow closely the process for Zeolite Filter Regeneration excluding the placement of the Zeolite Filter in the device. The air will circulate through the ZRU to the Sabatier for filtering.

1. ACTIVATE MAIN CABIN FANS

NOTE

If main cabin fans are not on, then they need to be activated. If they are already activated, then skip to next steps in 2.

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

Verify fan has audibly turned on.

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

Verify fan has audibly turned on.

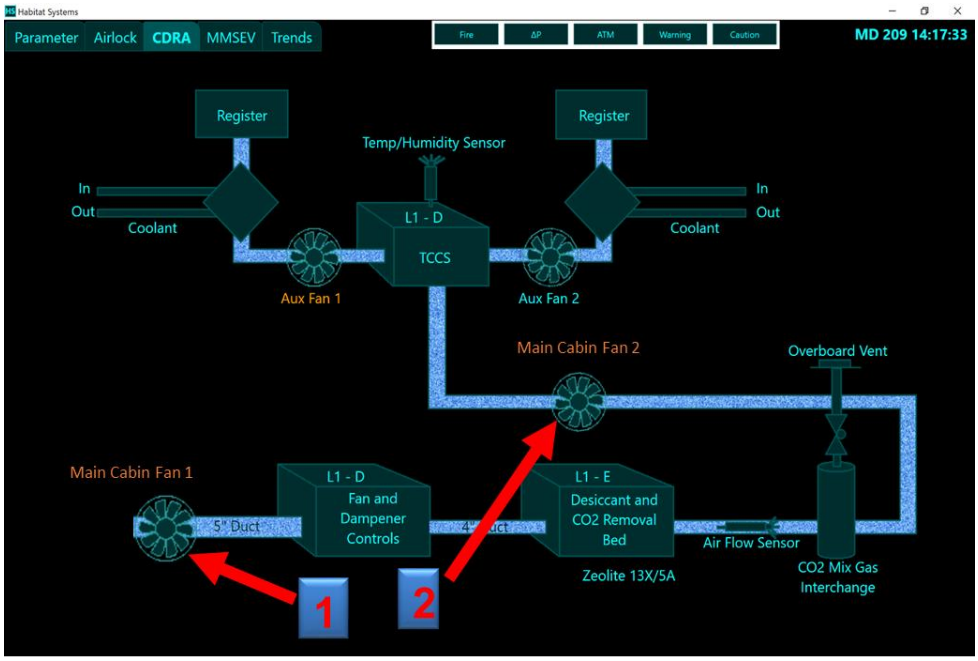

Figure 1. Main Cabin Fan Power

NOTE
The TCCS Fan Dampener Assembly (FDA) has variable speeds. It can be used to increase or decrease air flow throughout the Environmental Control and Life Support System (ECLSS) during nominal and off-nominal operations. For this procedure the air flow needs to be placed on high until process is completed.

L1D Subf 2 MODIFY TCCS FDA AIRFLOW RATE

2.1 Don PPE gloves and safety glasses

2.2 Remove floor panel 1D by lifting and sliding and temp stow.

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

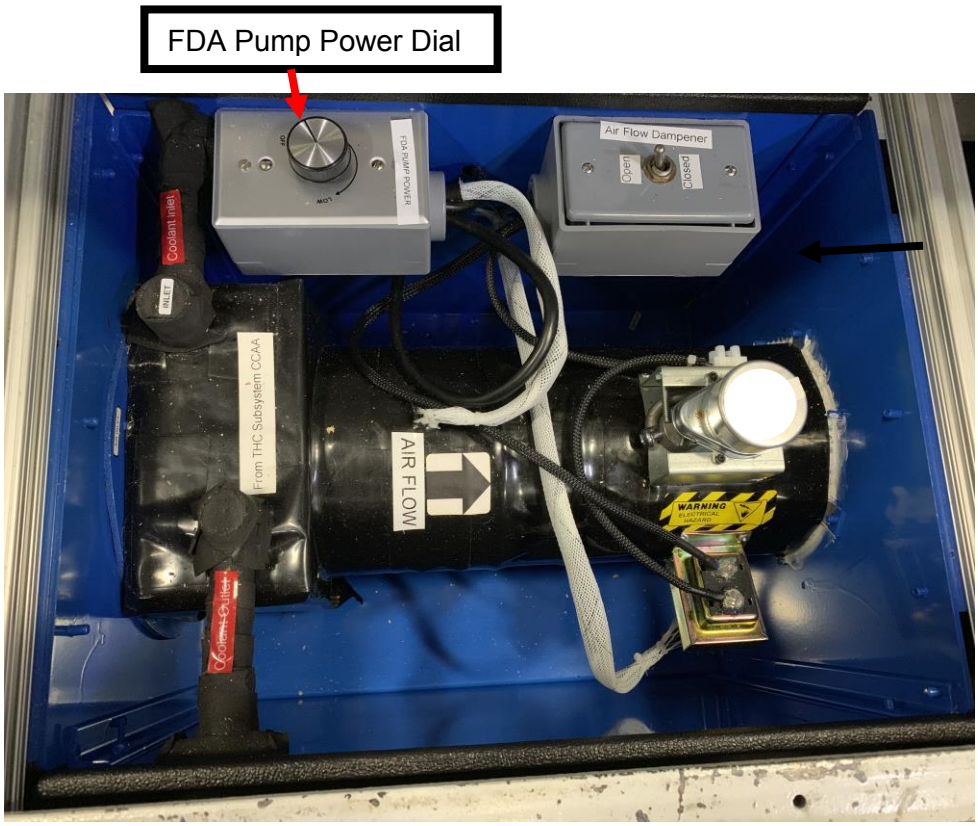

Figure 2. Fan Dampener Assembly (FDA) Pump

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

2.5 Turn FDA Pump Power Dial counterclockwise to increase to high.

2.6 Detach static wrist tether.

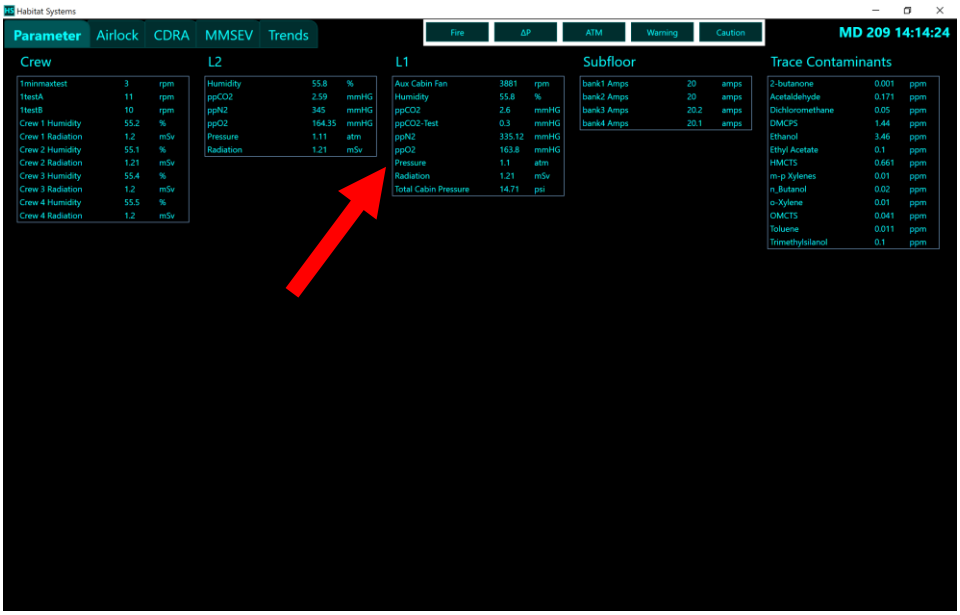

Figure 3: HSS Parameter display

2.7 Go to HSS Parameters tab and verify airflow rate change (see Figure 3).

2.8 Slide floor panel 1D back in place and safely latch.

GMWS 3. <u>PUT SABATIER IN STANDBY MODE</u>

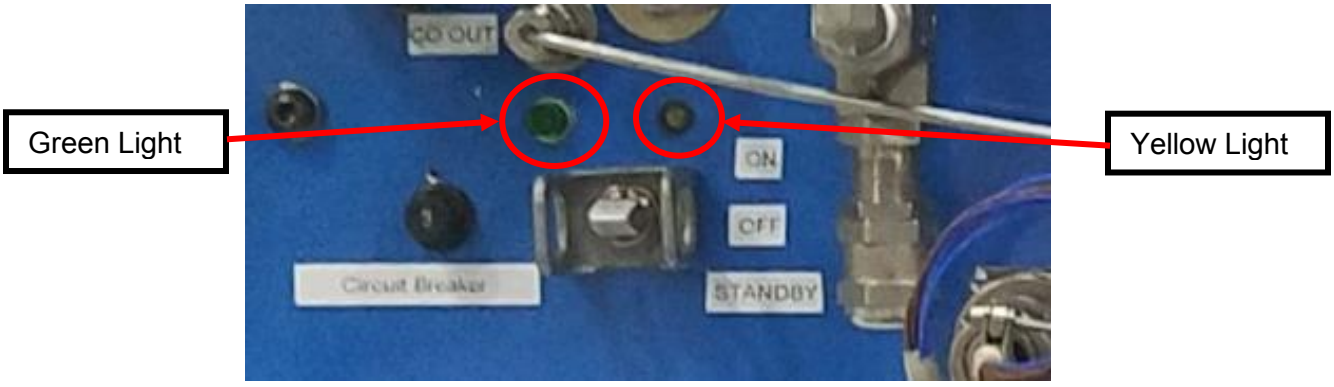

Figure 4: Sabatier Panel

3.1 On the Sabatier Panel, move the power switch to " S T A N D B Y " (see Figure 4).

3.2 Confirm yellow light blinks indicating Sabatier is in Standby mode (see Figure 4).

GMWS

4. ASSEMBLE ZEOLITE REGENERATION UNIT TO SABATIER

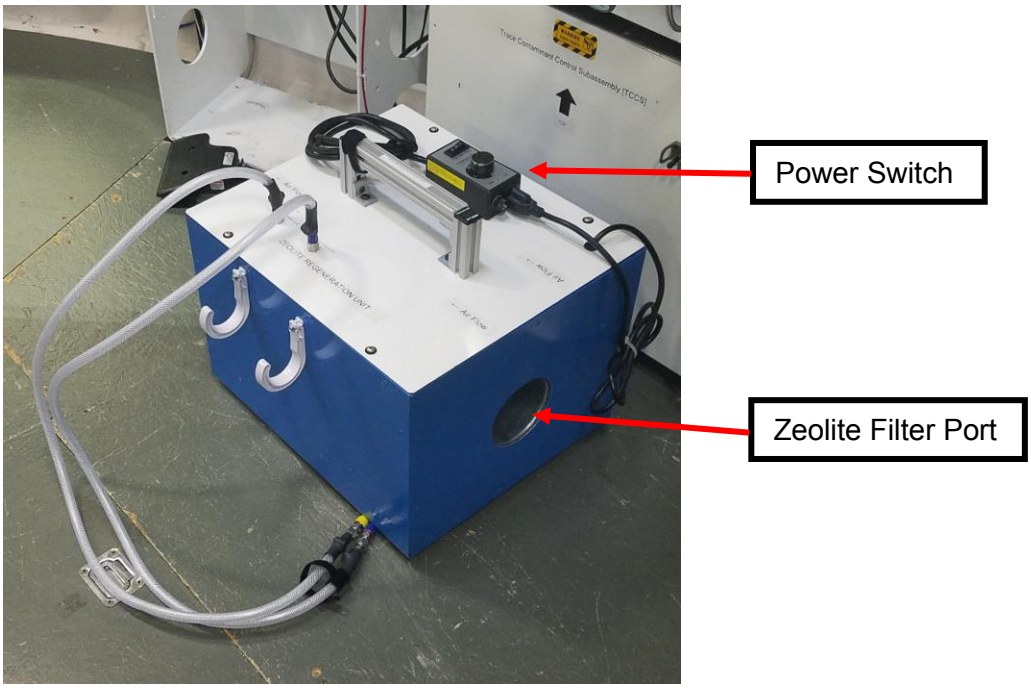

Figure 5: Zeolite Regeneration Unit (ZRU)

4.1 Move Zeolite Regeneration Unit (ZRU) in front of Sabatier (see Figure 5).

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

4.3 Unfurl the CO2 (yellow taped) and H2O (blue taped) hoses and quick disconnects (QDs).

4.4 Connect yellow QD to yellow port on Sabatier.

4.5 Confirm the yellow QD fully snaps into place by audible click sound and giving the hose a slight tug.

4.6 Connect blue QD to blue port on Sabatier.

4.7 Confirm the blue QD fully snaps into place by audible click sound and giving the hose a slight tug.

Figure 6: ZRU Power Switch

4.8 Confirm power switch on ZRU is in the "OFF" position (see Figure 6).

4.9 Unfurl power cable and plug power cable into outlet strip on right of Sabatier (see Figure 7).

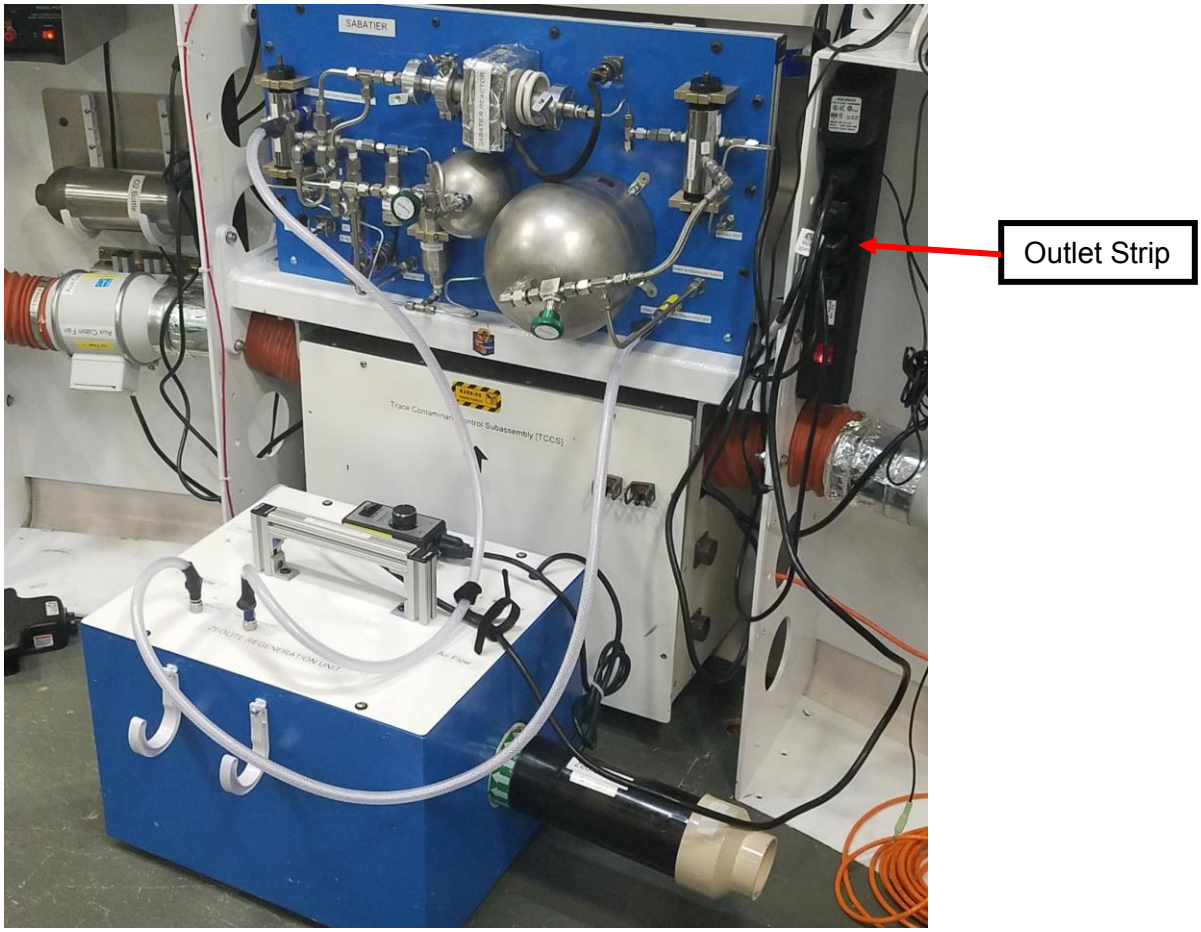

Figure 7: ZRU Connected to Sabatier

ALC 5. GAS REMOVAL

NOTE
The cabin air will flow through the ZRU to the Sabatier for excess gas removal. Each gas will require a different filtering time. The times are: Argon 15 minutes, Nitrogen 10 minutes, and Hydrogen 5 minutes. There will not be a filter placed on the ZRU for filtering these gases.

5.1 Open ZRU port and check that it is empty. (See Figure 5)

5.2 Switch Sabatier to "ON" (see Figure 4).

5.3 Detach static wrist tether from metallic surface.

5.4 Power on ZRU to "Full" power (see Figure 6).

5.5 Set timer for the minutes required for the appropriate gas to ensure ZRU removes all of the excess gas.

GMWS 6 REMOVING THE ZRU

6.1 After the filtering time has been completed, on the Sabatier Panel, move the power switch to "STANDBY" (see Figure 4).

6.2 Confirm yellow light blinks indicating Sabatier is in Standby mode (see Figure 4).

6.3 Power off ZRU (see Figure 6).

6.4 Remove ZRU power cable plug from outlet strip to right of Sabatier.

6.5 Furl power cord and use Velcro tie to secure.

6.6 Disconnect blue QD from Sabatier. To release pull back on the metallic collar at the connection.

6.7 Disconnect yellow QD from Sabatier. To release pull back on the metallic collar at the connection.

6.8 Furl hoses and QDs together around stow hooks and use Velcro tie to secure.

ALC 7. RETURN SABATIER TO ON CONFIGURATION

7.1 Switch Sabatier to "ON" (see Figure 4).

7.2 Confirm green light illuminates indicating Sabatier is in ON mode.

8. MODIFY TCCS FDA AIRFLOW RATE

8.1 Remove floor panel 1D by lifting and sliding and temp stow.

8.2 Attach static wrist tether to any unpainted metallic surface in the FDA.

8.3 Turn FDA Pump Power Dial to " m i ldle v (see Figure 2).

8.4 Go to HSS Parameters tab and verify airflow rate change (see Figure 3).

8.5 Slide floor panel 1D back in place and safely latch.

8.6 Detach and doff static wrist tether.

8.7 Doff all PPE and stow all equipment, including orange caution cone.