Basic Data Handling Guide
BBAD Experiment
2004.093

**Note:** If the laptop has not been previously used to download the disks do these steps first:

1. **Boot up the laptop into Linux.**
2. **Start the RACS program.**
3. **Select File|Input Device...** from the menus.
    Enter **/dev/sda** for the input device and click the **OK** button.
4. **Shutdown the laptop.**

The RACS program should remember the Input Device that you entered, so the above should not have to be done again.

**Note:** Things just seem to go more smoothly if the laptop is powered up with the SCSI PC-Card in the PCMCIA slot, and with a Reftek disk attached and ready to be read.  So:

1. **Insert the SCSI PC-Card into the PCMCIA slot.**  The upper one is preferred.  Connect the black cable to it.

2. **Connect the rest of the SCSI cable to the Reftek disk.**  Connect the black and white cables together through the adapter, and then connect the white cable to the front of the disk drive enclosure.   Connect the power cable (with the yellow connector) to the power port. Check that the disk drive spins up when power is applied.



3. **Power up the laptop.**  As it is booting up you should see information about the attached Reftek disk go by on the display.  You should end up in the desktop and logged in as "field".

4. **Start the RACS program** by clicking on the laptop icon at the bottom of the display.

The RACS program should come up possibly looking something like below. Click on the Enable button to get all of the circles to be green. The RACS program must always be kept running, and the Archive circle must be green to access the /data partiion where all downloaded data will be placed.
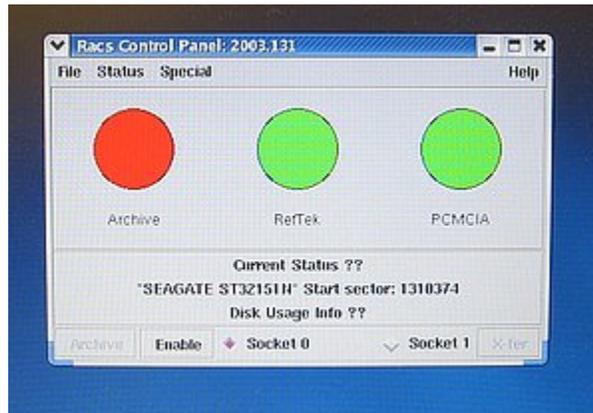


5. **Set the Output Prefix to something sensible.** This, plus the current day-of-year number, will be the name of the subdirectory in the /data partition where the raw data (.ref) files will be placed.
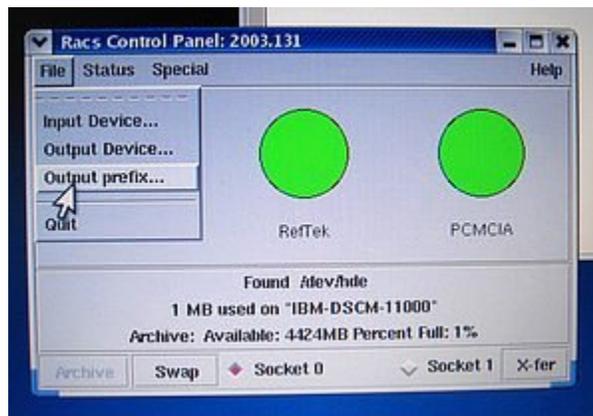


6. **X-fer to transfer.** Click the **X-fer** button to start the transfer. The DAS serial number will be displayed on the DAS Control Panel. The Archive circle will flash as the data is transferred. When the transfer is finished the amount of data transferred will be displayed. This value should be compared with the amount of data recorded on the Site Service Data Sheet that was filled in when the disk drive was removed from the site to make sure that they are close to each other.
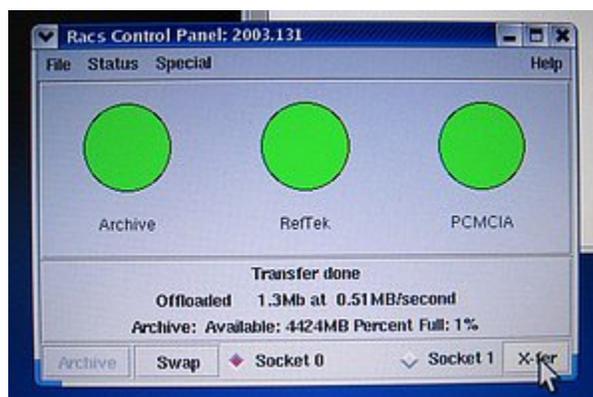
7. **Swap to swap.** Click the **Swap** button to disable the SCSI PC-Card, and the Reftek disk drive. The RefTek and PCMCIA circles should turn red. Disconnect the power and the SCSI cables from the disk drive enclosure.

8. **Repeat as necessary.** To download another disk connect the cables to the disk drive, click on the **Enable** button on the RACS Control Panel, click the **X-fer** button to transfer, click the **Swap** button when the transfer is finished, disconnect the cables from the disk drive.

9. **Look at the data.** Open a terminal window and change directory (cd) to the directory where the .ref files were transferred to (<Output Prefix>+day-of-year number) and process the data to SEGY using the program ref2segy and a command like

    ref2segy -f <.ref file name>

This will create files ending in .log, .run, possibly .err, and "R" sub-directories. There will be an "R" sub-directory (such as "R031.01") for each day that the time range of the .ref file covers. ".01" refers to data stream 1, and ".02" would refer to data stream 2. A CRITICAL error message will be displayed when the program starts which can be ignored. In some cases ref2segy may require information about the project that was not written to the raw data. It may ask for the sample rates and channel assignments. Answer the questions as appropriate.

After the data has been processed run the program logpeek (just type logpeek) in the directory where the .log files are located to produce a graphical representation of the contents of the .log files. Double-click on the log file names that will appear on the left side of the programs window. This will plot information such as timing information, GPS status items, battery voltages and DAS temperature.

Examine the trace data by changing directory to one of the "R" directories and using the program pql

      pql <something>

<something> can be any combination of standard wildcards to examine any of the files you want to see.  The files in the "R" directories ending in .1 and .4 are the trace files for the vertical channel, .2 and .5 for the N-S channel, and .3 and .6 for the E-W channel.  There should be a trace file for each channel for each hour of the day.