Standard operating procedure for Aviv 410 CD instrument

Turning ON the instrument:

1. Turn on the N_2 gas bottle by opening the gas valve on top and not the regulator (do not change the settings on the regulator). Make a note of the N_2 level in the bottle (a full bottle reads 200 Litre).
2. Open the inlet and outlet valves on both sides of the oxygen scrubber on the floor next to the CD instrument.
3. Adjust the N_2 flow regulator to 20.
4. Turn on the water-bath pump situated on the unit to the right of the CD instrument. The temperature of the water bath is set to 20˚C. Do not change this setting. Check the water level and add de-ionised water if necessary. Make sure that the water is circulating.
5. Monitor the oxygen level on the oxygen monitor on the right hand side of the lower shelf of the CD trolley. The oxygen level should read below 5 ppm before you can operate the CD instrument. Adjust the flow rate in the oxygen monitor by turning the black knob at the back of the monitor clockwise or anti-clockwise. The black marker in the flow meter on the front of the oxygen monitor should always be between 4 to 5 (otherwise you are not measuring the true oxygen concentration). Make sure that the instrument is reading ppm and not % (it changes automatically when it reaches 0.1% oxygen (1000 ppm) to the ppm scale). There are indicator lights next to the displayed number that tell you if the units are ppm or percentage. This step should take about 45-60 min. Do not attempt to turn-on the xenon lamp before the read-out is below 5 ppm.
6. Turn-on the switch marked 'Xenon lamp' on the front left side of the CD instrument.
7. The lamp power supply is on the lower shelf next to the oxygen monitor. Wait until the LED green light, indicating 'lamp ready', is on. When the green light is on, press the red button on the lamp power supply to ignite the lamp. Take a note of the lamp hours counter, displayed on the front of the lamp power supply.
8. Turn on the CPU switch on the front of the instrument (next to the Xenon lamp switch).
9. Turn on the computer and open the Aviv 410 software.
10. Watch the oxygen level in the oxygen monitor and gradually reduce the N_2 flow to 10 while at the same time maintaining the flow rate in the oxygen monitor to between 4 to 5 (this could be done during the experimental run).

You are now ready to start the experiments.

11. During operation, monitor the N_2 purity by reading the output of the oxygen monitor. If at any point the oxygen level goes above 5 ppm, turn

the Xenon lamp off immediately. As well as the oxygen level you should monitor the temperature, using the temperature control panel in the software. The heat-sink temperature should not rise above 35˚C.

Turning OFF the instrument:

1. take a note of the lamp hours counter on the lamp power supply front panel.
2. Turn off the switch marked 'Xenon lamp' on the front left side of the CD instrument.
3. Close the Aviv software saving the data first if required, and turn off the computer.
4. When the computer is off, turn off the CPU switch on the front of the instrument, next to the Xenon lamp switch.
5. Turn off the water-bath.
6. Close the inlet and outlet valves on both sides of the oxygen scrubber on the floor next to the CD instrument.
7. Take a note of the remaining N_2 level in the bottle and shut down the N_2 supply by closing the gas valve on top of the N_2 bottle.
8. Do not turn off the oxygen monitor. This instrument is always on.
9. Fill the CD Log Book clearly with the required information and return it to its draw.
10. Clear and clean the work surface and remove used tips etc etc.

Charges:

The charges are for covering the cost of Nitrogen and maintenance of the instrument.

The current total cost for a 200 Litre pure nitrogen bottle is £42.00. The charges for users (Biochemistry Department only) are as follows: A minimum charge of £10.50 for the first ¼ tank (50 Litres), even if you have not used the full ¼. If you use over a ¼ tank then the charge would be for ½ a tank (£21.00) etc etc. A full N_2 gas bottle should last for about 2-3 full days (8 hours per day).

Do not run the bottle dry. Monitor the N_2 level and if there is less than 25 litres left in the bottle, stop the experiment and turn off the lamp. Ask Simon Quick (sq204@cam.ac.uk) to replace the bottle. You must inform Simon Quick, Katherine Stott (ks123@mole.bio.cam.ac.uk) or Cynthia Lampert (cl396@cam.ac.uk) by email that a new bottle is required and one of them will order it from the suppliers. If you have operational problems with the instrument email Joseph Maman (jdm22@cam.ac.uk) or Katherine Stott.

- If you just want to manipulate/copy/delete/export existing data you just have to turn on the CPU and then the computer. You must open the Aviv 410 data manipulation software and not the software for operating the instrument. Turn off the computer followed by the CPU when you finish.
- We strongly recommend that data should be transferred by copying files to a new CD or a USB key that have been formatted before insertion into the port of the CD computer. We had problems with computer viruses that damaged the instrument in the past. If this persist then we will cancel the USB ports in the CD computer.
- It is possible to load the Aviv 410 software (PC, or Mac with PC emulator). Ask Joseph Maman for details.
- Cuvettes suitable for CD can be purchased from Starna Scientific Ltd. An 0.1 cm pathlength cuvette (Cat No: 21/Q/1/CD) costs £81.30. If you need different cuvette configuration go to the company website http://www.starna.com/ukhome/ukindex.html or you can try http://www.hellma.co.uk .