Index Panel

SLC Control Program

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BPM Calibration Beam Strength Changes

June 7, 1993

Author: *Mike Zelazny* **Subsystem:** *SLC* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *No* **Help File:** *Yes*

In the Arcs when the BPM calibration intensity is changed, the BPM readings change slightly. Because feedbacks are controlling the beam, changing the BPM calibration intensity affects the orbit, thereby changing the polarization. In order to allow changing the Linac calibration intensity separately from the Arcs, the ARC BEAM CURRNT button has been added to the BPM Calibration Panel.

Now for example when the SLC EXTRCT e- button is selected, the BEAM CURRNT e- 3.5 button displays the current for most micros but the current for CA11, CA12, and CA13 will be displayed on the new ARC BEAM CURRNT button.

One may of course change either beam current values with the above buttons and create a measurement definition with a private BPM calibration. But, changing the Arc calibration intensity and making the calibration public changes the orbit in the Arcs. So, be careful.

BPM Sampler Enhancements

March 25, 1993

Author: *Mike Zelazny* **Subsystem:** *Linac* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *No* **Help File:** *None*

The following enhancements have been made to the BPM Sampler:

ndx73.texThe number of available acquisitions has been doubled. The BPM Sampler can now have up to 16 acquisitions running at one time.

ndx74.texThe maximum size of each acquisition has been doubled. Each individual acquisition can be up to 64K.

ndx75.texYou can now override the BPM Sampler SLC database secondary by specifying that secondary in an acquisitions list file in *slcbs_lists:*. For example, if the line **'BSMD','FB69',700** appears in your list file the BPM Sampler will write its data into the SLC database primary *BSMD* micro *FB69* unit *700* secondary *DATA*. The secondary *DATA* can be overwritten by adding the secondary name to the list file. For example **'BSMD','FB69',0700,'FLUX'** writes its data into the SLC database primary *BSMD* micro *FB69* unit *700* secondary *FLUX*.

Fast Feedback Update

March 31, 1993

Author: *Feedback Group* **Subsystem:** *FBCK* **User Impact:** *Some*
Panel Changes: *Few* **Documents:** *No* **Help File:** *No*

Several new feedback loops have recently been added. Some are for diagnostic purposes only. New loops in EP02,EP05,CA13 and CA03 in addition to the "Source TMIT FBCK " loop in LI00 are intended for COMPUTE mode only. They have been installed to allow easy tracking of jitter sources and recording of RMS's in history buffers. They should be left in COMPUTE in order to accumulate history buffers of energy, intensity and other beam parameters. These loops are not intended to be put in FEEDBACK mode. In general, the Fast Feedback Summary Display can be used as a guide to determine the normal mode of fast feedback loops. If a loop is not in its normal mode, a magenta bar appears to indicate the normal mode.

Additional diagnostic feedback loops have been added in LI05, LI08, LI09 and other micros in order to diagnose beam trips. These loops are only intended to run in SAMPLE mode, and they may not be put into COMPUTE or FEEDBACK. They ring buffer BPM data at full rate all the time, but stop for two minutes each time after the beam goes away for more than half a second. This allows one to acquire the ring buffers and see what the beam did on the last few pulses before an MPS trip and hence track down the cause of the trip.

Feedback loops have been added to the reverse bends of the both Arcs. These correct the beam position and angles and measure but don't correct the energy.

Additional feedback loops are being commissioned in DR12 and DR02 to control the injection launch into the damping rings. These will normally be in FEEDBACK mode after they are commissioned.

The LI27, NRTL and SRTL fast feedbacks have been modified to run at a higher rate than previously. This should improve their response to disturbances in the Hz range. They now run at 60 Hz, as compared to other linac loops which run at 20 Hz. As a result, the cascade is turned off for the LI03 and LI27 feedback loops. This should not be turned back on without consulting an expert. ndx76.tex

CAMAC Crate Voltages

March 30, 1993

Author: *Ken Underwood* **Subsystem:** *CAMAC* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *No* **Help File:** *No*

For some time now the CAMAC crate temperatures have been monitored by the history buffers as a by-product of periodic CAMAC crate verification. The temperature of the crate is measured by the crate verifier module that is located in slot 1 of every CAMAC crate. The crate verifier module also measures the 6 power supply voltages and the power supply common. These 7 crate voltages are now being monitored by the history buffers.

To display the history of a CAMAC crate temperature or voltage, go to the Verify CAMAC touch panel, select the desired micro and then the desired crate. This will harmlessly verify the crate. The $\boxed{\text{TEMP/ VOLTS HISTRY}}$ button takes you to the CAMAC crate history buffer plot panel. Select the $\boxed{\text{TEMP}}$ or one of the voltage $\boxed{\text{+24 VOLTS}}$ buttons and then push the $\boxed{\text{PLOT AUTO SCALE}}$ button. The other history buffer plot controls allow specification of manual voltage and time ranges. To select a different micro or crate, you must return to the Verify CAMAC touch panel and select them.

A few words of caution: the temperature and voltage measurements have poor resolution. Since the power supplies typically regulate to much better than this, the history buffer plots tend to be straight lines. The plot scales will usually expand to values that may be misleading. Beware, not all power supply voltages may be present in a CAMAC crate. These will show up as straight lines at 0.0 volts. Finally, the micro updates the CAMAC crate temperature and voltages in the database at a rate of 1 crate per minute so the data can be many minutes old.

Correlation Plot Changes

March 24, 1993

Author: *Lee Ann Yasukawa* **Subsystem:** *Correlation Plots* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *No* **Help File:** *None*

The Correlation Plot facility has been enhanced to allow users to sample the RMS of fast feedback elements. In order to sample the RMS value, FBCK must be entered as the primary along with a valid feedback loopname, feedback element name and VRMS as the secondary. VRMS is only meaningful for STATE elements (it will be zero for Measurement and Actuator elements).

Previously, the correlation plot facility allowed FELB as a valid primary for a sample variable. The FELB primary is no longer valid. If the FELB secondary VRMS is desired, the data can be obtained through the FBCK primary. ndx77.tex

Correlation Plot Perturb Option

April 5, 1993

Author: *Nan Phinney* **Subsystem:** *SLC* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *No* **Help File:** *No*

To speed up Final Focus optimization scans and to satisfy a long standing user request, a new Perturb/Trim option has been added to the Correlation plots. For faster scans, the user may choose to "Perturb" or "Knob" magnet step variables rather than the usual "Trim" at each step. A button to toggle between Trim and Perturb has been added to the Correlation plot acquisition panels. When using the Perturb option, the user is no longer guaranteed of having the stepped device reach its new set point before sampled variables are scanned. The user must take care that the device responds quickly enough to provide reliable data or the user should select an appropriate settle time.

To allow better optimization of settling times with knobs, the handling of the correlation plot Settle time has been slightly changed. When using multiknobs or magnet Perturb for step variables, a longer delay is used for the first step of a scan to accommodate a possibly larger change in the device. On the first step, the time delay used will be the specified Settle time multiplied by half the number of steps in the scan. This allows a user to specify a shorter wait time for subsequent steps, while still giving the device sufficient time to stabilize on the first point.

SCP Suicide Pact

April 13, 1993

Author: *Ron Chestnut* **Subsystem:** *SCP maintenance* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *No* **Help File:** *No*

In response to the recent dearth of SCP slots, and realizing that most people had learned to circumvent the effect of the VANISH program, the SCP has been modified to watch its own activity and terminate when it has been inactive for one hour. This inactivity monitor is reset to start counting again for a SCP whenever any button is pushed on any panel. Button macros do NOT count as button pushes. The control room SCPs are exempted from this SCP slot pruning; we have asked that control room X-terms be voluntarily limited to two SCPs per workstation.