# 600 System Up to air procedure

**Overview**
This procedure will allow you to safely bring the system up to air for maintenance.

1. Shut down AugerMap and turn off the 20-610 electron gun control (filament down slowly)
2. Turn off the follow units: 32-150, 32-100, Model 110, ion gun controls, SIMS controls.
3. If V4 is open, close it by pressing the Diff Pump Ion Gun button on the AVC remote.
4. Pump the intro.
5. Turn off the DIGIII.
6. Turn off the Ion pump control and Boostivac control.
7. Allow the system to cool for at least 30 minutes.
8. With the turbo pump on and the intro still being pumped, depress the Backfill Chamber button on the Auto Valve control located behind the vacuum console.
9. You will hear a hissing sound as air is back-filled into the chamber.
10. Slightly loosen the intro hatch cover so that when the system is pressurized it will open.
11. Once the system is vented, turn OFF the turbo pump.

# 600 System Pump Down procedure

**Overview**
This procedure will allow you to safely pump down the system after being up to air for maintenance.

1. Make sure that all flanges are secured (use new copper gaskets whenever removing and replacing optics on the vacuum chamber).
2. With the turbo pump off, depress the Rough Chamber button on the Auto Valve control located behind the vacuum console.
3. Make sure that the intro hatch is closed.
4. Turn on the turbo pump by depressing the pumping unit button. You will hear some valves close and the turbo will begin to pump the system out.
5. After about 20 minutes you should have 5 bars on the Auto Valve control remote. Once you have 5 bars, cycle each of the 4 titanium sublimation filaments for about 2 minutes each at 50 amps on the Boostivac control.
6. Cycle each filament 2 times, with a few minutes of cool down time between filaments.
7. After all 4 filaments have been out-gassed, make sure that you still have 5 bars on the Auto valve control remote and then turn on the DIGIII by turning the power switch to UHV and depressing the I/T 3 button.

8. The DIGIII should indicate in the low 10-3 to mid 10-4 range. Allow the turbo to pump until the system pressure is in the low 10-4 to high 10-5 range, about 30 additional minutes.
9. Cycle the #1 titanium sublimation filament for about 2 minutes at 50 amps. (Note: If a filament can no longer get at least 45 amps, use the next filament).
10. When the vacuum is in the low 10-5 range, start the ion pump control by turning the Mode switch to Start. Monitor the 10KV scale. The voltage should be increasing (maximum is about 5KV), and the DIGIII should indicate that the vacuum is dropping into the 10-6 range.
11. Once the DIGIII indicates the high 10-6 range, close the V1 valve by depressing the Rough Chamber button on the Auto Valve control located behind the vacuum console one more time. You will hear the V1, V3 and V4 valves close.
12. On the Auto valve control remote, depress the Diff Pump Ion Gun button to differentially pump the ion gun.
13. The system vacuum will continue to improve over the next few hours. Cycle the #1 titanium sublimation filament every 30 to 45 minutes to help the ion pumps pull the vacuum down.
14. Once the base pressure is in the low 10-7 to mid 10-8 range, the system can be baked out to obtain the best possible base pressure.