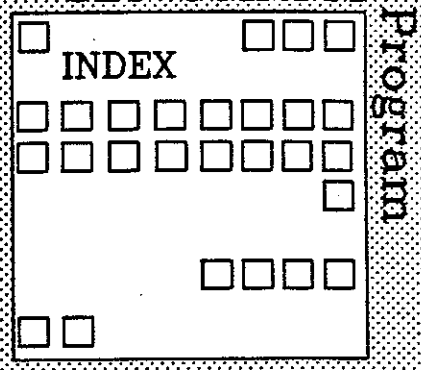
Index Panel

SLC Control Program



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X CALF now available on the Macintosh

February 4, 1991

Author: *Himel, Millsom, Krejcik* **Subsystem:** *CALF* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *No* **Help File:** *No*

Are you frustrated that your mouse can only be used as a paperweight when you are running the SCP from a Mac? Would you like a faster response time? Then try the new X windows version of the SCP now available from your local public disk. All you need is a Mac with at least 4 MB of memory and at least a 12" monitor (Sorry, that excludes Macs with the original tiny screen size). The Mac must also be hooked up to Apple Talk (most are).

This new CALF is based on a program from Apple called MacX. It enables the Macintosh to act as an X-server and allows our software which provides the X-COW and X-CALF on the VAX workstations to run the X-CALF on a Macintosh. The following section explains how to run the SCP once MacX is installed. The second section describes how to obtain a copy of necessary software from the public disk and install it on your Macintosh.

Running the MacX CALF

To start the SCP simply double-click on the SCP icon. You are prompted for your VAX user-id and password. Next you will see some text appearing in a non-interactive box as you are logged onto the MCC VAX. The next window to appear is a DEC-terminal session on the MCC VAX. Click once in this window to attach your keyboard to it. To start the SCP type:

```
SCP X user_id.
```

In about one minute three windows appear containing the touch panel, the graphics display, and the error messages and the user dialog screens respectively. On a 12" monitor, these windows all overlap. On a 19" monitor, the touch panel and graphics windows appear side-by-side at the top and the errors window is underneath them. You can move the windows to suit your taste, but they cannot be resized. The touch panel buttons may now be clicked with the mouse to run the SCP.

The basic operation of the SCP is identical to that of the X CALF running on a VAX workstation. This has been documented in a previous Index Panel article, so only a quick review is given here.

1. When the SCP prompts you for input, a dialog box will pop up. You just type your answer and hit return. Sometimes it may be necessary to click on the dialog box to attach the keyboard to it. If you know you are going to be prompted several times, you can give all the answers on one line separated by spaces.

2. You can use the scroll bars on the errors windows to look at old messages which have scrolled off the top.
3. If you want to use the Control or Function keys, you must first attach the keyboard to the terminal window by clicking on that window. If it is completely buried, you can select the **DECTERM** option from the **Window** pull-down menu to bring it to the top. Then you can click on it and then use the control or function keys. Important function keys are:
   (a) **F8:** Go to the button macros panel.
   (b) **F9:** Start CATER. Note that unless you have a 19" monitor that the terminal screen is too small to run CATER. However, it can be run on a 12" monitor using the VersatermPro terminal emulator. This is done from outside the SCP.
   (c) **F11:** Display global error messages.
   (d) **F12:** Don't display global error messages
4. Knobs are not yet available on the X CALF. We expect to release the knob software soon.

In some ways a Mac is different from a VAX station. The most obvious difference is that its mouse has only one button. The SCP uses all three buttons. The left mouse button is used to hit touch panel buttons, the center button brings up the knobs panel, and the right button moves the cursor to the return button. MacX handles this by using the single button on the mouse as the left mouse button, the left arrow key as the center mouse button and the right arrow key as the right mouse button. The up and down arrow keys also have special meanings although they are not needed by the SCP. If you want to really use an arrow key, then hold down the OPTION key while pressing the arrow key. Note that up arrow is useful when the SCP is prompting you with a dialog box. It recalls previous lines you have typed. If you will be using the arrow keys more than the center and right mouse buttons then you can use the **Misc. Preferences** option of the **Edit** pull down menu to reverse the meaning of the OPTION key.

There is one last detail which most people can safely ignore. The SCP has three different sets of window sizes which are optimized for various screen sizes. When you type SCP X the SCP interrogates the X server to find out how big its screen is. It then chooses the best window sizes for that screen size. If you do not like the size it chooses (which is most likely to happen if you have two screens on your Mac) you can force the SCP to use your own preferred size. To do this start the SCP by typing `SCP Xn` where n is 1, 2, or 3. The n=1 setting is optimized for a screen that is 1024 pixels across. VAX stations and 19" Mac monitors are this size. The n=2 value is optimized for a screen that is 640 pixels across. The 12" Mac monitor is this size. And finally, n=3 is optimized for a screen that is 1280 pixels across. This is the size of our DEC VT1300 Xterminals.

Installing MacX

MacX is a commercial product from Apple for which SLAC has obtained a site-wide license. We have customized it a little bit and placed it on the accelerator public disk. This change only involved adding 6 fonts to its repertoire of hundreds and setting it up to automatically start our application. Apple provides a 200 page manual for MacX, but it is not yet readily available. There are however a few copies here at SLAC. A minimum set of instructions are provided here for installing it and for running the SCP. If you need help with the installation, try asking your Apple Support Coordinator. If that fails, you may call Dennis Wisinski at the computing center who is in charge of the MacX release for SLAC.

To run MacX you need to have the Macintosh 6.0.4 or later release of the operating system. If you do not have this then obtain the appropriate floppy disks from and install it.

You also need to have the communications toolbox. If you have the VersatermPro terminal emulator then you might already have this. To tell if it is installed, look in the system folder; if a communications folder exists then you have the toolbox. If you do not have the communications toolbox then you need to obtain the **Communications 1** floppy disk and install it. This toolbox comes with MacX and in fact is on the public disk, but to install it you must boot the Mac from a floppy which has the toolbox and the installer tool on it. This is complicated so it is easier to just borrow the floppy from someone who has it. Anyone who has VersatermPro will have the necessary floppy.

Finally, you need at least 4 MB of memory. If you don't have that much then borrow it from a very good friend, or buy it.

The next step is to copy the MacX SCP to your hard disk for which you have to get access to the accelerator disk. To do this select the Chooser from the **apple** pull-down menu. Click on the **appleshare** icon and scroll up on the list of apple talk zones until you see **ethernet**. Click on **ethernet**. Now double click on the **Public Server 1** file server, and then double click on the **Accelerator** volume. This will cause an accelerator icon to appear on your desktop. You can now exit from the chooser.

To copy the files, double click on the accelerator icon. Next drag the **MacX SCP** folder to your hard disk. It will take several minutes to perform the copy over the network.

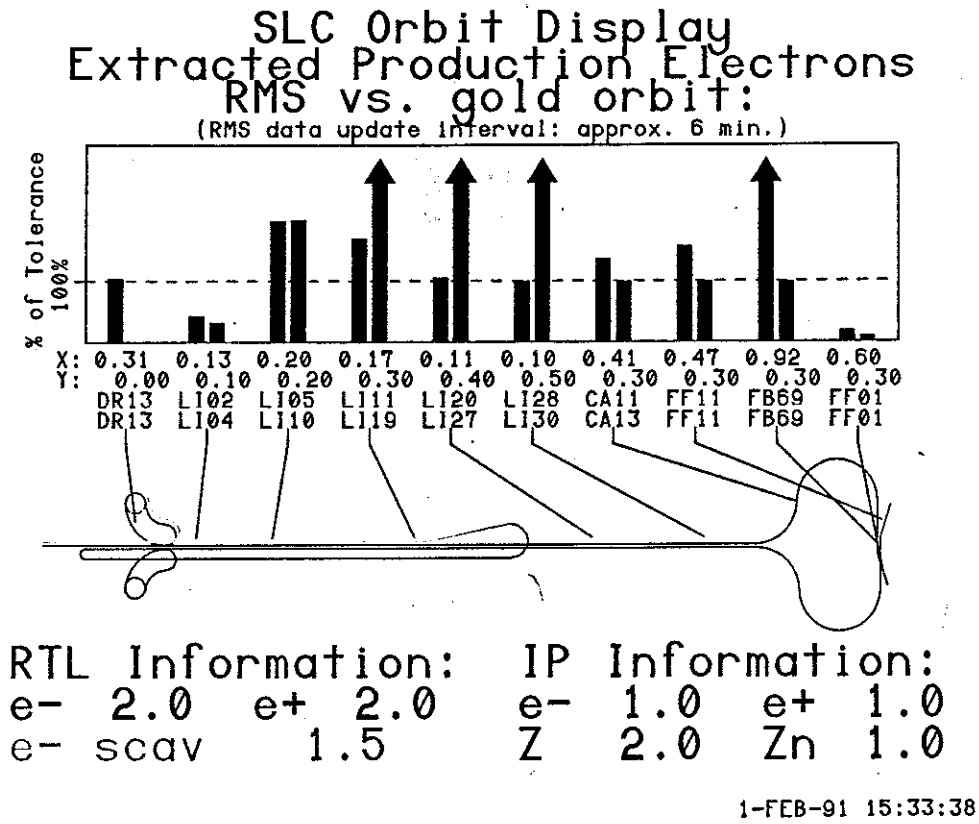
Now you have to put all the files in the right places. Double click on the **system things** folder. Double click on the **Files for your system folder** folder. There are three files and a folder inside. Drag two of the files (**MacTCP, and Hosts**) into your system folder. Now double click on the **Files for Communications Folder** folder. Drag the single file (**MacTCPtool** into the communications folder which is in your system folder. Finally, drag the **X-SCP** icon either to your hard disk or to your desktop. Now you can double click on the icon to start the SCP. Good Luck, and please don't trash the beam.

SLCORBIT Display Upgrade

February 1, 1991

Author: *Daniel Van Olst* **Subsystem:** *CUD* **User Impact:** *Moderate*
Panel Changes: *None* **Documents:** *No* **Help File:** *No*

The SLCORBIT updating display has been significantly upgraded to make it more readable and easier to interpret. New features include RMS values in bar graph as well as numeric form; displaying only a portion of the RMS data at one time; and arrows to indicate the association between data and areas of the machine. The display shows data acquired by the BPM Sampler at approximately 6 minute intervals so data can be up to 6 minutes old. The RMS data displayed is with respect to the gold BPM reference orbit for that region. In the previous version, RMS data for the entire machine was displayed at once in numeric format which was difficult to comprehend at a glance.



SLCORBIT Updating Display

In the new format, RMS data is displayed for one particle type at a time. A label on the top of the display shows the particle type (*e.g.* "EXTRACTED PRODUCTION POSITRONS") that is currently selected. The display cycles through the different particles and regions leaving each set of data up for a few seconds. As before, the RMS data is calculated for sub-ranges of the machine such as LI02-LI04 or CA11-CA13.

Each range has two bars and two numbers displayed for the X and Y RMS values with respect to the gold reference orbit. The height of the bar shows the RMS value as a percentage of the physicist-specified tolerance value (indicated by a dotted line on the display). If the measured orbit RMS is less than the tolerance, the bar is Green. If it is more than the tolerance, the bar is Red. (Off-scale bars are topped with an arrowhead). Both the bars and numeric values for a range are suppressed if the current drops below a threshold of 0.5×10^{10} particles. Indicator lines are provided to show where on the machine a particular range of data was acquired.

At the bottom of the display, a few important machine parameters are listed: the currents of the three bunches in the Linac, the currents at the IP and the estimated Z's per hour. The production electron and positron currents in the Linac are the intensities measured by the North and South RTL feedback loops. The scavenger electron intensity is read from the last toroid before the target, PT01 376. The IP parameters are the same as the data in the familiar Luminosity history summary. They are updated by the deflection scans or by the IP feedback watchdog.

The SLCORBIT display is not currently available on the SCP itself but will be added in a future release. History plots of the RMS values are also available as described in a previous Index Panel article.

Deflection Scan Changes

February 6, 1991

Author: *Nan Phinney* **Subsystem:** *Final Focus* **User Impact:** *Small*
Panel Changes: *One* **Documents:** *No* **Help File:** *None*

With the new SLD Final Focus, the BPMs nearest the IP (BPM 1) will no longer be able to read the outgoing beam when both beams are present. This means that only three of the long BPMs may be used to calculate Beam-Beam Deflections. To provide some redundancy, it is planned to also use the other two FB69 BPMs (BPM 4) in the calculation if these BPMs can me made to work reliably.

The deflection scan software has been modified to fully support these additional BPMs. The list of BPMs to be used is read from the BSCN database and may be modified with a database edit. BPMs may also be turned Offline to exclude then from the deflection fits. For diagnostic purposes, the outgoing BPM 1 will continue to be read out along with the other scan data and stored in the Correlation Plots for display, but it will not contribute to the deflection fits.

The Fit Beam Position software has been extended slightly to support the new SLD wires which are located 21 cm from the IP. When a measurement of the beam position at the IP is requested on the IP Wire Panels, the software also displays the calculated position of the beam at both the North and South wires.

History Buffers

January 24, 1991

Author: *Ralph Johnson* **Subsystem:** *Timing* **User Impact:** *Some*
Panel Changes: *None* **Documents:** *No* **Help File:** *No*

The timing of a Vernier Delay Unit (VDU) device is actually controlled by the VDU unit and an associated trigger or PDU. When changing the timing for such a device, the control system internally adjusts the timing of both VDU and PDU as needed. The combined time, *i.e.* the VDU delay (VDES) is plus the time offset of the corresponding trigger channel is now being saving in a history file. The expression for the saved parameter is:

VDES + (TRIGGER - TREF - TNOMINAL - PDUT)

This data is available from history plots by selecting any VDU on one of the timing panels.