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SLC Control Program

SLAC's Software Engineering Newsletter

January 25, 1995 — **All that Fits is News to Print** — Vol. 9, No. 1

Display Group XYZ Management

January 12, 1995

Author: *Kenneth Underwood* **Subsystem:** *BPM Software* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *No* **Help File:** *Yes*

A new facility is available for the management of the Display Group (DGRP) XYZ bit fields that are used by the BPM software to determine various beam setup options. These options include flipping X, Y or Z coordinates for either beam, reversing calibration polarity and delaying readings by one or two bunches. The modifications to the DGRP XYZ setup can be made to only one DGRP at a time and are local to the SCP.

The DGRP XYZ management touch panel can currently be reached by pushing the DGRP XYZ SETUP button on the SLC BPM DIAGNOSTIC touch panel. The touch panel displays the current DGRP XYZ status for the last selected DGRP.

The SELECT DGRP button prompts the user for the display group name. The default DGRP is determined by the last selected BPM DGRP which can be selected by just hitting the Return/Enter key. The current selected DGRP is displayed on the button. Changing the DGRP will automatically restore the previous DGRP XYZ bit fields to the database defined values.

The DGRP MODE button toggles between DGRP and USER modes. When in the DGRP mode the normal database definitions for XYZ are used by the BPM software. In the USER mode the user defined XYZ setup is used by the BPM software.

The PREV MICRO, SELECT MICRO, and NEXT MICRO buttons select one of the micros in the currently selected DGRP. The bottom two rows of buttons will change to reflect the state of the XYZ bit field for that micro.

The [RESTOR TO DGRP] button reverts the USER mode setup back to the database defined values for DGRP XYZ bit fields.

The bottom two rows of buttons display the DGRP XYZ bit field attributes and the current state of the USER mode setup. Any DGRP XYZ attribute that differs from the database defined value is high-lighted.

The [DISPLY DGRP XYZ] button displays the DGRP XYZ bit field state for all bits and all micros within the currently selected display group. In the XYZ DGRP mode the display shows the database defined values. In the XYZ USER mode the current user setup is displayed with any DGRP XYZ bits that differ from the database definitions high-lighted in yellow.

The following steps should demonstrate how to use this new facility.

1. Select a BPM display group on the main BPM touch panel such as [SLC INJECT E-], then go to the BPM DIAGNOSTIC touch panel and push the [DGRP XYZ SETUP] button.
2. Push the [SELECT DGRP] and then push Return/Enter when you are prompted for the display group name. This will select the same DGRP as used by the BPM software.
3. Toggle the [DGRP XYZ MODE] button to the USER mode.
4. Using the [PREV MICRO], [SELECT MICRO], and/or [NEXT MICRO] buttons, select the first micro to be modified.
5. Toggle the DGRP XYZ bit field state(s) to the desired state.
6. Repeat the previous two steps for any additional micros.

7. Return to the main BPM touch panel.

8. Create the BPM measurement definition. Depending upon the actual DGRP XYZ bits that you have changed, other BPM software activities, such as calibration, may be required.

LTR Fast Feedback to control Positron Energy

January 5, 1995

Author: *Grossberg, Tang* **Subsystem:** *Feedback* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *Yes* **Help File:** *Yes*

In order to control the electron and positron energies in the LTR independently at all beam rates, software and database changes have been made to the NLTRSLTR fast feedback loop. With the previous software, the NLTRSLTR fast feedback loop controlled the LTR energy using klystron 1-6 (LI01 AMPLs 611,613 and 614). When the machine was long-term rate limited, the energy of the electron and positron beams were controlled independently. But when the machine was at full rate, the positron energy was not controlled, and only the electron energy was controlled. At full rate, a timeslot control feature was implemented for the electron beam, with a user-entered timeslot delta.

In the new version, the feedback controls both the positron and electron energys for all beam rates. This is done by adding feedback control for klystron 1-1C, which is AMPL,LI00,131 and 134. The LI01 AMPLs affect the energy of both beams, while the LI00 AMPLs affect the electrons only . A separate manual timeslot control is implemented for 1-1C so that now there are manual timeslot controls for both LI00 and LI01.

In order to compensate for phase changes when the feedback moves 1-1C, we control the LI00 CID master phase and SBST phase (PHAS,LI00,96 and 64). (Note that these PHAS devices are also part of the LI01 PHASE RAMP feedback loop, so when that loop is commissioned, these will be turned offline for the NLTRSLTR feedback loop from the actuator panel.) Special-purpose code multiplies the change in the LI00 AMPLs by a conversion factor (initially -1.2 degrees per MeV) to determine the amount to move the LI00 PHASes. If the LI00 PHASs are HSTAd offline from the actuator panel, they are not changed when the LI00 AMPLs are changed.

If the LI00 AMPLs are HSTAd offline from the actuator panel, the software works the same way as previously, controlling with LI01 AMPLs only. Also, when the machine is long-term rate limited, the software controls the beam energies as previously, and does not need to move the LI00 devices.

The LI00 and LI01 manual timeslot controls and the conversion factor for the LI00 phase control may be entered by the user from the new LTR PARAMS panel, accessible from the fast feedback magnet panel and from the klystron 1-6 panel. The LI01 timeslot delta control, which was previously on the fast feedback magnet panel, has been moved to the new panel.

Knobbing for FB31 phase ramp

December 8, 1994

Author: *Grossberg,Hendrickson* **Subsystem:** *Feedback* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *No* **Help File:** *No*

Recent software changes facilitate knobbing of a setpoint for a minimization loop when the feedback is in DITHER mode. This was intended for the FB31 phase ramp loop, which controls the NDR and SDR phase ramp. When a minimization loop is in DITHER mode, it has control of the actuators in order to DITHER and perform a calculation, but the feedback loop is not closed. So, with the new software, if a user wishes to knob the NDR phase ramp and the FB31 phase ramp loop is in DITHER mode, all that is needed is to select the feedback loop, go to the STATE panel and select the "E- phase wrt RF" element and attach it to a knob. Then knobbing this controls the phase ramp while continuing the dithering.

Also note that on the fast feedback STATE panel, the user may control the gain and range of a knob by adjusting the minimum and maximum knob limits for each state element.

BPM Pulse-id in Correlation Plots

January 24, 1995

Author: *Gregory R. White* **Subsystem:** *SCP* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *Yes* **Help File:** *No*

The pulse-id on which a particular BPM acquired data for Correlation Plots, has been added as a sampled variable to that system. So, for instance, if `BPMS LI00 440 X` is entered as one sampled variable, then, to see which pulses are used to acquire data for BPMS LI00 440, enter `BPMS LI00 440 PLSD` as another sampled variable.

In those circumstances where there is either no unique pulse-id, such as when the BPM readings are averaged for each sample, or the pulse-id is not distinguishable, such as when the BPM is multiplexed, then the first pulse-id in the group for that reading will be used. In these cases, the data point value will be marked as being bad (e.g. with a 'B' on the graph). So this is a quick way to tell whether a particular BPM is muxed.

CUD Processes Restart Automatically

19-Jan-1995

Author: *D. Van Olst* **Subsystem:** *CUD* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *No* **Help File:** *No*

There are several processes devoted to updating CUD Monitors (such as KLYSTRON, SLCORBIT, etc.). These processes have an unfortunate problem: if they are connected to a CUD Monitor and the Monitor crashes or the hardware is turned off, the CUD program crashes.

For example, if the KLYSTRON process is on five CUD monitors, and one of these Monitors is turned off or crashes, the program crashes and the KLYSTRON display goes away on the other four monitors also.

For various technical reasons, this is not easy to solve. However, there is a workaround in place that (should) automatically restart the CUD process if it dies because a CUD Monitor has died or the hardware has been turned off.

If a CUD process has died, it should be able to restart itself in less than a minute, or perhaps two minutes. If a CUD process does not come back automatically within two minutes, feel free to 'warmslc' the CUD process.

If you wish to turn off the CUD Monitor Hardware for some reason, HSTAing a CUD Monitor to OFF on the CUD PANEL first should prevent this crash-and-auto-restart of the CUD process, if desired.

BEAM DUMPING FOR FAST FEEDBACK FB31ENGY LOOP

15 December 1994

Author: *Grossberg* **Subsystem:** *Fast Feedback* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *No* **Help File:** *None*

In order to reduce SLC CDC trips, FAST FEEDBACK now has the capability of firing the single beam dumper for the FB31ENGY loop when the loop is in feedback. When feedback detects that either beam is off-energy, it dumps both beams.

There are two operator-enterable parameters associated with this new feature: an on/off button controlling whether or not the feature is invoked, and a threshhold value (in mev) which is compared with the amount the energy deviates from its setpoint to determine whether or not the beam is off-energy. Note that a large threshhold value will essentially disable the feature. Both parameters are enterable from the FB31 PHAS and AMPLs panel, reachable from the FAST FEEDBACK panel by way of the FBCK Magnet Index panel.

A dummy actuator has been added to the loop so that the current condition of the beam dumper can be seen. The actuator's name is BEAM DUMP. On the display vector and ring buffer plots, a value of 1 means that feedback is currently dumping the beams, a value of 0 means that it is not.

Feedback also keeps track of the recent rate at which the beam is being dumped. The rate can be viewed in two ways: From the actuator panel, a history buffer plot is available for the BEAM DUMP actuator, and the units for this history buffered value are number of beam dumps per second. The rate is also shown on the Loop Status display.

SAM Reset

December 15, 1994

Author: *Ken Underwood* **Subsystem:** *SAM Modules* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *None* **Help File:** *None*

A "last chance abort" has been added to the SAM Reset command procedure which is available from the Analog Status Diagnostics touch panel. The requested micro, crate, and module location will be displayed and you will be prompted with "Proceed (Y/N) [Y]?". If you enter "y", "Y", or just hit the Return key, the selected SAM module will be reset. Any other character will result in aborting the command procedure.

Crate +/- 12 Volt Power Supply

December 13, 1994

Author: *Marshall Call* **Subsystem:** *CAMAC* **User Impact:** *None*
Panel Changes: *Few* **Documents:** *None* **Help File:** *None*

The Crate Verification display reports both the status of voltages supplied to, and the temperature of the selected crate, as read by the crate verifier module. This display shows +/- 6V, +/- 12V, +/- 24V and temperature in degrees Celsius. The CAMAC modules used in the crates do not require +/- 12V for operation. Because the CAMAC crate power supplies are purchased "off the shelf", some provide the +/- 12V while others do not. In order to avoid confusion concerning the status displayed for +/- 12V, a (NOT USED) statement has been placed by the reading on the Crate Verification display. The History Buffer selector buttons for +/- 12V have also been removed.