

SCT Testbeam Operation Notes:

Combined run 2004, version 3, 20041026.2000

Between runs:

1. Between runs the DAQ should be taken down to “UNLOADED” or “SHUTDOWN”. You must not Stop then next Start, without going down to UNLOADED in between.
2. Check the SCT Power Supply DCS in case of any trips: look at the power supply crate in rack RA103. If any of the LEDs which are marked with orange stickers are blinking or are off, then there is a fault. In this case, follow the recovery actions described in the document ‘SCT Power Supply Operation’.

Note: the CAN cable is normally disconnected from the power supply crate during normal running. It must be reconnected and the crate re-initialised to perform any power supply interventions. This is described in the power supply document. Don’t forget, once the fault is corrected and all labelled LED’s are on, then to disconnect the CAN cable.

3. Check that the SCT S-link is not Fifo Full: Go to the SCT ROD crate in rack RA106. Look at the LED labelled “SLFF” on the ROD. The ROD is the card in slot 15. If SLFF is on, then the ROS has asserted XOFF backpressure, and the ROD output FIFO may be full. To clear this situation

- Go to the SCT ROS console immediately adjacent to the ROD rack
- In one of the xterm windows, usually the top right, execute the program “filar_slink_dst -o2”.
- Ignore any errors from the program; the SLFF should anyway go off
- Ctrl-C out of the program

This situation can arise, for example, when the dataflow is blocked somewhere – not just SCT – but L1A’s are still arriving.

Shortly after start of run:

4. Check that the SCT hitmaps look reasonable in the Gatherer online monitoring or in the offline plots produced by the offline shifter, if present. The hitmaps should show some noise, some hot channels, and a beam profile consistent with the known beam shape. In particular, look out for missing chips or very hot chips. Each chip is 128 channels, corresponding to 1/6th of a plane. If the chip is in a critical region for the data being collected, eg, in the beam, then the shift leader should decide whether to stop the run to try to recover the chip. Otherwise, let the run finish, and then try to recover the chip. To recover the chip:

- Make sure the DAQ is taken down to UNLOADED.
- Go to the the SCT power supply crate and reconnect the CAN bus cable
- Follow the Power Supply Operation document instructions for recovering control of the crate, making sure all labelled LED's are on correctly.
- Issue a Hard Reset from each used power supply channel as per the instructions
- Disconnect the CAN cable
- Try to start the next run.

In case of SBC, ROS-21 problems or DAQ errors from SCT:

5. Check the SCT ROD has “Slink ON” (SLON) LED green, and that Slink Fifo Full (SLFF) is *not on* as per item 3 above. If SLON is off, then try re-seating the S-link fibre pair at the back of the ROD, behind the laser warning symbol.
6. If the SCT is missing event fragments, check that no power supply channel has tripped as per item 2 above.
7. If the SCT ROS (ROS-21) is not responding, then it may need to be rebooted:
 - Go to the ROS console next to rack RA106.
 - See if there is any response from the machine
 - If not, use a small screw-driver blade or similar to press the hidden reset button next to the blue light. The ROS is the Elonex in the lower part of rack RA106.
 - Wait for it to reboot.
8. There have been continuing problems of general DAQ stability: for example, “ROS-21” errors have been correlated with the presence of certain other sub-detectors, indicating a possible trigger or busy logic problem. This is not specifically an SCT issue even if the error is reported due to ROS-21. Call the T/DAQ expert.
9. If you need to reboot the SCT SBC, cttb-sct01, then after the reboot, the VME driver may not work. Log-in, and execute: `~/bin/fix_vme`

In case of severe problems preventing the continuation of useful data-taking, call the SCT support person as per current posted arrangements.

If the SCT support person can't recover a power supply situation, then they may call SCT DCS experts.

Other unlikely problems, especially when restarting after an MD, include one of us forgetting to put the correct trigger cable in, or the SCT busy not being included in the Busy logic.