Index Panel

SLC Control Program

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New Kicker Timing Display

May 7, 1990

Author: *Ken Underwood*
Subsystem: *Kickers*
User Impact: *None*
Panel Changes: *Some*
Documents: *Yes*
Help File: *No*

A new type of timing display is now available for the kickers. This display can be selected from either the North or South Damping Ring Kicker control or Timing panels by pushing the SYSTEM TIME DISPLY button.

Depending upon the selected kicker system, you will see a title, a list of beam code related devices (TRIG or VDU) and a list of base rate trigger devices (TRBR). Only those beams for which at least one of the beam code related devices is activated will be displayed. For each device either the current timing value relative to TREF and Tnominal is displayed or **OFF** if the device is deactivated.

The Kicker Timing Display is the first implementation of a general purpose timing display. The display is database driven by the primary TDSP. This primary describes the beam code and base rate devices to be displayed. The display order is determined by the order in the database. A special device **NONE** will leave a blank column on the display providing a limited degree of display formatting.

There are three types of displays currently available. The first will display only **ONLINE** beam codes. The second will display only those beam codes with a **NONZERO** rate. The third will display only those beam codes in which at least one of the specified devices is **ACTIVE**. The type of display and the TDSP database unit are specified on the touch panel button.

The display is currently limited to seven beam code and seven base rate devices. Only TRIGs, VDUs, and TRBRs are currently supported. Future enhancements will permit more than seven columns by wrapping and paging the display as well as supporting other timing devices.

Emittance Measurement with Wire Scanners

May 8, 1990

Author: *Michael Glaviano* **Subsystem:** *SCP* **User Impact:** *small*
Panel Changes: *few* **Documents:** *no* **Help File:** *none*

The emittance software in the SCP has been enhanced to allow measurements using wire scanners in addition to profile monitors.

When a wire is selected it is automatically noted (based on a HSTA bit in the database) whether it may be used to perform emittance measurements. Currently wires in sector 2 and in the 50 Line (CA11) may be used for this purpose. After selecting a wire, one may go to the AUTO EMITTANCE MEASUREMENT panel and proceed with emittance calculations as before.

The software has also been modified to allow using transport matrices (RMAT) in addition to Twiss parameters in calculating emittance. This may be the method of choice in areas with cross plane coupling such as the Final Focus (where new wires will be installed in future). There is a new button on the AUTO EMITTANCE MEASUREMENT panel for toggling between TWSS and RMAT for this purpose.

Other modifications to the emittance package include:

- identification of the measuring device, wires or profile monitor on the panel
- Warning if a device has not been selected
- addition of several error and informational messages
- removal of obsolete buttons.

Video Distribution Update

May 9, 1990

Author: *Ken Underwood* **Subsystem:** *Video* **User Impact:** *None*
Panel Changes: *None* **Documents:** *Yes* **Help File:** *Yes*

The Video Distribution System has been in use for over a year now, however there appears to be some misunderstandings as to the functioning of this system. The following will hopefully clarify the operation of the system and explain its only known problem at this time.

The goal of the Video Distribution control software was to hide the complexities of selecting and routing video signals from the users. The intent was to place the necessary information behind a button on the touch panel such that pressing that button would present the video signal to a monitor. For example, selecting a profile monitor would select the source of the video, and inserting the profile monitor would route the video to the currently selected monitor. The user would never need to know to which cable or channel the video was assigned.

The Video Distribution System consists of several video switching boxes and RF demodulators. Each box currently has 4 RF and 3 base band video cables that can be selected to any combination of up to 6 monitors. Each monitor has an RF demodulator capable of tuning to one of 100 channels on the RF cables. Any monitor can independently select any cable and any channel.

If all video signals were allocated independent channels, there would never be any interaction between the video distribution systems. Unfortunately, a large number of video sources are processed through Video Cable Access Modules (VCAM). These modules have 8 video inputs of which only one may be selected at a time, and can broadcast on one of the 4 available frequencies. Funneling these video sources through 4

frequencies severely complicates the routing algorithm.

One important goal was to minimize operator interaction. Only when another distribution system would be impacted, would the software prompt for help from the user. This could occur if another system was currently using the requested VCAM or if all 4 frequencies were in use by other systems. The control software tries to select a frequency using the following sequence:

1. If one of the frequencies is available then use it.

2. If one of the frequencies is in use by the requesting system then reuse it.

3. If all frequencies are in use by other systems then display the current usage and let the user decide.

This algorithm would work fine as long as the control software decides which frequency to allocate. Unfortunately, one of the frequencies, channel 54, is located on the edge of the SLCNET cable bandpass. After several amplifiers, the video on this frequency is no longer usable for digitization applications. As a result the user is forced to manually select a frequency other than channel 54. After a while this may result in several monitors being assigned to a single frequency. Any system changing the video source for that frequency would then result in several monitors suddenly and mysteriously changing their video.

The only solution to the mysterious video changes is to let the control software make the frequency allocations. Either channel 54 must be disabled, leaving only 3 frequencies to allocate, or the video quality should be improved to an acceptable levels. As long as all available frequencies are of equivalent quality and the user allows the control software to decide which frequency to allocate, the video distribution system will hide most routing details from the user with only minimal intervention required.