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V01
Oct. 12, 2004

MINOS Near Detector Power Outage Procedure

PREPARING FOR A POWER OUTAGE

HV:

- Use the HV software to set all HV channels OFF. Turn off the AC Main switch on the front of the HV Mainframes 9 and 10.

MINDER Racks:

- Turn off all MINDER Wiener power supplies
- Turn off all 208V RPS AC relay switches

MASTER Racks:

- Turn off all MASTER Wiener power supplies (both crates on a branch – one above the other – should be turned off within a few minutes of each other).
- Turn off all 208V RPS AC relay switches.

Clock Rack I:

- Turn off Wiener power supply.

DAQ Racks:

- Follow DAQ computer shutdown procedure – power off when shutdown is complete.
- Shutdown dcsdcp-nd: as root, “shutdown –h +2m”.
- Shutdown tabletop PC.
- Shutdown gateway PC.

Clock Rack II:

- Power off Timing PC – AFTER DAQ SHUTDOWN SCRIPT HAS BEEN RUN!
- Unplug power strip powering GPS receiver and TPC.
- Turn off the RPS AC Relay 110V switch.

Cooling Water:

- Press Stop button on Pump switch.
- Press "Manual" button on valve controller (it should light up).
- Turn off valve controller switch (household type switch).
- Turn off knife switch on pump skid.
- Pumps 4/5 (near base of shaft) – ensure that pumps and control panel are off. In case of any doubt, contact building manager or FESS/OPS.

RPS:

MAKE SURE ALL ELECTRONICS COMPONENTS ARE OFF BEFORE PROCEDING:

- Turn off all RPS circuits, which are in the 4 upstream-most panel boards (PP-MNB-1-A/B-1/2) near the DAQ table. The circuits that power the RPS are labeled on the inside door of each panel board. This will shut of RPS controllers, and stop power flow to fans. Some RPSs will alarm as their neighbors get shut off.

- Circuits:

  PP-MNB-1-A-1: 39,40,41
  PP-MNB-1-A-2: 31,32
  PP-MNB-1-B-1: 39,40,31
  PP-MNB-1-B-2: 31,32

Restoring Power:

NOTE: IF ANY WORK HAS BEEN DONE ON POWER DISTRIBUTION WITHIN THE CLOCK, MASTER, OR MINDER RACKS, THE APPROPRIATE PROCEDURE MUST BE FOLLOWED BEFORE ENERGIZING THEM.

Cooling Water I:

- Contact building manager or FESS/OPS to restart pumps 4/5 at the base of the shaft.

DAQ Racks:

- Power up and restart minos-gateway-nd, and tabletop PC.
- Power up DAQ PCs in the order from the top of the upstream rack, moving down each rack before going to the next. Start with daqsrv-nd, and wait for a sufficient time before proceeding.
- Power up dcsdcp-nd.

RPS:

- It is best to start with all 110V RPS AC Relay breakers in the ON position, except for the clock rack (its Wiener is powered by 110V, unlike all the others).
- Turn on the breakers for the RPS circuits, which are located in the 4 upstream-most panel boards immediately upstream of the DAQ table, one circuit at a time. This will bring on 3-5 racks each. Hopefully, the RPS controller will come up in a happy state, and the rack fan will start up before the airflow alarm grace period expires. A few racks will fail to come up right away, but they can be reset by unplugging the RPS control for the problem rack, and waiting several minutes before trying again. Other RPSs will have an audio alarm, but with no real problem. Just press “alarm

silence". Press "clear display", followed by "output latch reset", for ALL RPS controllers.

Timing Rack:

- Plug in the power strip feeding the TPC and the GPS receiver.
- Boot up the TPC.
- Set the 110V AC relay switch to the ON position. Hold in the "AC Relay Reset" button on the RPS controller until the fan is running and the green light is illuminated on the RPS controller. Press "Clear Display", followed by "Output Latch Reset".
- Turn on the Wiener power supply for the Timing crate.

Cooling Water II:

- Turn on the power to the LCW skid by putting the knife switch to the "ON" position.
- Turn on valve controller via the household style switch just beneath it.
- Turn the pump ON.
- If pump does not respond, a reset of the PLC may be necessary:
- Press F5 on the control. If either of the two lines of text include "SET", press ENTER to clear the trip. If the pump still doesn't work, contact an expert.
- Turn the pump off again if you are not ready to start the electronics.

MASTER Racks:

- With the RPS happy and fans running, turn on the 208 V AC Relay switch.
- Once the Wiener has booted, turn it on. Make sure to turn on both MASTER crates on each branch with a few minutes of each other.

MINDER Racks:

- Turn the LCW pump on if it was off.
- With the RPS happy and fans running, turn on the 208V AC relay switch.
- Once the Wiener has booted, turn it on.
- Wait about 10 minutes, before putting the LCW heat exchange valve controller in automatic mode – press the “manual” button, the light on the button should go off.

HV:

- Turn on the AC on each Mainframe.
- Follow procedure for setting High Voltage.

DCS:

- Contact DCS experts, to ensure that RPS, FP, and CanBus interfaces are working.