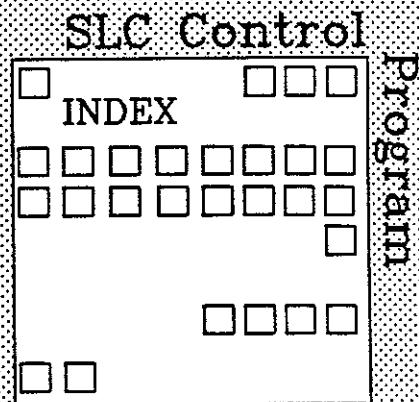


# Index Panel

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## New Sample State for Slow Feedback

September 17, 1990

**Author:** Ed Miller

**Subsystem:** SLC

**User Impact:** Modest

**Panel Changes:** Several

**Documents:** No

**Help File:** Yes

The Slow Feedback software has been modified and enhanced to provide better control of the execution of the loops.

Previously, the action of each Slow Feedback was primarily controllable by the HSTA state (OFF, REQUEST or SCHED) and a pair of timer intervals (SAMPLE-ONLY and SAMPLE-UPDATE). While these controls (and some others, such as GAIN) made it possible to achieve most operational objectives, some things were awkward to do and were prone to error. For example, the only way to switch a group (or single loop) from SAMPLE-UPDATE to SAMPLE-ONLY (or vice versa) was to manipulate the SAMPLE-UPDATE times for each loop. Similarly, the best method to keep a loop from controlling the beam was to set its GAIN to zero.

With the new version of the Feedback software, it should no longer be necessary to manipulate SAMPLE times or GAINS to achieve control objectives. It should also be easier to do GROUP ONE-SHOTs or to move a GROUP from controlling to sample-only (or vice-versa) without unwanted execution of some loops in the GROUP.

### Major Features of the New Scheme

- The number of control (HSTA) states (and corresponding NORMAL states) for each loop has been expanded from three to four; these are (in hierarchical order from 'low' to 'high') OFF, REQUEST, SAMPLE and FEEDBACK. The meaning of these states are: OFF-do not run; REQUEST-run only for single-shot execution; SAMPLE-run at scheduled intervals for sampling only; FEEDBACK-run at scheduled intervals for sampling and (if needed) control.
- The NORMAL state for each loop is now used for more than just informational purposes—a loop cannot be put into a state higher than its normal state without some additional deliberate effort.
- Each loop has an additional HSTA indicator which may limit its execution—the CTRL indicator. If this indicator is not set for a loop, it will never be allowed to control the beam.

### Details of the New Features

- The HSTA control state for an individual loop may be changed (from the TEST AND RUN panel) in a manner similar to the method previously used. However, an attempt to change the state above its NORMAL state will lead to a prompt asking you if you really want to change it. Also, if the loop does not allow control (HSTA CTRL indicator not set), then the FEEDBACK state will not be an option for that loop.
- The HSTA control state for all loops in a GROUP may be changed with a single button

GRPALL HSTA STATE
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on the GROUP SELECT panel. (Previously, a similar function was supported

by three buttons—GROUP ALL OFF, REQ and SCHED.) This new button offers five choices: OFF, REQUEST, SAMPLE, FEEDBACK and NORMAL. The NORMAL choice will set each loop in the group to its NORMAL state. The other choices set all loops in the group to the indicated state with the following exceptions: (1) a loop will not be moved to a state higher than its NORMAL state (or its current state, if that is higher than NORMAL); (2) a loop which does not have the CTRL indicator set will never be moved to the FEEDBACK state.

- For loops which have the CTRL indicator set in their HSTA, the states OFF, REQUEST and FEEDBACK operate the same as the previous states OFF, REQUEST and SCHED. If such a loop is in the new SAMPLE state, it is scheduled to execute every SAMPLE INTERVAL seconds and do only the signal measurement. Such a loop in the FEEDBACK state is scheduled to run every FEEDBACK INTERVAL seconds and both measures the signal and (if necessary) controls the beam. Note that a loop in FEEDBACK will also be scheduled to execute every SAMPLE INTERVAL seconds (unless SAMPLE INTERVAL is zero or an integral multiple of FEEDBACK INTERVAL) for signal measurement only.
- When doing GROUP ONE-SHOT (SCO), any loop which is not OFF will be executed, (as was the case previously). However, any loop which does not have the HSTA CTRL indicator set will only do the signal measurement execution.
- It is expected that the settings of the NORMAL states and the CTRL indicator will be the responsibility of those who commission the loops. Thus buttons to set these are located on the DIAGNOSTICS panel.

### Some Recommendations for Setting Loop Controls

- Loops which should never control the beam should have the HSTA CTRL indicator off. Don't rely on setting GAIN = 0 for this purpose.
- Groups which will have any loops which are scheduled should normally be set up with the same FEEDBACK INTERVAL for every loop in the group. Typically the SAMPLE INTERVAL should be an integral multiple of the FEEDBACK INTERVAL (or zero, if the group is never to be scheduled for sample-only purposes). Ordinarily it should not be necessary to specify non-zero time intervals for some and zero time intervals for other loops in a group—use the HSTA state, NORMAL state, and HSTA CTRL indicator to make such distinctions. Note that if the loop NORMAL states are properly set, it should be possible to move a group from FEEDBACK to SAMPLE (or vice-versa) with a single button push and without causing a loop to run at a state higher than it is normally supposed to be run.

**Gaussian Areas Added to Correlation Plots**

September 20, 1990

**Author:** *Hendrickson, Sanchez*  
**Panel Changes:** *No***Subsystem:** *SLC*  
**Documents:** *No***User Impact:** *Small*  
**Help File:** *Yes*

Correlation plot software has been modified to calculate the gaussian area whenever a gaussian fit is performed. This area is displayed with the gaussian fit parameters on correlation plots. The calculated area is the area of the fitted curve with the background subtracted:

$$\text{Area} = \sqrt{2\pi} \times \text{Height} \times \text{Width}$$

If required, the actual integrated area under the curve may be added in the future.

In addition, correlation plot pseudo-secondaries have been added to the display of the gaussian areas for wire scans and for video digitizer scans. This was requested to help diagnose problems with non-linearities in profile monitors and wire scanners. For the WSCN primary, new secondaries available are X.AREA and Y.AREA. For the DTIZ primary, the new pseudo-secondaries are XAREA and YAREA.

**Area Under Gaussian Added to Emittance Display**

September 19, 1990

**Author:** *Michael Glaviano*  
**Panel Changes:** *Few***Subsystem:** *SLC*  
**Documents:** *No***User Impact:** *Small*  
**Help File:** *None*

The emittance package now makes the various secondary variables used in the emittance calculation available for display. These are variables that are associated with the gaussian fit of the square of the beam width to the quad strength. They include the offset, peak, mean, width squared, and area of the gaussian.

To see these parameters, press the NEXT PAGE button on the Emittance Measurement panel after you have done an emittance measurement and displayed the results.

**Summary Status**

September 19, 1990

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

The Summary Status software has been modified to write a message to the Errorlog whenever a device is set to either "DEFERRED" or "ACKNOWLEDGED" through one of the SDS control panels. The message will contain the device type (primary,) micro, unit number, and the channel, as well as its new status, *i.e.* DEFERRED or ACKNOWLEDGED.

**Redisplay of Auto Collide Data***September 19, 1990***Author:** *Nan Phinney***Subsystem:** *Final Focus***User Impact:** *Small***Panel Changes:** *One***Documents:** *No***Help File:** *None*

By popular request, a button has been added to redisplay the results of the last Auto Collide procedure done on a particular SCP. Various problems with printing the display have also been fixed.

**NOHARDWARE Job Removed***September 20, 1990***Author:** *Sanchez, Hendrickson***Subsystem:** *Micro***User Impact:** *Small***Panel Changes:** *No***Documents:** *No***Help File:** *No*

The NOHARDWARE micro job has been removed from the system as its functionality is no longer required. Operators should not expect to see the usual messages generated by this software.