

# ***Gemini Ultra***

## ***Startup and Shutdown Procedures***



**Revised:** 8 November 2006

### **Startup Procedures**

- 1) Boot the computer.
- 2) Turn on the water chiller lines for the Gemini. The lines are on the power conduit in the middle of the room and are labeled Gemini. The taps are open when in the vertical position (i.e. parallel to the water hose).
- 3) Start the CCD chiller and CCD camera.
  - a) Turn the KMW150CCD chiller on by turning the key on the chiller.
  - b) Wait between 30 min and 2 hrs for chiller to cool down. The instrument is ready when the GREEN lights are lit on both the chiller and the top of the CCD camera. All RED lights must be OFF. If this never happens, turn off the chiller and contact Ross Angel or Carla Slebodnick.
- 4) Once the CCD chiller is cooled, power up the Xrays:
  - a) Open the 3 water valves on the KMW3000 chiller. The valves are open when they are vertical (i.e. parallel to the water lines).
  - b) On the power conduit behind the Gemini are breaker boxes labeled “Mo” and “Cu.” Flip the Red/Black lever on these two boxes to turn on the generators. The “+24V POWER ON” should be illuminated along with either INTLK CLOSED on one generator and INTL OPEN on the other.
  - c) Turn the KMW3000 chiller on by turning the key. The GREEN light on the chiller should be lit and all RED lights should be off. If any RED lights are lit, turn off the chiller and contact Ross Angel or Carla Slebodnick.
  - d) Turn on the Goniometer Interface. Turn on the MAINS switch in the lower left of the generator cabinet. On the far right of the interface, four small green lights should illuminate and no red lights.
  - e) Open *CrysAlisPRO*. (Note: Always make sure the goniometer interface is on *before* opening the software. Otherwise, the software can not communicate properly with the generators and there is risk of damaging the instrument).

- f) Confirm that the software and generator are communicating by making sure the radiation source specified is Mo on (1) the CrysAlisPro header, (2) the CrysAlisPro radiation source control button (upper right of CrysAlisPro Start/Stop screen), and (3) the Goniometer cabinet. If the instrument is set for Cu, in CrysAlisPro click the **Xray Cu** and press YES at the warning about switching to Mo. Wait a couple minutes while the instrument resets and then check everything correctly references Mo.
- g) From within *CrysAlisPRO*, press **X-ray** in the upper right. Press **Set kV,mA,Xray**. Set the voltage and current to 20 kV and 5 mA and press the **X-ray ON** radio button. The Mo tube will automatically power up to the standby setting.
- h) Check that generators are operating properly. In the generator cabinet, the Mo Generator should top 3 green lights on and the Cu generator should HV power and INTLK OPEN lights on.
- i) Close the Spellman device window.

## Shutdown Procedures

**ONLY PERFORM SHUTDOWN IF YOU ARE SPECIFICALLY INSTRUCTED TO DO SO OR IN CASE OF EMERGENCY. IF POSSIBLE, CONTACT ROSS ANGEL OR CARLA SLEBODNICK BEFORE PERFORMING AN EMERGENCY SHUTDOWN.**

- 1) From within CrysAlisPro, power down the X-ray tubes.
  - a) **Open the Spellman Device Window** by clicking **X-ray**.
  - b) Press **Set kV,mA,Xray** and press the **X-ray off** radio button. The generator will ramp down the power and then turn off the power to the X-ray tube.
  - c) Turn the KMW3000 chiller off by turning the key and turn all 3 water valves to the off position (i.e. perpendicular to the water lines).
  - d) Once power to the X-ray tubes is off, close the **Spellman Device Window** and close *CrysAlisPRO*
- 2) In the lower left corner of the generator cabinet, toggle the MAINS switch to the off position. (Note: always close *CrysAlisPRO* before turning off the goniometer interface).
- 3) Shut down the CCD chiller and CCD camera by turning off the KMW150CCD chiller with the key.
- 4) Turn off the chilled water taps for the Gemini. The taps are located on the power conduit in the middle of the room. The tap is OFF when in the horizontal position (i.e. perpendicular to the water line).
- 5) Shut Down the computer.
- 6) On the power conduit are 3 breaker boxes for the Gemini-one labeled “Mo” one labeled “Cu” and one providing power to the remaining diffractometer components (goniometer, chillers, etc). Flip the Red/Black levers on these three boxes to cut power to the generators and instrument.